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ANALYSIS OF TACTICAL AUTOMATION REQUIREMENTS FOR THE
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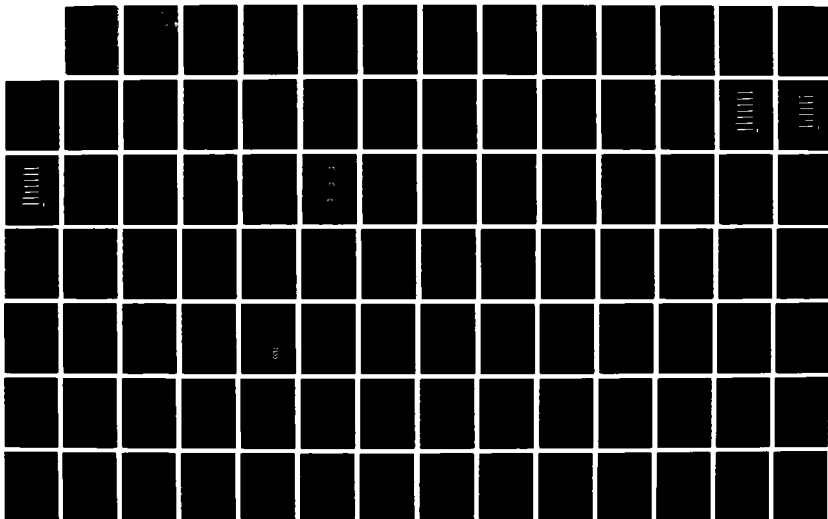
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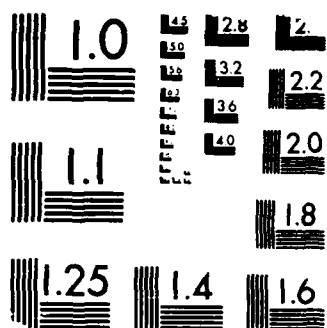
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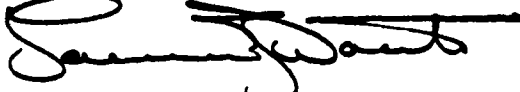
ANALYSIS OF TACTICAL AUTOMATION REQUIREMENTS
FOR THE MANEUVER FUNCTIONAL AREA

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FINAL REPORT

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The views, opinions, and/or findings in this report are those of the authors and should not be construed as an official Department of the Army position, unless so designated by other authorized documents.

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ABSTRACT

The analysis of Maneuver Functional Area (MFA) automation requirements was conducted to determine the need, value, and impact of extending automation within the Maneuver Battlefield Functional Area (BFA) below the battalion level. The MFA consists of Infantry, Armor, Aviation, Military Police, Engineer, Chemical and Signal units. This is a seven part study: (1) Identification of functionality (software) requirements; (2) Identification of hardware requirements; (3) Assessment of operational benefits; (4) Assessment of operational burdens; (5) Determination of correctable Battlefield Development Plan (BDP) deficiencies; (6) Identification of interface requirements with other BFA control systems; and (7) Cost analysis.

The analysis was designed to determine and compare the various MFA proponent automation alternatives in order to identify each Operational Facility (OPFAC) where the addition of an automated device would substantially enhance the unit's capability to perform its mission. The results of this study will be used to formally document MFA specific hardware and software needs as an extension of the Maneuver Control System (MCS). The MCS represents the Maneuver BFA automated Command and Control (C2) architecture.

SUMMARY

1. Introduction. In July 1987, the Command, Control, Communications and Intelligence (C3I) Directorate, Combined Arms Combat Developments Activity (CACDA), was tasked by HQ, TRADOC, to assess the requirement for Command and Control (C2) automation within battalions in the Maneuver Functional Area (MFA). These MFA organizations consist of Infantry, Armor, Aviation, Engineer, Chemical, Military Police and Signal units. The analysis was required in order to determine the need, value, and impact of extending automation beyond the currently approved Maneuver Battlefield Functional Area (BFA) C2 automation architecture. The results of this study will be used as the basis for documenting MFA specific hardware and software needs at and below the battalion level as an extension of the Maneuver Control System (MCS).

2. Purpose. To formally analyze, validate, and document the level or extent of automation necessary to fulfill MFA C2 automation requirements at and below the battalion level.

3. Background.

a. Two efforts are currently underway which address the need for automation at and below the battalion level: first, the Battlefield Management System (BMS), originally intended only for armor and mechanized infantry units; and second, the individual efforts of several MFA proponents to define their own requirements for automated command and control.

b. On 29 April 1987, C3I, CACDA, presented an information briefing to the CG, TRADOC, concerning the status of the Battlefield Management System (BMS) and other MFA proponent C2 automation initiatives currently underway. Because no formal study had ever been completed to justify the need for automation as articulated by these MFA proponents, the CG, TRADOC, directed an analysis be conducted to determine specific MFA C2 requirements.

4. Objectives. To validate and document tactical automation requirements for battalion level and below in terms of:

a. Software functionality required by type organization and echelon.

b. Hardware capability required by type organization and echelon.

5. Methodology. A two phased approach was used to determine which MFA proponent by type organization and echelon requires

tactical automation. Phase I examined those individual and collective task/functions performed by each organization and echelon in order to identify those select tasks which, if automated, would enhance the unit's ability to accomplish its mission. Phase II analyzed the hardware capability required to automate the tasks identified in Phase I. Choice of the preferred alternative was based upon:

- a. The identification of operational tasks, both force level and proponent unique high payoff tasks to be automated.
- b. Operational benefits.
- c. Operational burdens/disadvantages.
- d. MAA deficiencies the automation will resolve.
- e. Comparative costs.

6. Analysis Decision Criteria. Due to the composition of the organizations involved and the nature of the candidate hardware systems, system Characteristics, Capabilities, Performance, and Effectiveness (CCPE) were used in lieu of traditional Measures of Effectiveness (MOE). The CCPE was designed to measure whether the introduction of an automation device would significantly improve a unit's mission performance. Components of the CCPE measure were:

- a. The importance of the battlefield task/function toward prosecuting the battle.
- b. The improvements over existing manual procedures (e.g., timeliness, speed, reliability of delivery).
- c. The ability of the programmed tactical communications to support the information flow.

7. Findings.

a. Functionality requirements. These requirements were identified by MFA proponents and were based upon the use of doctrinal literature, ARTEP Mission Training Plans (MTP), Soldier Manuals (SM), and in-house subject matter experts. The results of the functional analysis are summarized below.

(1) Information requirements. Findings indicate that a high degree of commonality does exist among the MFA proponents. This is significant because it would enhance software development, reduce protocol overhead and costs, and facilitate software portability. In addition, unique functionality (software) requirements were identified for engineer, chemical,

military police, aviation and signal units to perform specific staff planning functions and computational work. Figure S-1 summarizes the information requirements identified.

(2) Operational capabilities. The basic operational capability requirements identified by each MFA proponent included: interactive display; operational graphics; ability to transmit, receive, and process formatted messages; audio/visual alerts; and message storage. Additional capabilities identified for users within the M1 fleet included: digital map background; position/navigation interface; touch sensitive screen with free draw graphics; interface with onboard equipment via a data bus; and the ability to process and manipulate data. Enhanced capabilities (operational graphics, memory, digital map background, and a Data Base Management System (DBMS)) were considered to be essential for the S2, S3 section and the S1/S4 to permit data manipulation and internal C2 of functional units.

b. Hardware requirements. Four candidate hardware solutions were provided from which to determine specific MFA materiel requirements: Handheld Terminal Unit (HTU); Portable Computer Unit (PCU); Transportable Computer Unit (TCU); and a Developmental Item (DEV ITEM). The HTU, PCU, and TCU are members of the Army Tactical Command and Control (ATCCS) Common Hardware/Software (CHS) family of devices. The DEV ITEM will require a materiel solution. Using the matrix and rating scale provided, the contribution of the hardware operational capability to fulfill the automation capability required was evaluated against the task/function listed and a subjective determination was made as to which hardware candidate solution best satisfied the automation needs of the specific Operational Facility (OPFAC) being addressed. Figure S-2 summarizes the materiel solutions for each of the MFA proponent alternatives as approved by the Commander, CACDA.

8. Conclusions.

a. Sufficient justification was provided to warrant automation devices at those OPFACS identified at figure S-2.

b. Supplemental software should be developed to support unique staff planning functions within the engineer, chemical, military police, signal, and aviation functional areas.

c. A significant degree of commonality exists among MFA information exchange requirements both horizontally and vertically.

d. The hardware distribution solution (NDI/DEV ITEM) will not overburden the capability of tactical vehicles to carry the equipment, nor impede the units capability to rapidly displace.

MFA PROPONENT
INFORMATION EXCHANGE REQUIREMENTS

TASK/FUNCTION	BN	CO	PLT	SQD/VEH
WARNING ORDER	I S E M AV AR C	I * E M AV AR C	I S E M AV AR C	AR
OPERATION ORDER	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
FRAG ORDER	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
FRIENDLY SITUATION RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
ENEMY SITUATION RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
LOGISTICS RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
EQUIPMENT STATUS RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
NBC 1	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 2	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 3	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 4	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 5	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 6	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
INTELLIGENCE RPT	I S E M AV AR C	I E M AV AR C		
BATTLE LOSS REPORT/ PERS DAILY SUMMARY	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
SPOT REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
MIJI REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
CONTACT REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
EFFECTIVE DOWNWIND MSG	I S E M AV AR C	I E M AV AR C		
CALL FOR FIRE	I AV AR	I AV AR	I AV AR	AR
ADJUST CALL FOR FIRE	I AV AR	I AV AR	I AV AR	AR
POSITION/LOCATION	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
MINEFIELD REPORT	I S E M AR C	I E M AR C	I S E M AR C	AR
OBSTACLE REPORT	I S E M AR C	I E M AR C	I S E M AR C	AR
RIVER CROSSING REPORT	I E M AR	I E M AR	I E M AR	
FR NUCLEAR				
STRIKE WARNING	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
SUPPLY SHORTAGE				
OPNL CONSTRAINTS	I S E M AV AR C	I E M AV AR C	S E M AV C	
TRANSFER OF AUTHORITY	I S E M AV AR C	I E M AV AR C		
SUPPORT AIR CORRIDOR/ ROUTES	AV	AV		
AIR SUPPORT REQUEST	I S E M AV AR	I AV AR		
CHEMICAL DOWNWIND MSG	I S E M AV AR C	I AR C	C	
BATTLEFIELD GEOMETRY/ GRAPHICS	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
MOVEMENT ORDER	I S E M AV AR C			
AIR STRIKE WARNING	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
GENERAL REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
RPT COMMUNICATIONS STATUS	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
RECEIVE WEATHER FORECAST	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
FIRE PLANNING	I AV AR C	I AV AR	I AR	AR
DAMAGE REPORT	I S E M AV AR C	I E M C	I E M C	
AIRSPACE RESTRICTIONS	AV	AV	AV	
ENGR SPT REQUEST	I S E M AV AR C	I E AR		
RPT C2 INFORMATION				
SYS STATUS	I S E M AV AR C			
BRIDGE REPORT	I E M AR	I E AR	I E M AR	AR
AIRHEAD LOCATION/ ACTIVITY	I S M AV			
CAPTURED MATERIAL REPORT	I S E M AV AR C	I E M AV AR C	I S E M AR C	
SAM STATUS REPORT	AV	AV		
REQUEST ADA PRIORITY	S AV	AV		
MEDICAL EVACUATION RPT	I S E M AV AR C	I E M AV AR C		
CHEMICAL PLANNING/ FALLOUT PREDICTIONS	I S E M AV AR C	I AR C	C	
DENIAL OPNS REPORT	I E AR	E	E	
ZONE BELT PROGRESS	E	E	E	
ROUTE RECONNAISSANCE REPORT	I E M AR C	I E M AR C	I E M AR C	AR
PREPARE ANNEX, OPNS ORDER	I S E M AV AR C			
MORTAR, BOMREP, SHELL REPORT	I S E M AR C	I E M AR C	I S E M AR C	AR

* SIGNAL COMPANY COLLOCATES WITH SIGNAL NODE AND SHARES RESOURCES.

I-INFANTRY; S-SIGNAL; E-ENGINEER; M-MILITARY POLICE; AV-AVIATION; AR-ARMOR

Figure S-1. Common information requirements

SCHEMATIC	USER	L7	INFANTRY	ARMOR	ATK	AVW	ASST	UTILITY	MP	EMOB	CMBN	SIGNAL
	(LT ADM)	(MTZ)	(IM13)	(BMADLET)	(8FVS)	(IM1)	(IM60)	(OH50C/AB6A)	(AH1(LHX)/OH58D)	(UHLB/OH58A)	(UB60(LHX)/CB47/CBS4 MECH)	(AA,IB,MTZ AA,IB,MTZ AA,IB,MTZ AA,IB,MTZ)
DE	BH CDR	HTU	HTU	DEV ITEM	DEV ITEM	HTU				HTU		HTU
	XO											
	S3	(a) PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V1)	PCU(V1)	PCU(V1)	PCU(V1)
	S3 SEC	(a) PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V1)	PCU(V1)	PCU(V1)	PCU(V1)
	S3 OFFICER			DEV ITEM	DEV ITEM	HTU						
	S1/S4 CBT	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V2)	PCU(V1)	PCU(V1)	PCU(V1)	PCU(V1)
	TRAINS											
	HHC CDR											
	MR PLT											
	SCT PVT	HTU (2)	HTU (2)	DEV ITEM (2)	DEV ITEM (2)	HTU (2)						
	SPEC STAFF											
	SPEC STAFF											
	S1 SEC (PAC)/C											
	CO FILL - BK	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)	(e)
	FIELD TRAINS											
CO	CO CDR/CO HQ	HTU	HTU	DEV ITEM	DEV ITEM	HTU	HTU	HTU	PCU(V1)	PCU(V2)	PCU(V1)	(b)
	CO XO											
	CO ISG											
PLT	PLT LDR			DEV ITEM	DEV ITEM			(f)	HTU	HTU	HTU	PCU(V1)
	PLT SG				DEV ITEM						(c-SMOKE)	(node)
SQB/YEB	SQB LDR											(b)
	IND YEH				DEV ITEM							(g)
	IND A/C							(f)				
TOTAL												
DEVICES REQUIRED	13,200		TOTAL 2658			TOTAL 5409		TOTAL 454	TOTAL 900	TOTAL 2952	TOTAL 550	TOTAL 358

1075.

(a) DEVICES WERE ALLOCATED IN MCS 0 & 0 PLAY

(b) SIGNAL C2 FUNCTIONS ARE PERFORMED BY THE MSE/TRI TAC ALLOCATED EQUIPMENT.

(c) ONE DEVICE PER SECTION

(d) SI/S4 OFFICER NORMALLY COLOCATED WITH BN MAIN CP.

(e) PACCS (DISPENS) AND OTC (PIL) PROVIDED BY CASSS.

[illegible]

(1) **MOLECULAR, BIOLOGICAL, CHEMICAL AND RECONNAISSANCE SYSTEM (MBORS) UNDER DEVELOPMENT BY US ARMY.**

Figure S-2. MFA proponent automation requirements

e. The development and fielding of parallel programs (NDI vs DEV ITEM) may not provide automation to all organizations at the same time. NDI off-the-shelf procurement will be faster than a DEV ITEM solution.

f. The extension of automation below the battalion level contributes to solving a large number of battlefield deficiencies (54) currently recognized within the TRADOC BDP (S), 1986.

g. Costs of DEV ITEMS are extremely high versus NDI hardware. Although not within the scope of this study, a Cost and Operational Effectiveness (COEA) study should be completed to assess this tradeoff prior to a milestone I decision.

9. RECOMMENDATIONS.

a. That the concepts identified within this study be approved and used to document the requirement for automation within MFA organizations at and below the battalion level.

b. That TRADOC C4, with the TRADOC System Staff Officer (TRASSO) responsibilities for the Maneuver Control System (MCS), be designated the single point of contact within HQ TRADOC for all Maneuver Functional Area command and control automation requirements.

c. That CACDA take action to continue the development of automation requirements at and below the battalion level to include:

(1) Coordinate/manage development of MFA Subordinate Systems (MFAS2) Operational and Organizational (O&O) plans and Required Operational Capabilities (ROC) - DEV ITEM only as enclosures to the MCS annex to the ATCCS O&O plan and ROC.

(2) Conduct a Cost and Operational Effectiveness Analysis (COEA)/Abbreviated Analysis (AA) to assess the relative effectiveness and cost of the hardware solutions identified as they pertain to developing, fielding and operating each alternative.

d. That USAARMC, as the CACDA executive agent for Close Combat Heavy C2 automation requirements, prepare the DEV ITEM ROC in coordination with the USAIC.

CHAPTER 1

INTRODUCTION

1-1. General. In July 1987, the Command, Control, Communications, and Intelligence (C3I) Directorate, Combined Arms Combat Developments Activity (CACDA), was tasked by HQ, TRADOC, to assess the requirement for Command and Control (C2) automation within battalions in the Maneuver Functional Area (MFA). These MFA organizations consist of Infantry, Armor, Aviation, Engineer, Chemical, Military Police and Signal units. The analysis was required in order to determine the need, value, and impact of extending automation beyond the currently approved Maneuver Battlefield Functional Area (BFA) C2 automation architecture. The results of this study will be used as the basis for documenting MFA specific hardware and software needs at and below the battalion level as an extension of the Maneuver Control System (MCS).

1-2. Problem. The Army requires automation within its C2 system which assists commanders and staffs to rapidly acquire timely tactical information, assess the requirement for new actions, determine appropriate courses of action, and direct the activities of subordinates. For units in the MFA, the MCS provides such automation. However, the approved requirement only provides automation from corps through battalion level. To improve the vertical and horizontal flow of information beyond the currently approved MCS architecture, several MFA proponents have been developing Operational and Organizational (O&O) plans to define additional hardware/software needs for their particular units at and below the battalion level. The level or extent of automation necessary to fulfill these parallel C2 initiatives, however, had never been formally analyzed, validated, nor documented. A comprehensive study was therefore necessary to formally identify MFA C2 automation requirements at and below the battalion level. Only in this way can we define a common C2 automation architecture that will ensure technical and tactical interoperability, effective system integration, and consistency with the Army Command, Control and Subordinate System (CCS2) architecture.

1-3. Background.

a. Two efforts are currently underway which address the need for automation at and below the battalion level: first, the Battlefield Management System (BMS), originally intended only for armor and mechanized infantry units; and second, the individual efforts of several MFA proponents to define their own requirements for automated command and control.

(1) The BMS concept, currently under exploration by the Armor Center, provides automated C2 within the battalion maneuver force down to the individual fighting vehicle. It is viewed as an extension of MCS for the processing, display and distribution of information in order to facilitate battlefield decision-making, employment, and sustainment of units below the battalion level.

(2) Concurrently, O&O plans were being developed by the Engineer, Military Police, and Chemical Schools to identify their unique hardware/software needs. These MFA proponents were defining their own requirements for automated C2 in order to enhance the vertical and horizontal exchange of information beyond that which MCS currently provides.

b. On 29 April 1987, C3I, CACDA, presented an information briefing to the CG, TRADOC, concerning the status of the Battlefield Management System (BMS) and other MFA proponent C2 automation initiatives currently underway. Because no formal study had ever been completed to justify the need for automation as articulated by these MFA proponents, the CG, TRADOC, directed an analysis be conducted to determine specific MFA C2 requirements.

c. To properly evaluate the extension of C2 automation within MFA organizations below the battalion level, the need exists to address these requirements as an integral part of the Army's CCS2 architecture. Therefore, a common understanding of the CCS2 architecture is essential to assess the value and impact of automated information exchange (technical, staff, and command-related) and its relevance to decision-making in support of the MCS. An explanation of the CCS2 concept is provided at appendix E.

1-4. Objectives. To validate and document tactical automation requirements for battalion level and below in terms of:

a. Software functionality required by type organization and echelon.

b. Hardware capability required by type organization and echelon.

1-5. Scope.

a. This study will encompass C2 automation requirements, at and below the battalion level, for units within the MFA.

b. This study will evaluate automation requirements for the battalion command group and coordinating staff (e.g., S1, S2,

S3, S4), company headquarters (e.g., commander, executive officer, and first sergeant), platoon headquarters (e.g., platoon leader and platoon sergeant), and squad or individual vehicle.

c. Information flow (input/output) will be evaluated as it relates to performance of functional tasks.

d. The study will explicitly address interface requirements with other automated control systems (i.e., AFATDS, FAADC2I, ASAS, and CSSCS).

e. Life cycle costs will be given in the "Big 5" format for each alternative ("Big 5" format includes: development, production, military construction, fielding, and sustainment).

1-6. Limitations. This study will not include automation requirements for special (functional) staff officers such as the chaplain, maintenance officer, and medical officer.

1-7. Assumptions. The following assumptions were deemed necessary for this study.

a. The Army Tactical Command and Control System (ATCCS) Common Hardware/Software (CHS) will interface with AFATDS, CSSC2, FAADC2I, MCS Block 1 (MILSPEC), and MCS Block 2 (NDI Hewlett Packard 330/310).

b. Any developmental hardware/software required by MFA proponents will interoperate with ATCCS CHS, AFATADS, CSSCS, FAADC2I, MCS Block 1 and MCS Block 2.

c. The usable life of computers is 10 years (includes technological obsolescence, wear and tear, and useful life).

d. The Army of Excellence (AOE) 92 force structure is a valid baseline for determining unit quantities.

e. Reserve round-out units will be accounted for and will receive C2 hardware with their active counterpart.

f. Those MFA battalion size and below units assigned at Echelons Above Corps (EAC) will require automation which interoperates with units assigned to corps and below.

CHAPTER 2

DISCUSSION/ANALYSIS

2-1. Mission Needs.

a. The need for improvements in the Army Tactical Command and Control System (ATCCS) arises from the operational demands of AirLand Battle doctrine. To achieve the necessary agility, initiative, depth, and synchronization, tactical commanders (i.e., corps and below) must make sound and timely decisions and rapidly direct the activities of subordinates and supporting units. To support this process, organizations, equipment, and procedures must be available to permit tactical commanders to apply military leadership in the decisive generation and application of combat power.

b. Today, tactical command and control, at and below the battalion level, is primarily performed in a manual mode. Voice and message traffic provide information for manual processing and correlation of battlefield data within current command posts. Because the existing manual system evolved in an environment far less dynamic than that required by AirLand Battle doctrine, significant deficiencies exist. Increased mobility and greater distances between friendly elements affect responsiveness; lengthy C2 voice and slow analogue message traffic permits the enemy to identify our key command and control nodes. Manual transcription and processing of information introduces inaccuracies. To eliminate these deficiencies, the need exists to extend automation at and below the battalion level at key nodes within the MFA to enhance the vertical and horizontal flow of critical information and to permit commanders to perform C2 of functional units in support of AirLand Battle doctrine.

2-2. Methodology. A two phased approach was used to determine which MFA proponent by type organization and echelon requires tactical automation. Phase I examined those individual and collective task/functions performed by each organization in order to identify those select tasks which, if automated, would enhance the unit's ability to accomplish its mission. Phase II analyzed the hardware capability required to automate the tasks identified in Phase I. Figure 2-1 summarizes the study methodology used. For details of the study methodology outline, refer to appendix F. Choice of the preferred alternative was based upon:

a. The identification of operational tasks, both force level and proponent unique high payoff tasks to be automated.

CACDA-C3I STUDY METHODOLOGY

MFA PROPONENT

CACDA

CACDA

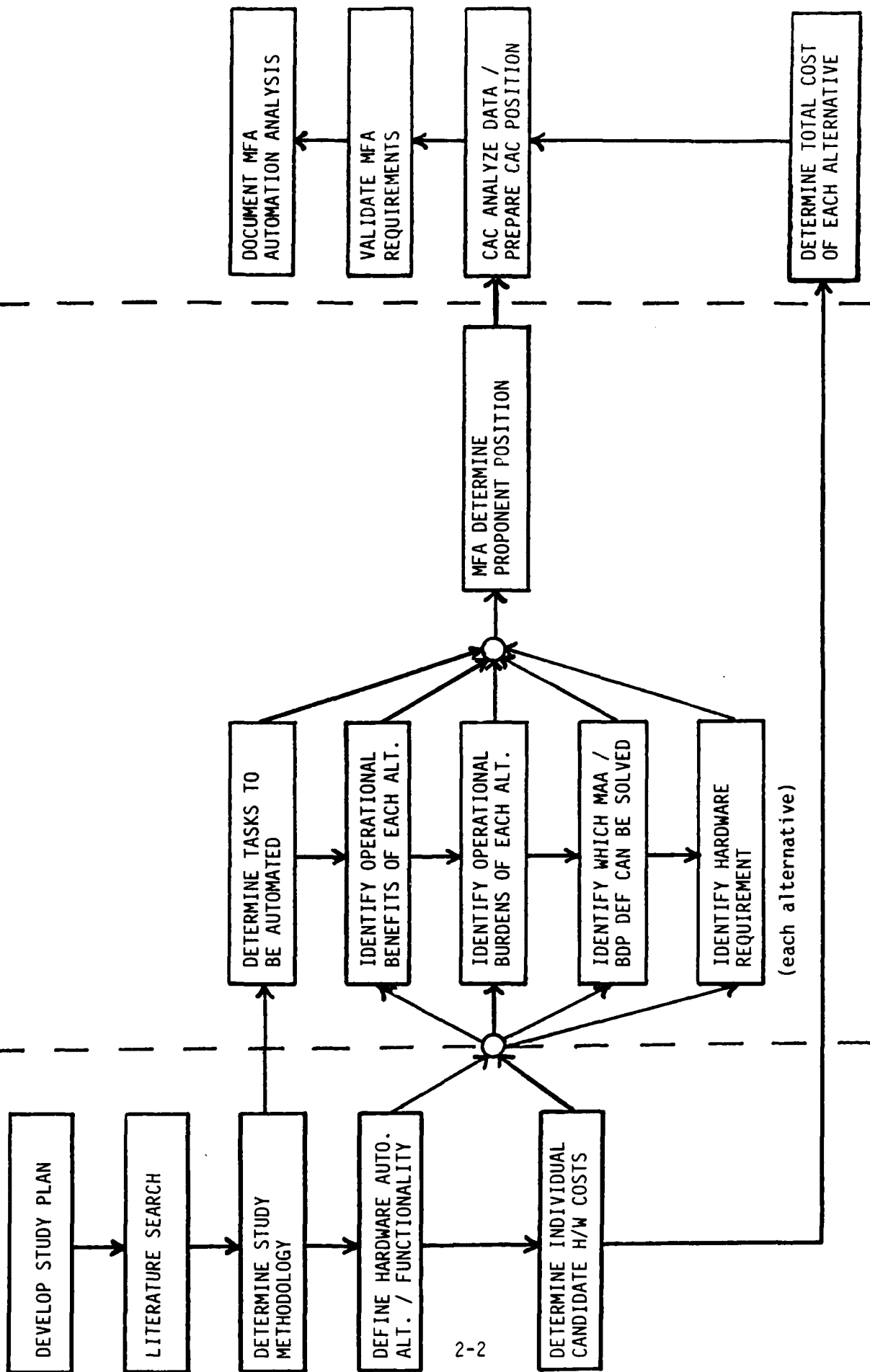


Figure 2-1. Study methodology

- b. Operational benefits of each alternative.
- c. Operational burdens/disadvantages of each alternative.
- d. Mission Area Analysis (MAA) deficiencies the automation alternatives will resolve.
- e. Comparative costs of the alternatives.

2-3. Alternatives. Due to the unique composition (e.g., mission, battlefield employment, equipment) associated with each MFA proponent, a single automation alternative (i.e., field to platoon level) could not be utilized to encompass MFA requirements as a whole. Therefore, the need existed to first identify alternatives for each MFA proponent. Alternatives were selected based on the combination of two variables: organizational unit by type (e.g., mechanized, airborne, infantry); and organizational echelon (e.g., battalion, company, platoon, squad/individual vehicle). Figure 2-2 summarizes the alternatives as selected by each of the MFA proponents for this analysis.

2-4. Analysis Decision Criteria. Due to the composition of the organizations involved and the nature of the candidate hardware systems, system Characteristics, Capabilities, Performance, and Effectiveness (CCPE) were used in lieu of traditional Measures of Effectiveness (MOE). The CCPE was designed to measure whether the introduction of an automation device would significantly improve a unit's mission performance. Components of the CCPE measure were:

- a. The importance of the battlefield task/function toward prosecuting the battle.
- b. The improvements over existing manual procedures (e.g., timeliness, speed, reliability of delivery).
- c. The ability of the programmed tactical communications to support the information flow.

2-5. Proponent Analysis Results. The following is a description of each of the analysis results provided by the proponent school/center. Proponent deliverables included: functionality (software) requirements; hardware capability requirements; operational benefits, operational burdens, correctable MAA deficiencies, and comparative alternative costs. The CCPE were used to measure the contribution of each alternative to operational effectiveness. Each alternative's contribution to the CCPE, based upon the analysis data provided, determined the best alternative. Also provided is a discussion of other significant findings associated with the alternatives, as well as a comparison of the alternatives.

ECH	USER	LT LT.AA ABN,MTZ	INF M12	HY/ M113	BRADLEY M3	M1 BTVS	AR MFO M113	ATK CHESJC/ AHB4	A111 OH89D	ASSLT UH1H/ CH59A	AVN UH60 (LHX)	UTILITY CH47 CH54	MP LT.AA ABN,MTZ IN,MECH	ENGR LT.AA ABN,MTZ IN,MECH	CHEM LT.AA ABN,MTZ IN,MECH	SIGNAL LT.AA ABN,MTZ IN,MECH
....	BN CLR YO S2 S3 Sec S3 OFF S1/S4 CBT TRN MHC CLR MTP PLT SCT PLT STAFF STAFF	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
BN	CO CDR / CO GPNB CO XO CO 1SG PLT LDR PLT SGT SOD / SOD LDR VEH IND VEH IND A/C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CO	CO CDR / CO GPNB CO XO CO 1SG PLT LDR PLT SGT SOD / SOD LDR VEH IND VEH IND A/C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
PLT	CO CDR / CO GPNB CO XO CO 1SG PLT LDR PLT SGT SOD / SOD LDR VEH IND VEH IND A/C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
....	CO CDR / CO GPNB CO XO CO 1SG PLT LDR PLT SGT SOD / SOD LDR VEH IND VEH IND A/C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
SOD / SOD LDR VEH IND VEH IND A/C	CO CDR / CO GPNB CO XO CO 1SG PLT LDR PLT SGT SOD / SOD LDR VEH IND VEH IND A/C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
....	CO CDR / CO GPNB CO XO CO 1SG PLT LDR PLT SGT SOD / SOD LDR VEH IND VEH IND A/C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Figure 2-2. Alternatives

a. Functionality requirements.

(1) General. The identification of specific task/functions, by type organization and echelon, which would provide a high operational payoff, if automated, were identified and analyzed by each respective MFA proponent. Functionality requirements were based upon the use of doctrinal literature, ARTEP Mission Training Plans (MTP), Soldier Manuals (SM), and in-house subject matter experts. Each proponent determined the decision criteria/MOE's used to determine the specific tasks to automate.

(2) Infantry. Results of the functional analysis performed by the Infantry School identified the need to automate specific operational tasks at the battalion (commander, S2, S3, S1/S4 and scout platoon) and company (commander) level within light, airborne, air assault, motorized, and mechanized infantry (M113) battalions, and to the battalion S3 officer and platoon level within mechanized infantry (M2) battalions. The basic operational capabilities identified included: interactive display; operational graphics; ability to transmit, receive, and process formatted messages; audio/visual alerts; and message storage. Enhanced capabilities (operational graphics, memory, digital map background, and a Data Base Management System (DBMS)) were considered to be essential for the S2, S3 section and the S1/S4 to permit data manipulation and internal C2 of functional units. No infantry unique functionality (software) requirements were identified. A listing of the specific high payoff tasks identified for each echelon is provided within section I of appendix G.

(3) Armor. Results of the functional analysis performed by the Armor School identified the need to automate specific operational tasks at the battalion (commander, S2, S3, S1/S4, and scout platoon) and company (commander, executive officer) level within the M1 and M60 fleet, and to the individual fighting vehicle level within the M1 fleet. The basic operational capabilities identified for users within the M60 fleet included: interactive display; operational graphics; ability to transmit, receive, and process formatted messages; audio/visual alerts; and message storage. Additional capabilities identified for users within the M1 fleet included: digital map background; position/navigation interface; touch-sensitive screen with free-draw graphics; interface with onboard equipment via a data bus; and the ability to process and manipulate data. Enhanced capabilities (operational graphics, memory, digital map background, and a DBMS) were considered to be essential for the S2, S3 section and S1/S4 to permit data manipulation and internal C2 of functional units. No armor unique functionality (software) requirements were identified. A listing of the specific high payoff tasks identified for each echelon is provided within section I of appendix H.

(4) Engineer, Chemical, and Military Police. Results of the functional analysis performed by the Engineer, Chemical and Military Police Schools identified the need to automate specific operational tasks at the battalion (S2, S3, engineer commander), company (commander/headquarters), and platoon level within light, airborne, air assault, motorized, and heavy divisions. The basic operational capabilities identified included: interactive display; operational graphics; ability to transmit, receive and process formatted messages; audio/visual alerts; and message storage. Enhanced capabilities (operational graphics, memory, digital map background, and a DBMS) were considered essential for the S2, S3 section and company commander/headquarters to permit the functional commander and staff to manipulate data and perform C2 of functional units. Unique functionality requirements (e.g., to process NBC reports, calculate obstacle/barrier requirements) were identified for each of these proponents. These requirements exist at the battalion and company level and require the ability to manipulate, process, and store technical data used to generate pertinent force level information for command and staff decision making. Automation requirements defined at the platoon level support the need to rapidly exchange technical and force level data due to the specialized operational missions performed by these platoons. A listing of the specific high payoff tasks identified for each echelon is provided within section I of appendix I, J, and K.

(5) Aviation. Results of the functional analysis performed by the Aviation School identified the need to automate specific operational tasks at the battalion (S2, S3), company (commander/headquarters), and platoon level for attack and assault aviation battalions and at the battalion and company level for utility aviation battalions within light, airborne, air assault, and heavy divisions. Company and platoon level operational capabilities identified included: interactive display; ability to transmit, receive, process, and store formatted messages; and the ability to operate on the move. Enhanced capabilities (operational graphics, memory, digital map background, and a DBMS) were considered essential for the S2 and S3 section to permit the functional commander and staff to manipulate data and perform C2 of functional units. Unique functionality requirements (e.g., aircraft performance planning, flight mission planning) were identified for use at the battalion level. Automating special staff planning functions would expedite the generation of aviation force level data required for command and staff decision-making as well as to enhance internal C2 of functional units. Automation requirements at the platoon level support the need to rapidly exchange critical data (e.g., enemy intelligence, target information) as well as to provide interoperability with attached maneuver forces. A listing of the specific high payoff tasks identified for each echelon is provided within section I of appendix L.

(6) Signal. Results of the functionality analysis performed by the Signal School identified the need to automate specific operational tasks at the battalion (commander, S2, S3) and platoon (signal node) level within light, airborne, air assault, motorized, and heavy divisions. Signal company command posts normally collocate with one of their platoons and, thus, are capable of sharing information resources. Operational capabilities identified for the battalion commander included: interactive display; ability to transmit, receive, process, and store formatted messages; audio/visual alerts; and operational graphics. Enhanced capabilities (operational graphics, memory, digital map background, and a DBMS) were considered essential for the S2 and S3 to permit data manipulation and C2 of functional units. Unique functionality requirements were identified (e.g., site equipment status, network management) at both echelons. A listing of the specific high payoff tasks identified for each echelon is provided within section I of appendix M.

(7) Comparison of information requirements. Based on the high payoff tasks submitted by each of the MFA proponents, a comparison of MFA information requirements was conducted.

(a) See figure 2-3 for a summary of MFA information exchange requirements. This matrix was compiled using each proponent's high payoff tasks (cross-leveled with anomalies resolved).

(b) Information exchange commonality was assessed. Figures 2-4, 2-5, and 2-6 summarize the degree of commonality identified at battalion, company, and platoon level. Findings indicate that a high degree of commonality does, in fact, exist among the MFA proponents. The averages at each echelon are: battalion - 75%; company - 69%; and platoon - 72 %. This is significant because it would enhance software development, reduce protocol overhead and costs, and facilitate software portability.

(c) A comparison of message text formats required to transmit the force level/technical data is at figure 2-7. A total of 42 message formats would be required. Presently, all but seven of these are to be incorporated within MCS Version 11 software which provides the Initial Force Level Control System (IFLCS) capability. This indicates that a high degree of commonality also exists between echelons which would again facilitate software portability and reduce software development costs.

(8) Survey of MFA automation functionality requirements. To reinforce the definition of user requirements as defined by each respective MFA proponent, a survey was initiated to obtain the subjective judgments of company grade MFA officers attending the Combined Arms Service Staff School

MFA PROPONENT
INFORMATION EXCHANGE REQUIREMENTS

TASK/FUNCTION	BN	CO	PLT	SQD/VEH
WARNING ORDER	I S E M AV AR C	I * E M AV AR C	I S E M AV AR C	AR
OPERATION ORDER	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
FRAG ORDER	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
FRIENDLY SITUATION RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
ENEMY SITUATION RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
LOGISTICS RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
EQUIPMENT STATUS RPT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
NBC 1	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
NBC 2	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 3	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 4	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 5	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
NBC 6	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
INTELLIGENCE RPT	I S E M AV AR C	I E M AV AR C		
BATTLE LOSS REPORT/ PERS DAILY SUMMARY	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
SPOT REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
MIJI REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
CONTACT REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
EFFECTIVE DOWNWIND MSG	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
CALL FOR FIRE	I AV AR	I AV AR	I AV AR	AR
ADJUST CALL FOR FIRE	I AV AR	I AV AR	I AV AR	AR
POSITION/LOCATION	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
MINEFIELD REPORT	I S E M AR C	I E M AR C	I S E M AR C	AR
OBSTACLE REPORT	I S E M AR C	I E M AR C	I S E M AR C	AR
RIVER CROSSING REPORT FR NUCLEAR	I E M AR	I E M AR	I E M AR	
STRIKE WARNING	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
SUPPLY SHORTAGE				
OPNL CONSTRAINTS	I S E M AV AR C	I E M AV AR C	S E M AV C	
TRANSFER OF AUTHORITY	I S E M AV AR C	I E M AV AR C		
SUPPORT AIR CORRIDOR/ ROUTES	AV	AV		
AIR SUPPORT REQUEST	I S E M AV AR	I AV AR		
CHEMICAL DOWNWIND MSG	I S E M AV AR C	I AR C	C	
BATTLEFIELD GEOMETRY/ GRAPHICS	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
MOVEMENT ORDER	I S E M AV AR C			
AIR STRIKE WARNING	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
GENERAL REPORT	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	AR
RPT COMMUNICATIONS STATUS	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
RECEIVE WEATHER FORECAST	I S E M AV AR C	I E M AV AR C	I S E M AV AR C	
FIRE PLANNING	I AV AR C	I AV AR	I AR	AR
DAMAGE REPORT	I S E M AV AR C	E M C	E M C	
AIRSPACE RESTRICTIONS	AV	AV	AV	
ENGR SPT REQUEST	I S E M AV AR C	I E AR		
RPT C2 INFORMATION SYS STATUS	I S E M AV AR C			
BRIDGE REPORT	I E M AR	I E AR	I E M AR	AR
AIRHEAD LOCATION/ ACTIVITY	I S M AV			
CAPTURED MATERIAL REPORT	I S E M AV AR C	I E M AV AR C	I S E M AR C	
SAM STATUS REPORT	AV	AV		
REQUEST ADA PRIORITY	S AV	AV		
MEDICAL EVACUATION RPT	I S E M AV AR C	I E M AV AR C		
CHEMICAL PLANNING/ FALLOUT PREDICTIONS	I S E M AV AR C	I AR C	C	
DENIAL OPNS REPORT	I E AR	E	E	
ZONE BELT PROGRESS	E	E	E	
ROUTE RECONNAISSANCE REPORT	I E M AR C	I E M AR C	I E M AR C	AR
PREPARE ANNEX, OPNS ORDER	I S E M AV AR C			
MORTAR, BOMREP, SHELL REPORT	I S E M AR C	I E M AR C	I S E M AR C	AR

* SIGNAL COMPANY COLLOCATES WITH SIGNAL NODE AND SHARES RESOURCES.

I-INFANTRY; S-SIGNAL; E-ENGINEER; M-MILITARY POLICE; AV-AVIATION; AR-ARMOR

Figure 2-3. Common information requirements

BN TASKS/FUNCTIONS

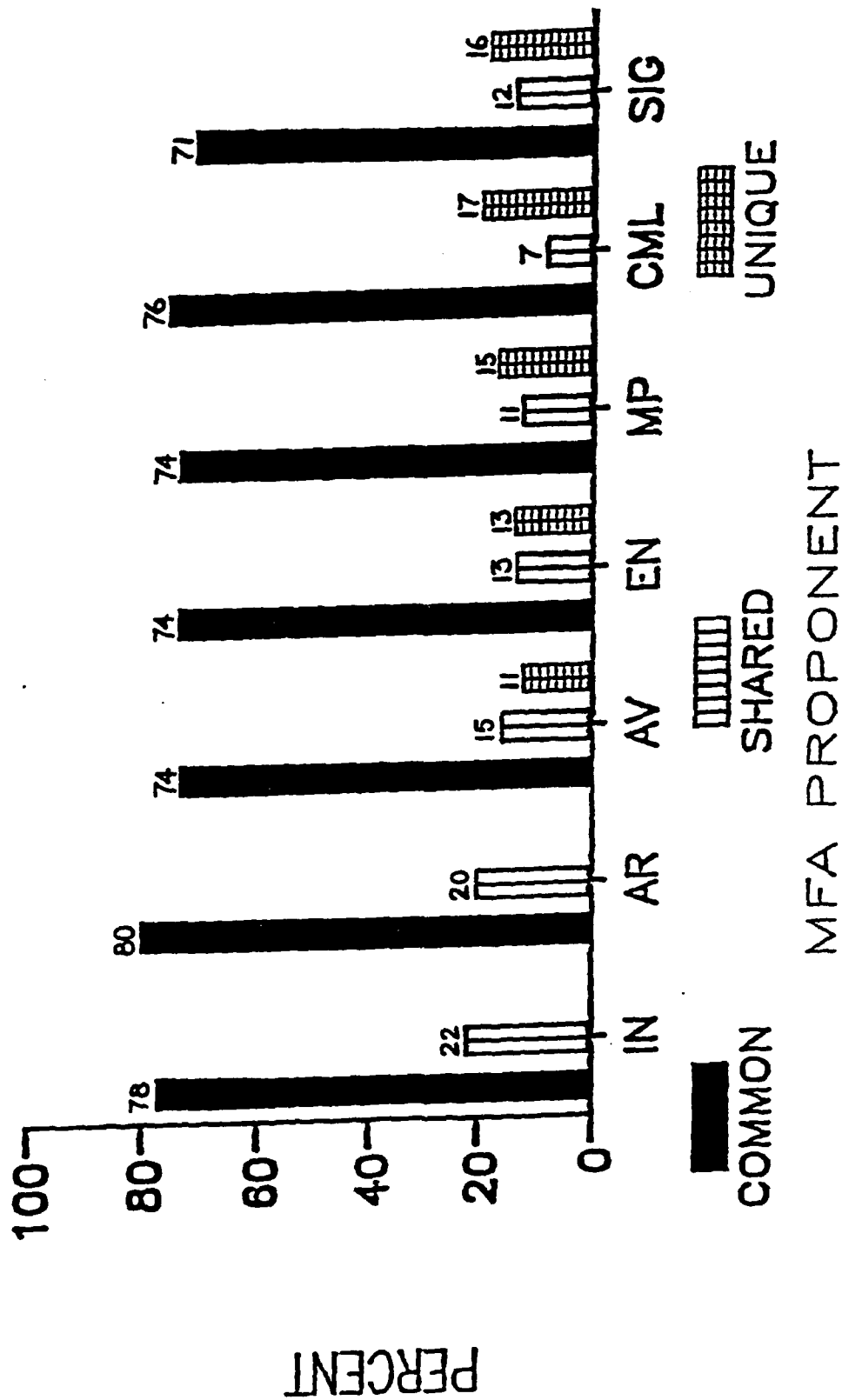


Figure 2-4. Commonality of battalion level functions

CO TASKS/FUNCTIONS

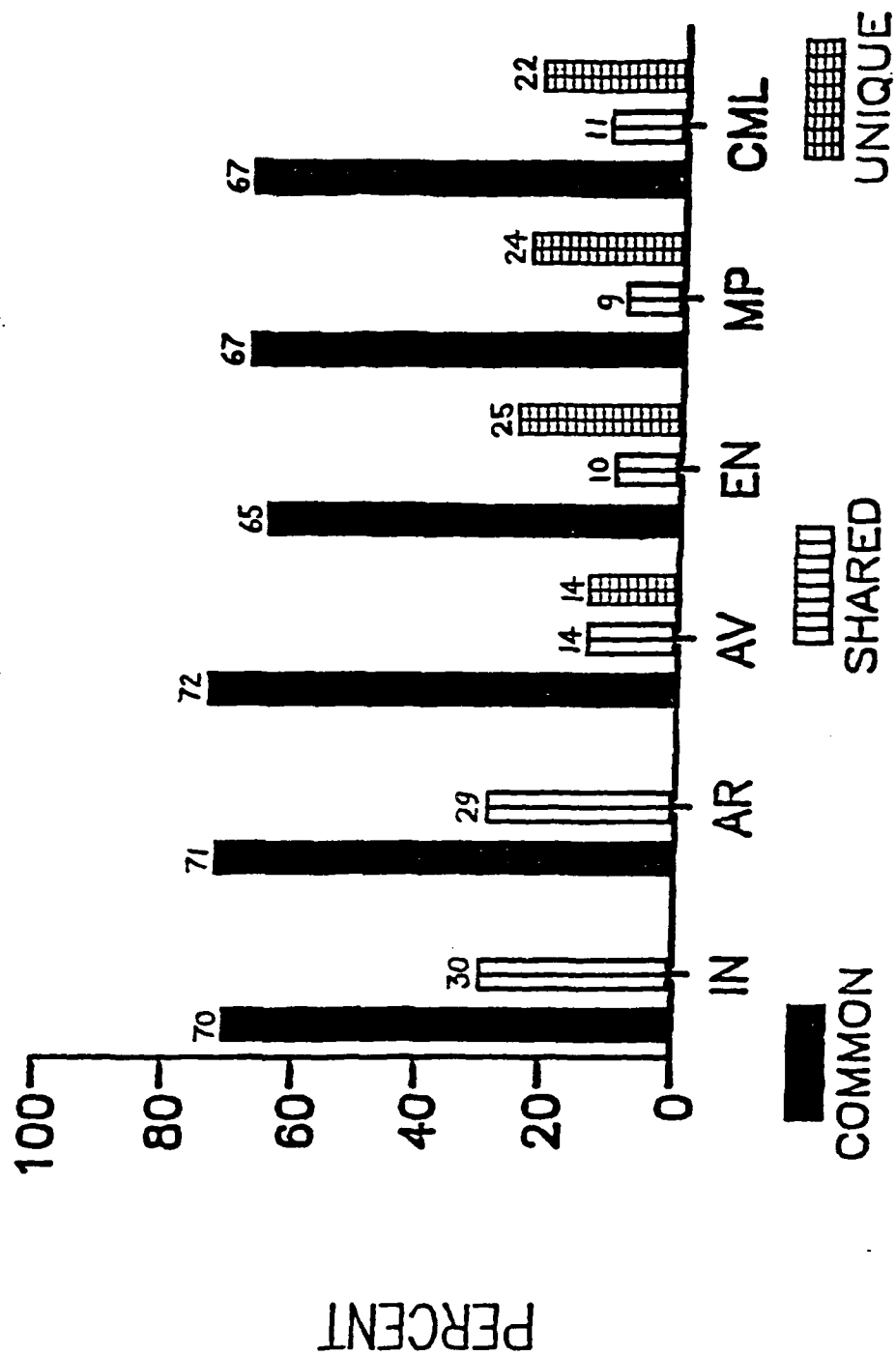
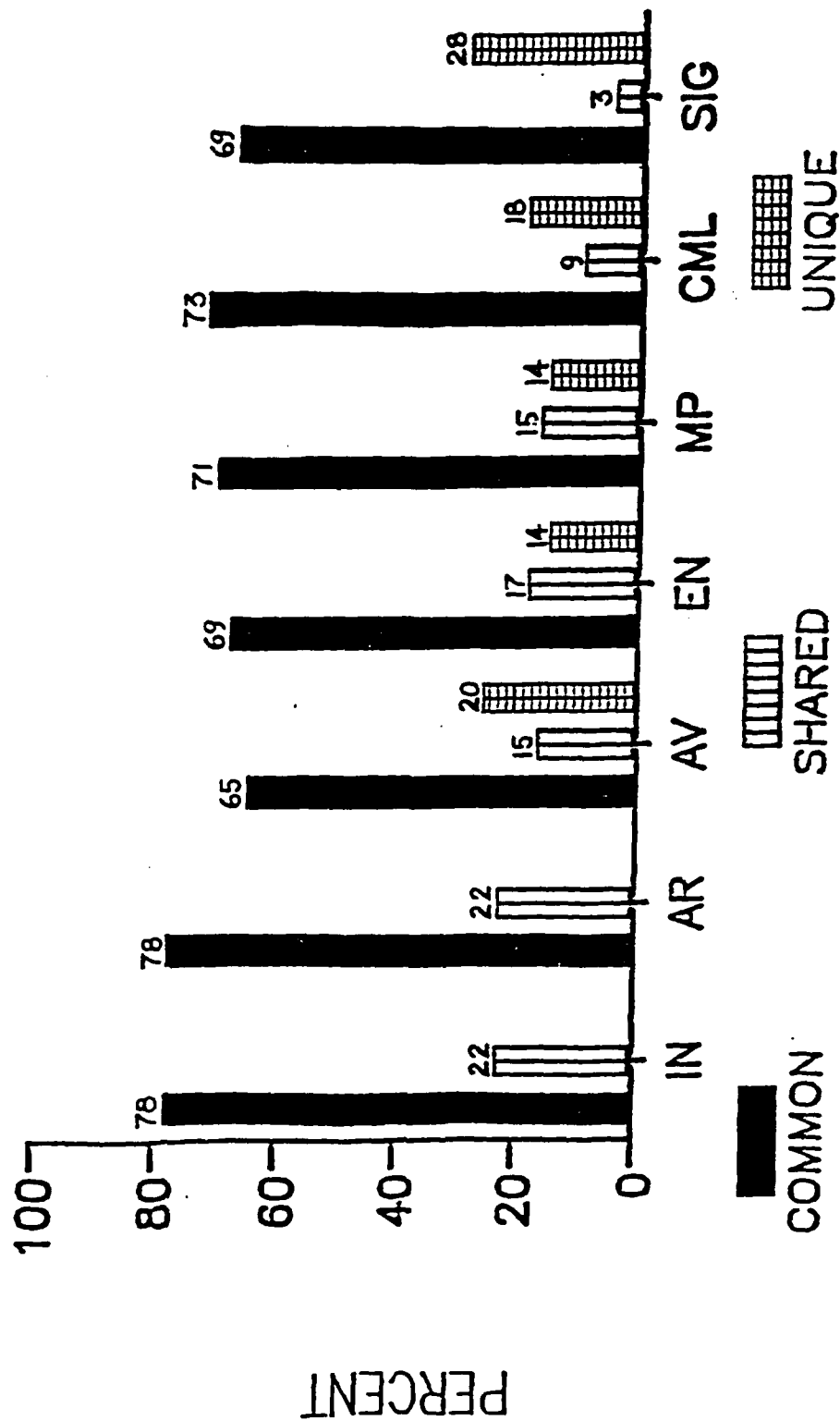


Figure 2-5. Commonality of company level functions

PLT TASKS/FUNCTIONS



MFA PROPONENT

Figure 2-6. Commonality of platoon level functions

MFA PROPONENT MESSAGE SET

MESSAGE SET	MESSAGE TITLE	BN	CO	PLT	SQD/VEH
STANAG (9)					
A331	LAND FORCES SITUATION REPORT	X	X	X	X
A326	ENEMY SITUATION REPORT	X	X	X	X
A066	COMMANDER'S LOGISTICS REPORT	X	X	X	X
A055	PERSONNEL REPORT	X	X	X	X
A023	CONTACT REPORT	X	X	X	X
A032	TRANSFER OF AUTHORITY	X	X		
A022	AIRSTRIKE WARNING MESSAGE	X	X	X	X
A065	GENERAL TEXT	X	X	X	X
A021	C2 INFORMATION SYSTEM STATUS REPORT	X			
USMTF (25)					
A423	ORDER MESSAGE	X	X	X	X
C488	NBC 1 REPORT	X	X	X	X
G489	NBC 2 REPORT	X	X	X	
C443	NBC 3 REPORT	X	X	X	
C447	NBC 4 REPORT	X	X	X	
C501	NBC 5 REPORT	X	X	X	
C506	NBC 6 REPORT	X	X	X	
G131	INTELLIGENCE SUMMARY	X	X		
C120	MIJI FEEDER REPORT	X	X	X	X
C503	EFFECTIVE DOWNWIND	X	X	X	
D210	CALL FOR FIRE	X	X	X	X
C521	WEATHER FORECAST	X	X	X	
C505	FRIENDLY NUCLEAR STRIKE WARNING	X	X	X	X
A263	SUPPORT-AIR CORRIDOR	X	X	X	
D670	AIR SUPPORT REQUEST	X	X	X	
C507	CHEMICAL DOWNWIND	X	X	X	
C460	COMMUNICATIONS SPOT REPORT	X	X	X	
A211	FIRE MISSION - SUBSEQUENT ADJUSTMENT	X	X	X	X
G270	FIRE PLANNING ARTILLERY TARGET LIST	X	X	X	X
A280	SUPPORT - DAMAGE AVOIDANCE REPORT	X	X	X	
B705	ALERT AIRCRAFT/SAM STATUS REPORT	X	X	X	
F251	METEOROLOGICAL - FALLOUT MESSAGE	X	X	X	
A063	ENGINEER DATA SHEET UPDATE REPORT	X	X	X	
A262	SUPPORT - BATTLEFIELD GEOMETRY	X	X	X	X
S012	MOBILITY STATUS REPORT	X	X	X	X
ACCS (6)					
S010	ENEMY ACTIVITY/WEAPONS	X	X	X	X
F750M	AIRSPACE CONTROL	X	X	X	X
S028	ENGINEER SUPPORT REQUEST	X	X	X	
S034	SUPPLY SHORTAGE AND OPERATIONAL CONSTRAINT	X	X	X	
S023	AIRHEAD LOCATION/ACTIVITY	X			
S029	AIR DEFENSE ARTILLERY PRIORITY	X	X	X	
OTHER (2)					
	BARRIER REPORT	X	X	X	
	SHELL, MORTAR, BOMREP REPORT	X	X	X	X

Figure 2-7. MFA proponent message text formats

(CAS3) at Fort Leavenworth. Participants were asked to subjectively evaluate the contribution of the task/functions provided by their proponent school to improve the degree to which a unit could accomplish its mission. The findings of the survey follow.

(a) Figure 2-8 highlights the student profile of CAS3 student participants. A total of 201 subjects participated, of which 85 considered themselves as having minimal experience, 63 as being computer literate, 45 as being regular users, and 8 as having extensive automation experience. Survey results of students who identified themselves as having no automation experience were not utilized in order to avoid skewing the survey results.

(b) Results of the survey are summarized within figure 2-9. No new task/functions were identified during the survey and, in fact, subjects on the whole desired to automate fewer tasks as supported by the percentages depicted. Overall, the survey results reinforced the functional analysis findings of each proponent, supporting a need for automation by echelon, as indicated.

b. Hardware capability requirements.

(1) General. The following is a description of each of the MFA automation alternatives as defined through the analysis of MFA requirements. Four candidate hardware solutions were provided from which to determine specific MFA materiel requirements: Handheld Terminal Unit (HTU); Portable Computer Unit (PCU); Transportable Computer Unit (TCU); and a Developmental Item (DEV ITEM). The HTU, PCU, and TCU are Non-Developmental Items (NDI) and members of the ATCCS Common Hardware/Software (CHS) family of devices. The DEV ITEM will require a materiel solution. Figure 2-10 provides a listing of the essential characteristics of each device. (Note: Characteristics are based on the Army Command and Control (ACCS) request for proposal and draft BMS O&O plan and may not totally reflect objective system capabilities).

(2) Hardware analysis. Figure 2-11 provided the format for the comparison of each hardware candidate solution to each task/function identified by type organization and echelon. Using the rating scale provided, the contribution of the hardware operational capability to fulfill the automation capability required was evaluated against the task/function listed. Refer to section II of appendix G through M for each proponents analysis results. From the numerical values assigned within the matrix by each proponent, a subjective determination was made as to which hardware candidate solution best satisfied the automation needs of the specific OPFAC being addressed. Figure 2-12 summarizes the materiel solutions for each of the MFA proponent alternatives as approved by the Commander, CACDA.

CAS3 SURVEY OF AUTOMATION REQUIREMENTS (STUDENT PROFILE)

TOTAL	AR	IN	EN	CML	MP	AV	SIG
201 CAS3 PARTICIPANTS	26	52	29	12	21	31	30
8.2 YRS OF SERVICE (AVG)	7.5	9.5	6.8	8.3	7.6	9.2	8.4
AUTOMATION EXPERIENCE							
85 MINIMAL EXPERIENCE	10	32	10	5	8	10	10
63 COMPUTER LITERATE	8	9	9	3	9	13	12
45 REGULAR USER	8	10	6	3	3	7	8
8 EXTENSIVE EXPERIENCE		1	4	1	1	1	
TOE EXPERIENCE (MONTHS)							
18 BN STAFF	19	15	15	23	18	11	26
17 CO CDR	18	19	20	17	16	14	14
11 CO XO	11	11	13	7	11	12	10
19 PLT LDR	20	21	17	14	21	23	17

Figure 2-8. CAS3 survey student profile

CAS3 EVALUATION OF MFA PROponent **TASK/FUNCTIONS** **(% OF CONCURRENCE)**

	AR	IN	EN	CML	MP	AV	SIG
BN	95	77	92	81	93	92	78
CO	78	59	85	88	92	90	
PLT	67	38	68	85	77		75
SQD/VEH	61						

Figure 2-9. CAS3 survey results

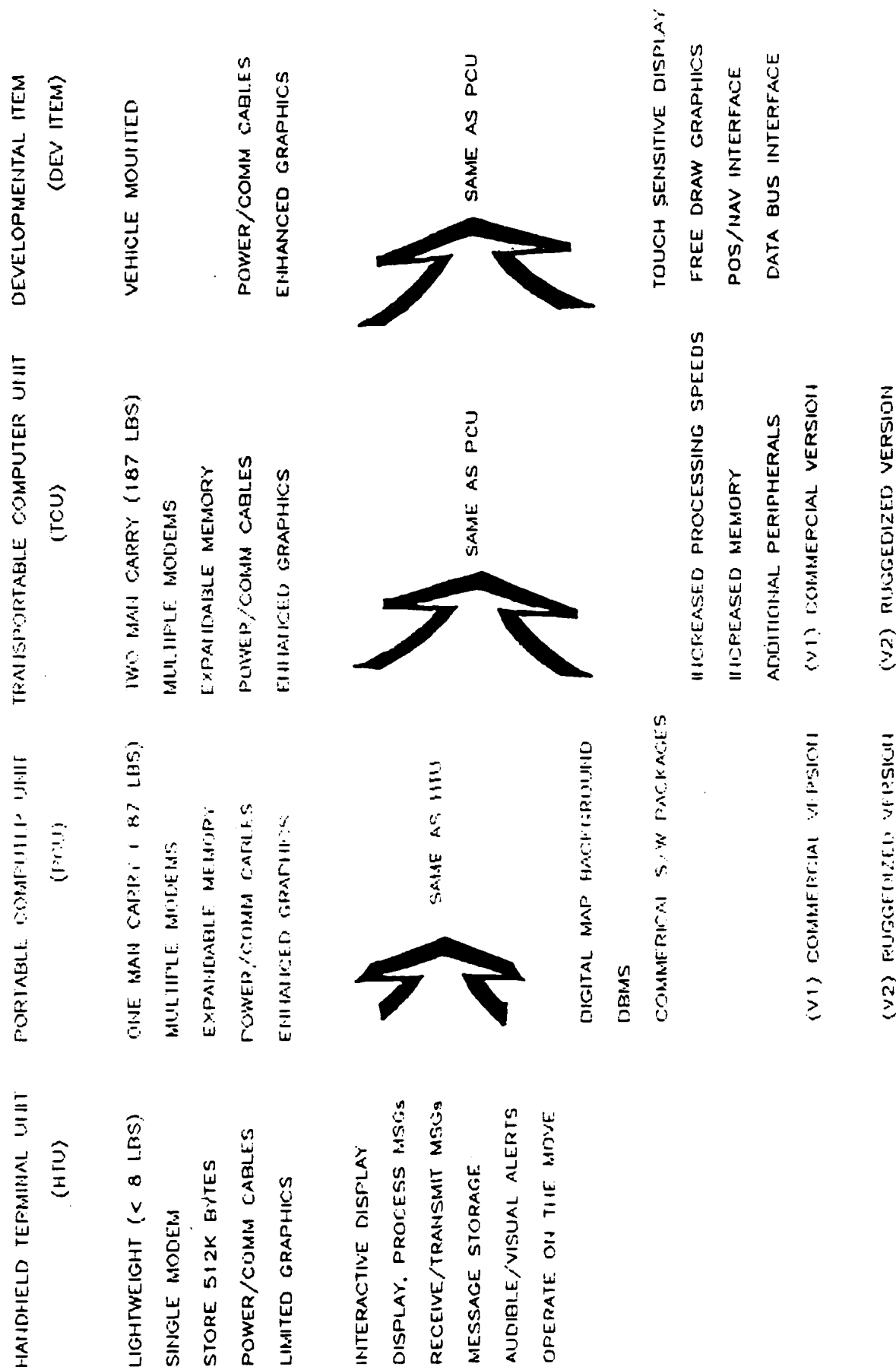


Figure 2-10. Hardware candidate characteristics

[illegible]

RATING SCALE:

- 1 - NO CONTRIBUTION
2 - MODERATE CONTRIBUTION
3 - ESSENTIAL CONTRIBUTION

Figure 2-11. Format for the identification of hardware requirements

Justification of hardware requirements follow (Note: some hardware requirements were previously covered by the MCS O&O plan; therefore, no additional hardware is required):

(a) Infantry.

1. Battalion commander. Allocated an HTU within light, motorized, airborne, air assault, and mechanized (M113) organizations. Allocated a DEV ITEM within mechanized (M2) organizations to enhance interoperability and ensure mutual functionality when cross attached with M1 units. Device provides automation to the command group/TAC when forward of the Tactical Operations Center (TOC) to C2 attached forces. Facilitates automated interoperability with brigade TAC, battalion TOC and access to force level and functional control system data base.

2. Battalion S2. Allocated a PCU(V2) within light, motorized, airborne, air assault, and mechanized battalions. Provides S2 the capability to manage and update intelligence data base files and to transmit/receive critical intelligence data. (Note: Requirement identified within current MCS O&O plan.)

3. Battalion S3 section. Allocated a PCU(V2) within light motorized, airborne, air assault, and mechanized battalions. Provides S3 section capability to rapidly collect, process, and manage combat information. Enhances unit synchronization to conduct command and control and coordination across BFA lines. (Note: Requirement identified within current MCS O&O plan.)

4. Battalion S3. Allocated a DEV ITEM within mechanized (M2) battalions only. Enhances use of M2 as fighting vehicle and prevents degradation of C2 capability due to physical separation of commander and S3. Facilitates dissemination of orders and guidance.

5. Battalion S1/S4. Allocated a PCU (V2) within light, motorized, airborne, air assault, and mechanized battalions. Device provided S1/S4 to manage personnel and logistical resources/force level data base.

6. Battalion scout platoon. Allocated two HTU devices per platoon within light, motorized, airborne, air assault, and mechanized (M113) battalions. Allocated two DEV ITEMS within mechanized (M2) battalions. Expedites intelligence gathering, and early warning capability of battalion. DEV ITEM issued within M2 units to provide mutual functionality. Two devices are required to support doctrinal employment of scouts by section.

7. Company commander. Allocated an HTU within light, motorized, airborne, air assault, and mechanized (M113) battalions. Allocated a DEV ITEM within mechanized (M2) organizations. Expedites passage/receipt of force level/technical data. DEV ITEM enhances interoperability when cross attached with M1 units. Facilitates synchronization of combat operations.

8. Platoon leader. Allocated a DEV ITEM within mechanized (M2) organizations. Enhances the receipt and transmission of combat data, reaction time, and interoperability when cross attached with M1 units. Provides capability to rapidly coordinate the movement of forces in order to decisively generate combat power at the right time and place.

(b) Armor.

1. Battalion commander. Allocated a DEV ITEM within M1 and an HTU within M60 battalions. Provides the command group/TAC automation interoperability with units when forward of TOC. DEV ITEM maximizes inherent capabilities of M1 as a fighting vehicle. Facilitates automated interoperability with brigade TAC, battalion TOC, and access to force level and functional control system data base.

2. Battalion S2. Allocated a PCU(V2) within armor M1 and M60 battalions. Provides S2 the capability to manage and update intelligence data base files as well as transmit and receive critical intelligence data. (Note: Requirement identified within current MCS O&O plan.)

3. Battalion S3 section. Allocated a PCU(V2) within armor M1 and M60 battalions. Provides S3 section the capability to rapidly collect, process and manage combat information. (Note: Requirement identified within current MCS O&O plan.)

4. Battalion S3. Allocated a DEV ITEM within M1 and an HTU within M60 battalions. Enhances use of M1/M60 as a fighting vehicle and supports C2 interoperability considering physical separation of commander and S3. Facilitates dissemination of orders and guidance and provides access to force level and functional control system data base.

5. Battalion S1/S4. Allocated a PCU(V2) within armor M1 and M60 battalions. Enhances S1/S4 capability to manage personnel and logistics resources and force level data base entries.

6. Battalion scout platoon. Allocated two DEV ITEMS within armor M1 and two HTUs within armor M60 battalions. Enhances near real time passage of intelligence

data and early warning. Two devices are required to support the doctrinal employment of scouts by section.

7. Company commander. Allocated a DEV ITEM within armor M1 and an HTU within armor M60 battalions. Enhances near real time passage/receipt of force level and technical data between echelons. DEV ITEM enhances interoperability when cross attached with M2 fleet. Maximizes inherent capability of M1 and facilitates synchronization of unit operations.

8. Company executive officer. Allocation of a DEV ITEM within armor M1 and an HTU within armor M60 battalions. Provides C2 capability in support of fighting X0 concept.

9. Platoon leader. Allocated a DEV ITEM within armor M1 organizations. Enhances inherent capabilities of M1 as a fighting vehicle, provides interoperability with M2 fleet when cross attached and expedites the receipt and passage of combat information. Provides capability to rapidly coordinate the movement of forces in order to generate combat power at the right time and place.

10. Individual vehicle. Allocated a DEV ITEM within armor M1 organizations. Enhances inherent capabilities of M1 as a fighting vehicle, target handoff, and the transmission and receipt of combat information.

(c) Aviation.

1. Battalion commander. No device allocated. Normally collocated with aviation battalion TOC or maneuver TOC where a device is available.

2. Battalion S2. Allocated a PCU(V2) within attack and assault aviation battalions and a PCU(V1) within utility aviation battalions. Provides S2 the capability to manage and update intelligence data base files as well as to transmit/receive critical intelligence data. (Note: Requirement identified within current MCS O&O plan.)

3. Battalion S3. Allocated a PCU(V2) within aviation attack and assault helicopter battalions and a PCU(V1) within utility helicopter battalions. Provides S3 capability to rapidly collect, process, and manage combat information. (Note: Requirement identified within current MCS O&O plan.)

4. Battalion S1/S4. No device allocated. Normally collocated with battalion main command post where a device is available.

5. Company commander. Allocated an HTU within attack, assault, and utility helicopter battalions. Expedites the

passage and receipt of force level and technical data. Facilitates interoperability with maneuver forces. Facilitates response times of aviation assets, target handoff, and the passage of intelligence data to maneuver units.

6. Platoon leader. No device allocated. Automation functions performed using Airborne Target Handover System (ATHS) being developed by the Aviation School. Need exists to develop User Interface Requirements (UIRs) between the MCS/ATHS systems to provide interoperability and maximize use of both systems.

(d) Engineer, Chemical, and Military Police.

1. Battalion commander. Engineer battalion commander allocated an HTU within light, infantry, motorized, airborne, air assault and heavy units. Allows the commander to manage engineer resources, distribute assets, and maintain the status of all mobility and countermobility operations. No devices are allocated to chemical and military police battalion commanders. The commander is normally collocated at his own or maneuver force headquarters where a device is available.

2. Battalion S2. Allocated a PCU(V1) within light, infantry, motorized, airborne, air assault and heavy units. Mechanized engineer battalions are allocated a PCU(V2). Provides S2 the capability to manage and update intelligence data base files as well as to transmit and receive critical intelligence information. (Note: Requirement identified within current MCS O&O plan for divisional as well as active component engineer corps combat and combat heavy battalions.)

3. Battalion S3. Allocated a PCU(V1) within light, infantry, motorized, airborne, air assault, and heavy units. Mechanized engineer battalions are allocated a PCU(V2). Provides S3 capability to rapidly collect, process, and manage combat information. (Note: Requirement identified within current MCS O&O plan for divisional as well as active component engineer corps combat and combat heavy battalions.)

4. Battalion S1/S4. No device allocated. Normally collocated with battalion main command post where a device is available.

5. Company commander/company headquarters. Allocated a PCU(V1) within light, infantry, motorized, airborne, air assault and heavy units. Combat engineer companies are allocated a PCU(V2). Expedites passage and receipt of force level and technical data and provides the capability to perform those unique functions identified (i.e., fallout predictions).

6. Platoon leader. Allocated an HTU within light, infantry, motorized, airborne, air assault, and heavy battalions. Expedites passage of proponent unique technical

data as a result of their unique missions and functions on the battlefield. Facilitates timely execution of instructions and the reallocation of critical assets.

(e) Signal.

1. Battalion commander. Allocated an HTU within light, infantry, motorized, airborne, air assault, and heavy units. Facilitates the C2 of signal assets, provides capability to test and monitor the communications and automation network. The commander is mobile most of the time.

2. Battalion S2. Allocated a PCU(V1) within light, infantry, motorized, airborne, air assault and heavy units. Provides S2 the capability to manage and update intelligence data base files as well as transmit/receive critical intelligence data. (Note: Requirement identified within current MCS O&O plan.)

3. Battalion S3. Allocated a PCU(V1) within light, infantry, motorized, airborne, air assault, and heavy units. Provides S3 capability to rapidly collect, process, and manage combat information. (Note: Requirement identified within current MCS O&O plan.)

4. Battalion S1/S4. No device allocated. Normally collocated with battalion main command post.

5. Company commander. No device allocated. Commander normally collocated with one of the platoon signal nodes where there is access to a device.

6. Platoon nodes. Allocated a PCU(V1) within light, infantry, motorized, airborne and heavy units. Facilitates the C2 of signal nodes to ensure effective communications. Enhances synchronization of communications support, displacements, and the dissemination of combat information.

(3) Proponent hardware distribution quantities. A total of 13,290 devices (NDI and DEV ITEM) will be required to support the hardware distribution strategy outlined above. Figure 2-13 provides the distribution quantities. Quantities are depicted to reflect both the Active Component (AC) and Reserve Component (RC) fielding requirements. Note that these totals DO NOT reflect those devices currently allocated within the MCS O&O plan to support automation at and below the battalion level. Presently, a total of 1,367 NDI devices are programmed to support battalion level automation within the current MCS program. Section VII of appendix G through M identifies each MFA proponent's quantity/distribution of devices.

c. Operational benefits. Specific operational benefits associated with fulfilling the alternatives, as defined by each

MFA PROPONENT	NDI		DEV - ITEM		TOTAL
	(AC)	(RC)	(AC)	(RC)	
INFANTRY	590	1012	888	168	
ARMOR	101	941	3905	462	
AVIATION	277	177			
MILITARY POLICE	354	555			
ENGINEER	919	2033			
CHEMICAL	174	376			
SIGNAL	218	140			
TOTAL	2633	5234	4793	630	13,290

Figure 2-13. MFA proponent hardware distribution quantities

MFA proponent, are listed within section III of appendix G, H, I, J, K, L, and M. The operational benefits derived from fielding MFA requirements as an extension of MCS are provided below.

(1) Implementation of a DEV ITEM solution for heavy forces (M1/M2) facilitates the ability to exchange operators due to similar operating systems and the physical characteristics of the computers. This also enhances continuous operations (CONOPS) capability.

(2) The processing, Random Access Memory (RAM), and memory storage capabilities of the DEV ITEM may facilitate the use of MCS common software.

(3) DEV ITEM equipment will be built to military specification (MILSPEC). This will increase costs but will provide equipment which can withstand condition extremes found on the battlefield.

(4) The extension of automation at and below battalion level enhances unit synchronization to execute tactical operations through the timely acquisition of information, readily usable formats for the packaging of critical information, standardization of operating procedures (reporting), and rapid processing and dissemination of combat, combat support, and combat service support information.

(5) The equipment will be used by the TOE personnel currently operating the manual command and control system. Therefore, no additional personnel will be required.

(6) Provides a streamlined command and control system which can provide the necessary force level and technical data necessary to keep pace with AirLand Battle doctrine.

(7) An NDI/DEV ITEM solution will not overburden the existing transportation requirements nor impede the speed of displacing units in tactical situations.

d. Operational burdens. Specific operational burdens associated with fulfilling the alternatives, as defined by each MFA proponent, are listed within section IV of appendix G, H, I, J, K, L, and M. The operational burdens derived from fielding MFA requirements as an extension of MCS are provided below.

(1) The proliferation of different types of equipment (NDI/DEV ITEM) inhibits operator and equipment exchanges and complicates training, personnel management, and software management.

(2) Fielding of parallel systems will cause development

of nonstandard training support packages and affect training in professional development courses.

(3) Maintenance management will be more complex. Separate stockages of replacement parts and additional training of maintenance personnel will be required.

(4) Configuration management for replacing and updating software may become more complex.

(5) Vehicle modifications may be required within the host vehicle to provide adequate space to mount a DEV ITEM.

(6) Current NDI maintenance strategy requires contractor support. Contract help may not be timely or available in a mid to high intensity conflict. Items cannot be fixed forward, thus a large quantity of floats may be required. This increases transportation requirements and stockage levels.

e. BDP deficiencies. The extension of MCS automation within MFA organizations at and below the battalion level contributes to solving fifty four deficiencies identified in the TRADOC Battlefield Development Plan (BDP), 1986. These deficiencies are numbers 3, 4, 7, 8, 9, 10, 12, 16, 25, 28, 32, 33, 36, 38, 40, 41, 44, 49, 50, 58, 64, 84, 85, 86, 88, 93, 94, 98, 106, 107, 118, 127, 132, 133, 140, 142, 145, 153, 154, 159, 180, 182, 195, 207, 224, 237, 238, 273, 280, 293, 303, 306, 318, and 314. The fielding of automation as an extension of MCS will solve all, or in part, the BDP operational deficiencies noted. A listing of the specific BDP deficiencies identified by each proponent is provided within section V of appendix G, H, I, J, K, L, and M.

f. Cost analysis results. This section reflects the cost estimates, as provided by TRAC-WSMR, required to support fielding of each MFA proponent's automation alternatives. Cost data will be provided to reflect both Active and Reserve Component procurement options. Hardware configuration acquisition and maintenance cost estimates are provided in best and worst-case estimates. Best-case cost estimates assume a basic contract award for a multiyear procurement obligation. Worst-case estimates assume both a one year basic award contract and year-by-year options. Costing data will be presented in constant dollars using 1988 as the base year. For the purposes of this study, the useable life of computers is ten years. A life cycle cost estimate, less software, will be provided to present total MFA proponent requirement costs.

(1) Figure 2-14 presents each respective MFA proponent's hardware configuration acquisition and maintenance costs, best-case, in FY88 dollars. Total cost equals \$1.305 billion to support fielding of 13,290 devices. Cost data is

MFA PROPONENT	NDI - COST		DEV ITEM - COST		TOTAL
	(AC)	(RC)	(AC)	(RC)	
INFANTRY	26 M	41 M	173 M	20 M	
ARMOR	8 M	35 M	740 M	55 M	
AVIATION	8 M	6 M			
MILITARY POLICE	13 M	20 M			
ENGINEER	36 M	87 M			
CHEMICAL	6 M	14 M			
SIGNAL	10 M	7 M			
TOTAL	107 M	210 M	913 M	75 M	1305 M

Figure 2-14. Hardware and maintenance cost estimate - Best Case (FY88C)

based upon recurring unit production costs per system and initial spares plus sustainment (i.e., materiel and labor) costs.

(2) Figure 2-15 presents each respective MFA proponent's hardware configuration and maintenance costs, worst-case, in FY88 dollars. Total cost equals \$1.630 billion to support fielding of 13,290 devices.

(3) Figure 2-16 reflects the total life cycle costs, less software, to support total system fielding. The average cost based upon a best/worst-case estimate equals \$1.530 billion.

g. Training.

(1) The development of C3I systems at and below the battalion level will cause increased requirements for institutional, sustainment, and new equipment training. This increase is based on the proliferation of computer systems throughout the battlefield and the resulting expansion of the user target audience. Broad training considerations to support this development are basic computer literacy, computer skills for common hardware/software, computer networking skills, and MFA specific skills.

(2) Training burdens associated with MFA systems are:

(a) An increase in tasks required by the supervisors, operators, and maintainers.

(b) Changes in mission task requirements with computer systems which impact the skill, training, and aptitude requirements for MFA system operation.

(c) An increase in the numbers of personnel who will require specialized schooling and support for user units.

(d) Sustainment training in automation tasks which requires specialized schooling and support for user units.

(3) Training benefits of MFA systems are:

(a) When the training programs are established for MFAs, it will provide a training base for higher level C3I systems.

(b) The expansion of current and future training programs established for the MCS and family of ATCCS.

(c) The centralization of training programs for computer C3I systems at MFA proponent institutional training sites.

MFA PROPONENT	NDI - COST		DEV ITEM - COST		TOTAL
	(AC)	(RC)	(AC)	(RC)	
INFANTRY	37 M	57 M	208 M	24 M	
ARMOR	12 M	49 M	888 M	66 M	
AVIAION	11 M	7 M			
MILITARY POLICE	17 M	28 M			
ENGINEER	50 M	123 M			
CHEMICAL	8 M	19 M			
SIGNAL	16 M	10 M			
TOTAL	151 M	293 M	1096 M	90 M	1630 M

Figure 2-15. Hardware and maintenance cost estimate - Worst case (FY88C)

	NDI		DEV ITEM	
	(BEST)	(WORST)	(BEST)	(WORST)
RESEARCH & DEVELOPMENT	1 M	1 M	25 M	30 M
PRODUCTION	190 M	275 M	573 M	687 M
MILITARY CONSTRUCTION	0 M	0 M	0 M	0 M
FIELDING *	NEGLECTIBLE		NEGLECTIBLE	
INITIAL SPARES	13 M	17 M	1 M	1 M
SUSTAINMENT	135 M	162 M	431 M	517 M
SOFTWARE	TBD		TBD	
TOTAL	339 M	455 M	1030 M	1235 M
	(BEST) - 1369 M		(WORST) - 1690 M	
	(AVG) 1530 M			

* INCLUDES NET TRAINING, HARDWARE SHIPMENT COSTS

NOTE: COSTS INCLUDE ORF/RCF AND TRAINING BASE

Figure 2-16. Life cycle costs

CHAPTER 3

CONCLUSIONS

3-1. Sufficient justification was provided through the results of the functional analysis to warrant automation devices at those OPFACS identified at figure 2-12.

3-2. A requirement exists for the development of supplemental software to support unique staff planning functions within the engineer, chemical, military police, signal, and aviation functional areas.

3-3. A significant degree of commonality exists among MFA information exchange requirements both horizontally and vertically.

3-4. The hardware distribution solution (NDI/DEV ITEM) will not overburden the capability of the tactical vehicles to carry the equipment nor impede the unit's capability to rapidly displace.

3-5. The development and fielding of parallel programs (NDI vs DEV ITEM) may not provide automation to all organizations at the same time. NDI off-the-shelf procurement will be faster than a DEV ITEM solution.

3-6. The extension of automation below the battalion level contributes to solving a large number of battlefield deficiencies (54) currently recognized within the TRADOC BDP (S), 1986.

3-7. Costs of DEV ITEMS are extremely high versus NDI hardware. Although not within the scope of this study, a Cost and Operational Effectiveness (COEA) study should be completed to assess this tradeoff prior to a milestone I decision.

CHAPTER 4

RECOMMENDATIONS

4-1. That the concepts identified within this study be approved and used to document the requirement for automation within MFA organizations at and below the battalion level.

4-2. That TRADOC C4, with the TRADOC System Staff Officer (TRASSO) responsibilities for the Maneuver Control System (MCS), be designated the single point of contact within HQ TRADOC for all Maneuver Functional Area command and control automation requirements.

4-3. That CACDA take action to continue the development of automation requirements at and below the battalion level to include:

a. Coordinate/manage development of MFA Subordinate Systems (MFAS2) Operational and Organizational (O&O) plans and Required Operational Capabilities (ROC) - DEV ITEM only as enclosures to the MCS annex to the ATCCS O&O plan and ROC.

b. Conduct a Cost and Operational Effectiveness Analysis (COEA)/Abbreviated Analysis (AA) to assess the relative effectiveness and cost of the hardware solutions identified as they pertain to developing, fielding, and operating each alternative.

4-4. That USAARMC, as the CACDA executive agent for Close Combat Heavy C2 automation requirements, prepare the DEV ITEM ROC in coordination with the USAIC.

APPENDIX A
STUDY DIRECTIVE

ROUTINE

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GCDR _____ THAC 1 ✓ 9020 _____
ISC _____ USDB _____ CID _____
CADA 1 ✓ AMMO _____ MEDDAC _____
CATA _____ SSO _____ DENTAC _____

COR	
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CYEDIR	
FC	

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ZNR UUUUU
R 231434Z JUL 87
FM CDR TRADOC FT MONROE VA //ATCO-RH//
TO RUUTFHA/CDR USACAC FT LEAVENWORTH KS //ATZL-CAC/ATZL-CAC-CO//
~~INFO RUEADWD/DA WASHDC //SAUS-OR/DAMO-ZD/DAMO-FOO/DAMO-FD//~~
~~RUEADWD/SA WASHDC V/SARD-TR/SARD-EA//~~
~~RUUTFHA/CDR USA TRAC FT LEAVENWORTH KS //ATRC/ATRC-7X/ATRC-TD//~~
~~RUEADWD/CDR USALD OC FT LEE VA //ATCL-M//~~
RUEBAAA/CDR SOLDIER SPTCEN FT BEN HARRISON IN //ATZ I-CO//
RUEBAAA/COMDT ARMOR SCH FT KNOX KY //ATSB-CO//
RUEOFUA/COMDT ENGR SCH FT BELVOIR VA //ATZA-CO//
RUWDXDA/COMDT AD ARTY SCH FT BLISS TX //ATSA-CO//
RUWTRQA/COMDT FASCH FT SILL OK //ATZR-CO//
RUELOHA/COMDT INF SCH FT BENNING GA //ATSH-CO//
RUELEUA/COMDT AVN SCH FT RUCKER AL //ATZQ-CO//
RUELBWA/COMDT CML SCH FT MCCLELLAN AL //ATZN-CH-C//
RUELOIA/COMDT SIG SCH FT GORDON GA //ATZH-CO//
RUELBWA/COMDT MPSCH FT MCCLELLAN AL //ATZN-MP-C//
RUWTFHA/DIR TRAC-FLVN FT LEAVENWORTH KS //ATRC-F/ATRC-FS//
RUWJHTA/DIR TRAC WSMR NM //ATRC-W/ATRC-WA/ATRC-WSR//
RUEGNDW/DIR CEAC WASH DC //CACE-YE//

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~~SUBJECT: MANEUVER FUNCTIONAL AREA (MFA) ANALYSIS OF AUTOMATION REQUIREMENTS (S: 28 OCT 87)~~

1. PURPOSE. THIS MESSAGE TASKS CACDA-C3I TO CONDUCT ANALYSIS TO ASSESS REQUIREMENTS FOR COMMAND AND CONTROL (C2) AUTOMATION WITHIN BATTALIONS IN THE MFA. THESE CONSIST OF ARMOR, INFANTRY, AVIATION, ENGINEER, CHEMICAL, MILITARY POLICE AND SIGNAL UNITS.

2. BACKGROUND.

A. ON 29 APR 87, CG TRADOC WAS BRIEFED BY CACDA-C3I ON THE BMS CONCEPT. AS A RESULT OF THE BRIEFING, THE CG TRADOC DIRECTED AN ANALYSIS TO ASSESS BMS AND OTHER TACTICAL AUTOMATION REQUIREMENTS AT AND BELOW THE BATTALION LEVEL.

B. THE BMS IS A PROPOSED CONCEPT FOR AUTOMATED C2 WITHIN THE BN MANEUVER FORCE, DOWN TO INDIVIDUAL FIGHTING VEHICLES. IT WOULD BE FIELDIED AS AN EXTENSION OF THE MANEUVER CONTROL SYSTEM (MCS) TO PROVIDE PROCESSING, DISPLAY AND DISTRIBUTION OF INFORMATION TO

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FACILITATE BATTLEFIELD DECISION MAKING, EMPLOYMENT AND SUSTAINMENT OF UNITS BELOW THE BN LEVEL.

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C. THE MCS PRESENTLY PROVIDES C2 AUTOMATION WITHIN THE MFA UNIT COMMAND POSTS FROM CORPS THROUGH BN. IN ORDER TO ENHANCE THE VERTICAL EXCHANGE OF INFORMATION WITH C2 AUTOMATION BEYOND THAT WHICH THE MCS PROGRAM WILL PROVIDE, OPERATIONAL AND ORGANIZATIONAL (ORO) PLANS AND ARCHITECTURES ARE BEING DEVELOPED BY THE ENGINEER, MP AND CHEMICAL SCHOOLS TO MEET THEIR UNIQUE C2 HARDWARE/SOFTWARE NEEDS. AFTER THE PROPONENT SCHOOL AND/OR CENTER FOR EACH OF THESE AREAS DEVELOPS AN ORO PLAN TO PROVIDE AUTOMATED C2 FUNCTIONALITY, THAT PLAN WILL BE INCORPORATED INTO THE MCS ORO PLAN AS A SEPARATE ANNEX. THE MFA C2 SYSTEM, ONCE APPROVED, WILL BE A SUBORDINATE SYSTEM OF MCS.

3. PROBLEM. TWO EFFORTS ARE CURRENTLY UNDER WAY WHICH ADDRESS THE NEED FOR AUTOMATION AT AND BELOW THE MANEUVER BN LEVEL. THE BMS, ORIGINALLY INTENDED ONLY FOR ARMOR AND INFANTRY UNITS, CAN BE EXTENDED TO THE OTHER TYPE UNITS WITHIN THE MFA. CONCURRENTLY, SOME MFA PROponent SCHOOLS ARE DEFINING THEIR OWN REQUIREMENTS FOR AUTOMATED C2 AS SUBORDINATE SYSTEMS OF MCS. IN EITHER CASE, THE LEVEL OR EXTENT OF AUTOMATION TO FULFILL THE REQUIREMENT HAS NEVER BEEN FORMALLY ANALYZED, VALIDATED OR DOCUMENTED.

4. ALTERNATIVES. ALTERNATIVES MUST BE CONSIDERED SEPARATELY FOR

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EACH MFA, AND WILL BE COMPRISED OF THE COMBINATION OF THE VARIABLES LISTED BELOW:

A. ORGANIZATIONAL UNIT BY TYPE (E.G., AR, ABN, INF, ETC.).

B. ORGANIZATIONAL LEVEL (E.G., BN, CO, PLT, SQUAD).

5. ANALYTICAL ISSUES FOR EACH ALTERNATIVE:

A. FOR EACH LEVEL (E.G., BN, CO, PLT, INDIVIDUAL VEH/SQUAD) WITHIN EACH TYPE BN (E.G., ABN, AR, INF, ETC.) WHAT AUTOMATION HARDWARE AND ASSOCIATED SOFTWARE FUNCTIONS ARE REQUIRED?

B. WHAT ARE THE OPERATIONAL BENEFITS OF FULFILLING THIS REQUIREMENT AT EACH LEVEL?

C. WHAT ARE THE FIELDING COSTS AND OPERATIONAL BURDENS (E.G., TIME, MAINT, TRANS, ETC.) ASSOCIATED WITH FULFILLING THESE REQUIREMENTS?

D. WHAT BOP DEFICIENCIES CAN BE CORRECTED BY SUCH AUTOMATION?

6. SCOPE. THIS IS A NON-MAJOR STUDY. HQ TRAC HAS DETERMINED THE FOLLOWING:

A. CACDA-C3I IS THE STUDY AGENCY AND WILL PREPARE THE STUDY PLAN, CONDUCT THE STUDY, AND WRITE THE STUDY REPORT.

B. ALL REQUIREMENTS FOR APC COST AND PERFORMANCE DATA WILL BE SUBMITTED THROUGH DIR, REQUIREMENTS AND PROGRAMS DIR (ATRC-RP), HQ

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TRAC-RPD, FT MONROE, VA 23651-5143.

C. CACDA-C3I IS AUTHORIZED DIRECT COORDINATION WITH USA ARMS, USA IS, USAES, USA MVNS, USAMPS, USASIGS, USACHLS, USAAOAS, USAFAS,

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USADGC AND USA SOL SPT CEN, AS REQUIRED, TO CONDUCT AND SUPPORT THIS STUDY EFFORT.

D. TRAC-WSR (ATRC-WSR) WILL PROVIDE COST ANALYSIS SUPPORT.

E. TRAC-FLYN (ATRC-FS) WILL PROVIDE QUALITY CONTROL OVERSIGHT FOR THE STUDY, APPROVE THE STUDY PLAN, PROVIDE APPROPRIATE ANALYTICAL ASSISTANCE AND CERTIFY THE STUDY REPORT.

7. MILESTONES.

A. 24 JUL 87 - STUDY PLAN SUBMITTED TO TRAC-FLYN (ATRC-FS) FOR APPROVAL.

B. 13 OCT 87 - DRAFT REPORT SUBMITTED TO TRAC-FLYN (ATRC-FS) AND HQ TRADOC (ATCD-M) FOR CERTIFICATION.

C. 20 OCT 87 - FINAL REPORT SUBMITTED TO CG USA CAC FOR APPROVAL.

D. 28 OCT 87 - FINAL REPORT SUBMITTED TO HQ TRADOC (ATCD-M) FOR APPROVAL.

8. HQ TRADOC POC IS CPT ROBERT M. KENT, AY 680-4427.

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ROUTINE

APPENDIX B
ESSENTIAL ELEMENTS OF ANALYSIS

1. What operational functions/tasks should be automated by type organization and echelon?

a. What force level/common software functionality is required?

b. What unique software functionality is required by any of the MFA proponents?

2. What are the operational benefits, by type organization and echelon, of fulfilling this requirement?

3. What are the operational burdens associated with each alternative?

a. What are the transportability constraints associated with each alternative?

b. What are the maintenance burdens on operators, maintenance personnel, and logistical support associated with each alternative?

c. What are the training impacts associated with each alternative?

4. What battlefield deficiencies may be solved, all or in part, by each alternative?

a. Which Mission Area Analysis (MAA) deficiencies can be corrected?

b. Which associated Battlefield Development Plan (BDP) deficiencies can be corrected?

5. What are the MFA hardware requirements by:

a. Quantity and battlefield location?

b. Handheld terminal unit?

c. Portable computer unit (commercial or ruggedized)?

d. Transportable computer unit (commercial or ruggedized)?

e. Developmental computers?

6. What are the life cycle and comparative costs of each individual alternative?

a. What is the estimated cost of each candidate hardware solution?

b. What is the estimated total cost of fulfilling the requirement (hardware fielding) for each alternative?

c. What is the estimated cost for software for each alternative?

(1) What are the MFA force level/common software costs?

(2) What are the unique software and system integration costs?

d. What are the estimated hardware/software maintenance costs associated with each alternative?

e. What are the associated training costs associated with each alternative?

7. Is each alternative supportable by the programmed tactical communications?

APPENDIX C

REFERENCES

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10. United States Department of the Army, Combined Arms Combat Developments Activity. "Operational and Organizational Plan for the Battlefield Management System - Draft." Fort Leavenworth, Kansas: 2 July 1986.

APPENDIX D
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Commander US Army Soldier Support Center ATTN: ATSG-DDB Ft Benjamin Harrison, IN	1
Commander US Army Combined Arms Combat Developments Activity ATTN: ATZL-CAC/ATZL-CAC-CD/ Fort Leavenworth, KS 66027	1 per

APPENDIX E

COMMAND, CONTROL, AND SUBORDINATE SYSTEM (CCS2 CONCEPT)

1. The CCS2 architectural concept (figure E-1) establishes the basis for automation and communication which comprise an interoperable and survivable tactical command and control system and serves as the basic architectural concept for the development of the Army Tactical Command and Control System (ATCCS). The CCS2 concept recognizes the existence of five BFAs (Maneuver Control, Fire Support, Air Defense, Combat Service Support, and Intelligence/Electronic Warfare), each with its own control element (e.g., Maneuver Control System), to manage, coordinate, and process internal information while coordinating information flow with other BFA control elements.

2. The purpose of CCS2 architectural concept is to provide timely, accurate, and reliable information to and from the force commander and his staff, the BFA commanders and their staffs, and subordinate systems. This results in both the generation of information needed by the force commanders and staff for decision-making and the dissemination of the force commander's guidance and directives for actions which influence the battlefield environment. The command and control system also contains the means for achieving the required information flows between mutually supporting command and control nodes, particularly the force commander, his staff, and the constituents of the force.

3. The CCS2 vertical architecture partitions Army tactical command and control into three classes of interconnected subsystems (figure E-2): the force level control system (command); functional control system (control); and subordinate systems. The force level control system integrates information across all five BFA control systems, each functional control system integrates information from the subordinate systems to permit the functional commander (e.g., division commander) to perform his internal C2 of functional units. The subordinate systems perform detailed work peculiar to the system (e.g., fallout predictions).

a. Force Level Control System (FLCS).

(1) This system is composed of the commander and staff at each Army echelon (e.g., corps, division) and their facilities, personnel, procedures, automation, communications, etc.

(2) FLCS provides the C2 means for the commander and staff at each echelon and the means of coordinating among BFAs at each echelon. Specifically, its functions are to facilitate:

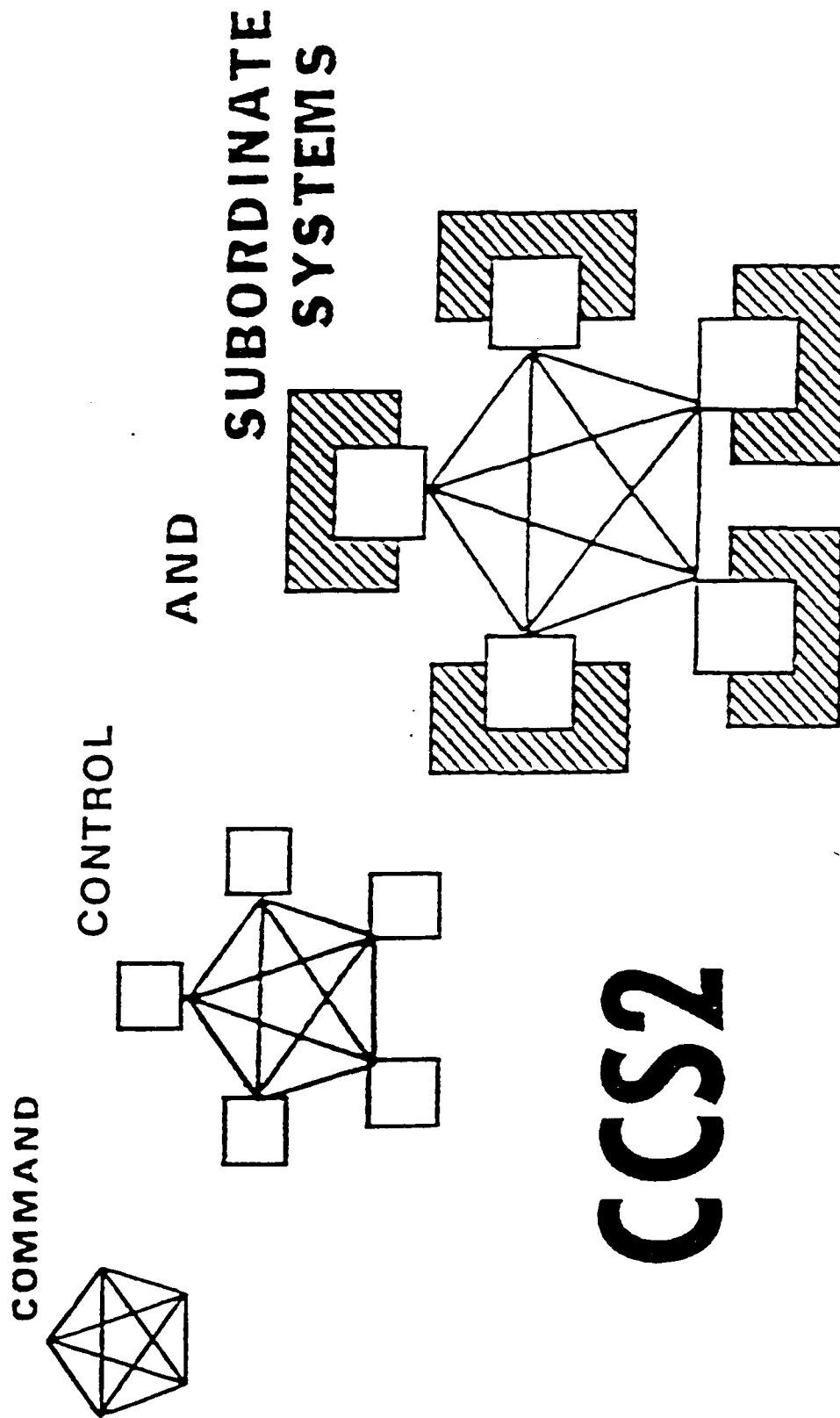


Figure E-1. CCS2 architecture

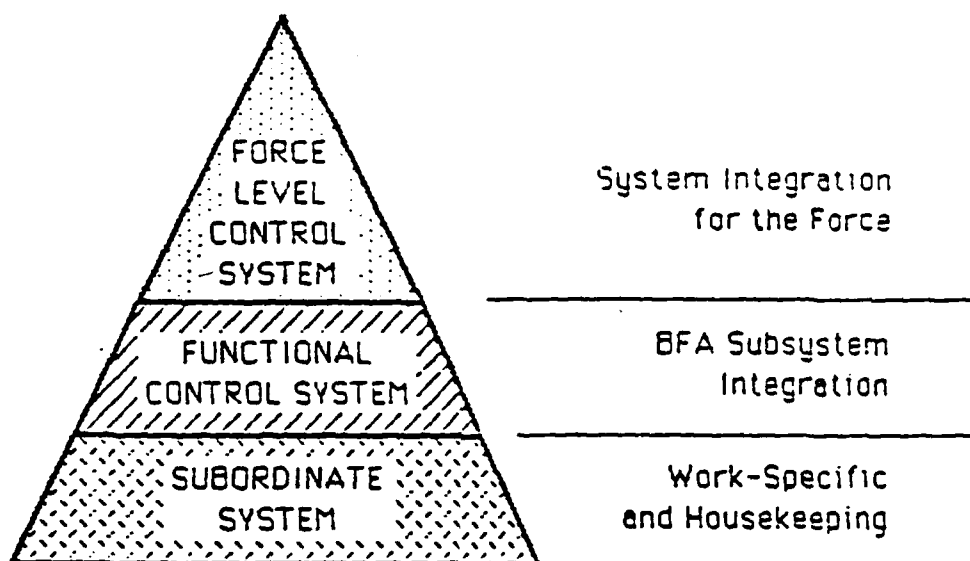


Figure E-2. CCS2 vertical architecture

(a) Decisions regarding the employment and sustainment of combat power.

(b) Directions to subordinate and supporting units.

(c) Coordination across BFAs at each force echelon.

(3) The FLCS is a netted distributed system which permits the force level commander to command and control from any of his echelon's command posts, or from the operational facilities at the subordinate functional control nodes (e.g., Division Artillery (DIVARTY) Command Posts(CP)) or from CPs at the next lower echelon. FLCS develops an integrated combined arms and services concept of operations for the AirLand force.

(4) The functional control systems support the FLCS by:

(a) Collecting data from the five functional segments and structuring them into meaningful information for the force commander and his staff.

(b) Disseminating guidance and direction from the force commander and his staff.

(c) Coordinating across BFA lines (e.g., DIVARTY to Division Support Command (DISCOM)).

b. Functional Control Systems.

(1) An echelon of a force, corps and below, containing up to five functional control systems, each corresponding to a BFA. A functional control system is the set of personnel, procedures, and materiel systems that perform one or more functions of that BFA.

(2) The general functions performed by BFA control systems are to:

(a) Develop decisions concerning the employment and sustainment of combat power appropriate to the BFA.

(b) Direct subordinate and supporting units.

(c) Coordinate among BFA subsystems.

c. Subordinate Systems.

(1) Subordinate systems are manual or automated systems which perform unique command and control of functional segments

and collect meaningful force level and technical data for the BFA commander and his staff.

(2) Each subordinate system is composed of a set of personnel, procedures, and materiel that together perform one or more activities of a BFA work-specific or housekeeping function. Housekeeping functions are similar for all five BFAs and are concerned with providing for intra-BFA communications, security, and protection of BFA resources and self-sustainment of these resources.

(3) Information required by a subordinate system to perform its tasks is generated both internally, by the subordinate system, and externally, by the functional control system, other subordinate systems, and command and control systems of allied nations and other services. These external systems may also receive information produced by a subordinate system while it performs C2 or unique technical functions. Together, the information inputs required to perform these tasks and the information outputs produced by them constitutes the content of the subordinate system data base.

APPENDIX F

METHODOLOGY DESCRIPTION

1. General. The contents of this appendix outline the detailed methodology used in the MFA analysis of tactical automation requirements.

2. Specific methodology steps.

a. Study Plan. This document fulfills the first step within the study methodology.

b. Literature search.

(1) Conduct a DTIC/DLSIE search with the following key terms: Command and Control (C2) systems, display systems, computer applications, decision-making, computers.

(2) Acquire and review documents.

(3) Interview experts in cost benefit analysis, ATCCS automation, and other pertinent areas.

(4) Develop bibliography.

c. Define, in detail, the candidate hardware solutions.

(1) Review pertinent documents and interview experts.

(2) Conduct preliminary analysis and identify appropriate candidate hardware solutions.

(3) Determine functionality provided by each candidate solution selected.

(4) Conduct Joint Work Group (JWG) meeting with MFA proponents, HQ TRADOC, and other interested parties to gain feedback on hardware candidate solutions.

(5) Modify hardware candidate solutions/functionality based on feedback.

(6) Expand on hardware candidate solutions and functionality and document new alternatives as developments occur throughout the study, but limit additions to fit within the resource constraints of this study.

d. Determine, in detail, the MFA automation alternatives.

(1) Review pertinent documents (e.g., ARTEP, MTP, SM) and interview in-house subject matter experts.

(2) Conduct preliminary analysis to determine specific tasks performed.

(3) Group similar tasks by type organization/echelon.

(4) Develop preliminary alternatives.

(5) Gain school/center approval of automation alternatives.

e. Determine MFA technical/unique and force level tasks (software functionality) by type organization and echelon.

(1) Develop criteria to determine which operational tasks would provide a high payoff if automated.

(2) Compare criteria to tasks by type organization and echelon.

(3) Identify those tasks which would provide a positive payoff if automated.

(4) Prioritize selected tasks by type organization and echelon.

(5) Gain school/center approval of selected tasks (software functionality) identified.

(6) Document MFA proponent position.

f. Define the operational advantages of each alternative.

(1) Determine the capability for MFA technical and force level information to be supported by each alternative.

(2) Determine the benefit of an automated interface with the BFA unique systems.

(3) Determine the benefit of developing unique software to interface with MCS common software.

g. Determine conclusions and recommendations.

(1) Determine conclusions concerning the alternatives and other relevant findings.

- (2) Determine MFA automation recommendations.
- (3) Brief conclusions and recommendations to MFA In-Process Review (IPR).
- (4) Finalize proponent recommendations.
- h. Define the costs of each alternative.
 - (1) Determine the hardware costs for each alternative.
 - (2) Determine the software costs for each alternative.
 - (3) Determine the maintenance costs for the hardware in each alternative.
 - (4) Determine the maintenance costs for the software in each alternative.
 - (5) Determine the training costs for each alternative.
 - (6) Determine the costs associated with implementing the interfaces required.
 - (7) Define and determine other costs as the study progresses.
- i. Validate MFA automation requirements.
 - (1) Validate hardware distribution by:
 - (a) Type organization.
 - (b) Type echelon.
 - (c) Quantity of devices required (AC/RC).
 - (2) Combine requirements where appropriate.
 - (3) Add additional devices where required.
 - (4) Screen for nonessential redundancy.
- j. Document the MFA analysis of tactical automation requirements, and recommendations in a final report.
 - (1) Develop outline.
 - (2) Develop draft.

- (3) Coordinate draft.
- (4) Finalize the final report.
- (5) Distribute the final report.

APPENDIX G

INFANTRY SCHOOL STUDY DELIVERABLES

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

HIGH PAYOFF TASK/FUNCTIONS TO BE AUTOMATED

TYPE UNIT: LT/ABN/AAS/MTZ/MECH/INF

ECHOLON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	WARNING ORDER	X	
2	OPERATION ORDER	X	
3	FRAG ORDER	X	
4	CALL FOR FIRE	X	
5	POSITION/NAVIGATION	X	
6	SPOT REPORT	X	
7	SITUATION REPORTS (FRIENDLY/ENEMY)	X	
8	CONTACT REPORT	X	
9	MINEFIELD REPORT	X	
10	PATROL REPORT	X	
11	OBSTACLE REPORT	X	
12	BRIDGE REPORT	X	
13	SENSITIVE ITEM REPORT	X	
14	MINI REPORT	X	
15	LOGISTIC REPORTS	X	
16	EQUIPMENT STATUS REPORT	X	
17	NBC 1/4	X	
18	NBC 2/3/5	X	
19	EFFECTIVE DOWN WIND MESSAGE	X	
20	SHELL REPORT	X	
21	INTELLIGENCE REPORT	X	
22	PERSONNEL DAILY SUMMARY	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: LT/ABN/AASD MIZ/MECH/INF

SCHEM: 01

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MPA UNIQUE
1	WARNING ORDER	X	
2	OPERATION ORDER	X	
3	FRAG ORDER	X	
4	CALL FOR FIRE	X	
5	POSITION NAVIGATION	X	
6	SPOT REPORT	X	
7	SITUATION REPORT (FRIENDLY/ENEMY)	X	
8	CONTACT REPORT	X	
9	MINEFIELD REPORT	X	
10	PATROL REPORT	X	
11	OBSTACLE REPORT	X	
12	BRIDGE REPORT	X	
13	SENSITIVE ITEM REPORT	X	
14	MICI REPORT	X	
15	LOGISTIC REPORTS	X	
16	EQUIPMENT STATUS REPORT	X	
17	NEC 1/4	X	
18	NEC 2/3/5	X	
19	EFFECTIVE DOWNWIND MESSAGE	X	
20	SHELL REPORT	X	
21	INTELLIGENCE SUMMARY	X	
22	PERSONNEL DAILY SUMMARY	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: LT/ABN/AAS/MTZ/MECH/INF

ECHOLON: FLT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	WARNING ORDER	X	
2	FRAG ORDER	X	
3	CALL FOR FIRE	X	
4	POSITION/NAVIGATION	X	
5	SPOT REPORT	X	
6	SITUATION REPORT (FRIENDLY/ENEMY)	X	
7	CONTACT REPORT	X	
8	MINEFIELD REPORT	X	
9	PATROL REPORT	X	
10	OBSTACLE REPORT	X	
11	NBC 1 4	X	
12	NBC 2/3 5	X	
13	EQUIPMENT STATUS REPORT	X	
14	PERSONNEL DAILY SUMMARY	X	

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: LT/ABN/AASLT/INF CANDIDATE SOLUTIONS OPERATOR: BN CDR
 ECHELON: BN

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

RTU

	OPER ON	ACT DIS- PLAY	OPEN GRAP HICS	FORMAT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	PDS/ NAV DATA	AUTO TGT ACQ	HELPFUL SENS. INPUT	TON SEN FREE DRW GRAPHICS	PROD DATA BUS
WARNING ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1
REPETITION ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1
FRAG ORDER	1	3	3	3	2	3	1	3	2	2	1	1	1	1
CALL FOR FIRE	1	3	1	3	2	3	3	3	2	3	1	1	1	1
POSITION-NAVIGATION	1	3	1	1	1	1	3	3	3	3	1	1	1	1
SPOT REPORT	1	3	1	3	2	3	1	3	1	3	1	1	1	1
SITUATION REPORTS (FRIENDLY/ENEMY)	1	3	2	3	1	3	1	3	1	3	1	1	1	1
CONTACT REPORT	1	3	1	3	3	3	1	3	1	3	1	1	1	1
MINEFIELD REPORT	1	3	2	3	1	3	2	3	3	3	1	1	1	1
RADIOL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
VEHICLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	1	3	1	3	2	2	1	2	1	1	1	1	1	1
MINI REPORT	1	3	1	3	2	2	1	2	1	1	1	1	1	1
LOGISTIC REPORTS	1	3	1	3	1	2	2	3	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	1	3	1	3	1	1	2	3	1	1	1	1	1	1
NBC 1/4	1	3	3	3	1	3	3	3	3	3	1	1	1	1
NBC 1/3/5	1	3	3	3	1	3	3	3	3	3	1	1	1	1
EFFECTIVE DOWN WIND MESSAGE	3	1	1	3	1	1	1	1	1	1	1	1	1	1
SHELL REPORT	1	2	1	2	3	1	1	3	1	1	1	1	1	1
INTELLIGENCE REPORT	1	1	3	3	1	1	1	3	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	3	3	1	3	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTIONS: HTU

RATING SCALE:

- 0 - NO CONTRIBUTION
- 1 - MODERATE CONTRIBUTION
- 2 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: 17/ABN/AASLT/INF

ECHOLON: BN

OPERATOR: 83 SEC. 81/84. 82

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

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	ON	DIS-	GRAP	TEXT	TEXT	VISUAL	CESS	DATA	MAP	NAV	TGT	SENSOR	FREE	DRW	DATA
	MOVE	PLAY	HICS	MSG	MSG	ALERT	DATA		BACKGRD	DATA	ACQ	INPUT	GRAPHICS	BUS	
WARNING ORDER	1	1	3	3	3	2	3	1	3	1	2	1	1	1	1
OPERATION ORDER	1	1	3	3	3	2	3	1	3	2	2	1	1	1	1
FRAG ORDER	1	1	3	3	3	2	3	1	3	2	2	1	1	1	1
CALL FOR FIRE	1	1	3	1	3	3	3	3	3	2	3	1	1	1	1
POSITION/NAVIGATION	1	1	3	1	1	1	1	3	3	3	3	1	1	1	1
SPOT REPORT	1	1	3	1	3	2	3	1	3	3	3	1	1	1	1
SITUATION REPORTS (FRIENDLY/ENEMY)	1	1	3	2	3	1	3	1	3	1	1	1	1	1	1
CONTACT REPORT	1	1	3	1	3	3	3	1	3	2	3	1	1	1	1
MINFIELD REPORT	1	1	3	2	3	1	3	2	3	3	3	1	1	1	1
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OBSTACLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	1	1	3	1	3	2	2	1	3	1	1	1	1	1	1
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LOGISTIC REPORTS	1	1	3	1	3	1	2	2	3	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	1	1	3	1	3	1	1	2	3	1	1	1	1	1	1
NBC 1/4	1	1	3	3	3	1	3	3	3	3	3	1	1	1	1
NBC 2/3/5	1	1	3	3	3	1	3	3	3	3	3	1	1	1	1
EFFECTIVE DOWN WIND MESSAGE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SHELL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INTELLIGENCE REPORT	1	1	3	3	3	1	1	1	3	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	3	3	3	1	3	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: PCU V1

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: LT/ABN/AASLT/INF

CANDIDATE SOLUTIONS
ECHELON: CO

OPERATOR: CDR. NO. 186

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TG ACQ	BTFLD SENSOR INPUT	TCH SEN FREE GRAPHICS	PROC DATA BUS
WARNING ORDER	1	3	3	3	1	3	1	3	1	2	1	1	1	1
OPERATION ORDER	1	3	3	3	1	3	1	3	1	2	1	1	1	1
FRAG ORDER	1	3	3	3	1	3	1	3	1	2	1	1	1	1
CALL FOR FIRE	1	3	1	3	2	3	3	3	1	3	1	1	1	1
POSITION/NAVIGATION	1	3	1	1	1	3	1	1	1	3	1	1	1	1
SPOT REPORT	1	3	1	3	2	2	1	3	1	3	1	1	1	1
SITUATION REPORT (FRIENDLY/ENEMY)	1	3	2	3	1	3	1	3	1	1	1	1	1	1
CONTACT REPORT	1	3	1	3	3	3	1	3	1	3	1	1	1	1
WINEFIELD REPORT	1	3	3	1	3	3	1	3	1	3	1	1	1	1
PATROL REPORT	1	3	3	3	1	3	1	3	1	3	1	1	1	1
OBSTACLE REPORT	1	3	3	3	1	1	1	3	1	3	1	1	1	1
BRIDGE REPORT	2	2	3	3	1	1	1	3	1	1	1	1	1	1
SENSITIVE ITEM REPORT	1	3	1	3	1	1	1	3	1	1	1	1	1	1
WIND REPORT	1	3	1	3	2	2	1	2	1	1	1	1	1	1
LOGISTIC REPORTS	1	3	1	3	1	1	2	3	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	2	3	1	3	1	1	2	3	1	1	1	1	1	1
NBC 1-4	1	3	3	3	1	3	3	3	1	3	1	1	1	1
NBC 5-8	1	3	3	3	1	3	3	3	1	3	1	1	1	1
EFFECTIVE DOWNWIND MESSAGE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SHELL REPORT	1	3	1	3	1	2	1	3	1	1	1	1	1	1
INTELLIGENCE SUMMARY	1	3	2	3	1	1	1	3	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	1	1	1	3	1	1	1	3	1	1	1	1	1	1

HARDWARE SOLUTIONS: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: LT/ABN/AASLT/INF

ECHELON: PLT

OPERATOR: SGT PLT LDR. SGT PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON	ACT DIS- MOVE	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TOH SEN FREE DRW GRAPHICS	PROC DATA BUS
WARNING ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1
FRAG ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1
CALL FOR FIRE	1	3	1	3	2	3	3	3	1	3	1	1	1	1
POSITION/NAVIGATION	1	3	1	1	1	1	3	3	1	1	1	1	1	1
SPEC REPORT	1	3	1	3	2	3	1	3	1	3	1	1	1	1
SITUATION REPORT (FRIENDLY-ENEMY)	1	3	2	3	1	3	1	3	1	1	1	1	1	1
CONTACT REPORT	1	3	1	3	3	3	1	3	1	3	1	1	1	1
MINERFIELD REPORT	1	2	3	1	3	3	1	3	1	3	1	1	1	1
PATROL REPORT	1	3	3	3	1	3	1	3	1	3	1	1	1	1
OBSTACLE REPORT	1	3	3	3	1	3	1	3	1	3	1	1	1	1
NEC 1-4	1	3	3	3	1	3	3	3	1	3	1	1	1	1
NEC 1-5/6	1	3	3	3	1	3	3	3	1	3	1	1	1	1
EQUIPMENT STATUS REPORT	1	3	1	3	1	1	1	3	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	1	3	1	3	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH (M113)

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN CDR

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ION	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
WARNING ORDER	3	3	3	3	2	3	1	3	2	2	1	1	2	1
OPERATION ORDER	3	3	3	3	2	3	1	3	3	2	1	1	2	1
FRAG ORDER	3	3	3	3	2	3	1	3	3	2	1	1	3	1
CALL FOR FIRE	3	3	1	3	3	3	3	3	3	3	1	1	3	1
POSITION/NAVIGATION	3	3	1	1	1	1	3	3	3	3	1	1	1	1
SPOT REPORT	3	3	1	3	2	3	1	3	1	3	1	1	3	1
SITUATION REPORTS (FRIENDLY/ENEMY)	3	3	2	3	1	3	1	3	1	1	1	1	1	1
CONTACT REPORT	3	3	1	3	1	3	1	3	1	3	1	1	3	1
MINFIELD REPORT	3	3	2	1	3	3	2	3	1	3	1	1	1	1
PATROL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OBSTACLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1
WIC REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1
LOGISTIC REPORTS	3	3	1	3	1	2	2	3	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	3	3	1	3	1	1	2	3	1	1	1	1	1	1
NEC 1/4	3	3	3	3	1	3	3	3	1	3	1	1	1	1
NEC 2/3/5	3	3	3	3	1	3	3	3	1	3	1	1	1	1
EFFECTIVE DOWN WIND MESSAGE	2	2	1	2	1	2	2	3	1	1	1	1	1	1
SHELL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INTELLIGENCE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	3	3	1	3	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

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IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH/BRADLEY

CANDIDATE SOLUTIONS

ECHELON: BN

OPERATOR: S3 SEC, S1/S4, S2

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DEW GRAPHICS	PROC DATA BUS
WARNING ORDER	3	3	3	3	2	3	1	3	1	2	1	1	2	1
OPERATION ORDER	3	3	3	3	2	3	1	3	3	2	1	1	2	1
FRAG ORDER	3	3	3	3	2	3	1	3	3	2	1	1	3	1
CALL FOR FIRE	3	3	1	3	3	3	3	3	3	3	1	1	3	1
POSITION/NAVIGATION	3	3	1	1	1	1	3	3	3	3	1	1	1	1
SPOT REPORT	3	3	1	3	2	3	1	3	1	3	1	1	3	1
SITUATION REPORTS (FRIENDLY/ENEMY)	3	3	2	3	1	3	1	3	1	1	1	1	1	1
CONTACT REPORT	3	3	1	3	3	3	1	3	1	3	1	1	3	1
MINFIELD REPORT	3	3	2	1	3	3	2	3	1	3	1	1	1	1
PATROL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OBSTACLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1
MIJI REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1
LOGISTIC REPORTS	3	3	1	3	1	2	2	3	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	3	3	1	3	1	1	2	3	1	1	1	1	1	1
NBC 1/4	3	3	3	3	1	3	3	3	1	3	1	1	1	1
NBC 2/3/5	3	3	3	3	1	3	3	3	1	3	1	1	1	1
EFFECTIVE DOWN WIND MESSAGE	2	2	1	2	1	2	2	3	1	1	1	1	1	1
SHELL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INTELLIGENCE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	3	3	1	3	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: PCU(V2)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH (M113)

CANDIDATE SOLUTIONS

ECHOLON: CO

OPERATOR: CDR/XO/ISG

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DRW BUS	PROC DATA
WARNING ORDER	3	3	3	3	2	3	1	3	1	2	1	1	3	1	1
OPERATION ORDER	3	3	3	3	2	3	1	3	3	2	1	1	2	1	1
FRAG ORDER	3	3	3	3	2	3	1	3	3	2	1	1	3	1	1
CALL FOR FIRE	3	3	1	3	3	3	3	3	3	3	1	1	3	1	1
POSITION/NAVIGATION	3	3	1	1	1	1	3	3	3	3	1	1	1	1	1
SPOT REPORT	3	3	1	3	2	3	1	3	2	3	1	1	2	1	1
SITUATION REPORT (FRIENDLY/ENEMY)	3	3	2	3	1	3	1	3	1	1	1	1	1	1	1
CONTACT REPORT	3	3	1	3	3	3	1	3	1	3	1	1	3	1	1
MINFIELD REPORT	3	3	2	1	3	3	2	3	1	3	1	1	3	1	1
PATROL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1
OBSTACLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1	1
MINI REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1	1
LOGISTIC REPORTS	3	3	1	3	1	2	2	3	1	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	3	3	1	3	1	1	2	3	1	1	1	1	1	1	1
NEC 1/4	3	3	3	3	1	3	3	3	1	3	1	1	1	1	1
NEC 2/3/5	3	3	3	3	1	3	3	3	1	3	1	1	1	1	1
EFFECTIVE DOWNWIND MESSAGE	2	2	1	2	1	2	2	3	1	1	1	1	1	1	1
SHELL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INTELLIGENCE SUMMARY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	3	3	1	3	1	1	3	3	1	1	1	1	1	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

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IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH (M113)

CANDIDATE SOLUTIONS

ECHOLON: PLT

OPERATOR: SGT PLT LDR AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON	ACT DIS-	OPN GRAP	FWMT TEXT	FREE TEXT	AUDIO/ VISUAL	PRO- CESS	STORE DATA	DIGITAL MAP	POS NAV	AUTO TGT	RETRFLD SENSOR	TCH FREE	SEN DEW	PHOC DATA
	MOVE	PLAY	REICS	MSG	MSG	ALERT	DATA		BACKGRD	DATA	ACQ	INPUT	GRAPHICS	BUS	
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	2	3	1	3	3	3	1	1	3	1	1
ALERTS (NBC, FAAD, RECON STATUS)	3	3	3	3	2	3	1	3	3	3	1	1	3	1	1
NBC 1	3	3	1	3	2	3	3	3	2	3	1	1	1	1	1
NBC 3	3	3	1	1	1	1	3	3	3	3	1	1	1	1	1
NBC 4	3	2	1	3	2	3	1	3	3	3	1	1	1	1	1
NBC 5	3	3	1	3	2	2	1	3	1	1	1	1	1	1	1
EFFECTIVE DOWNWIND MESSAGE	3	3	1	3	3	3	1	3	3	3	1	1	1	1	1
DOSIMETRY REPORT	1	2	3	3	2	3	1	3	3	3	1	1	1	1	1
STRIKEWARN	3	2	3	3	2	3	1	3	3	3	1	1	1	1	1
CHEMWARN	1	2	3	3	1	1	1	3	1	1	1	1	1	1	1
SHELL/MORT/BOMREP	3	2	2	3	1	3	2	3	2	3	1	1	1	1	1
SPOT REPORT	3	2	2	3	1	3	2	3	2	3	1	1	1	1	1
SITUATION REPORT	2	2	1	3	1	1	1	3	1	1	1	1	1	1	1
CONTACT REPORT	2	2	1	3	1	1	3	3	1	1	1	1	1	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH (BRADLEY) CANDIDATE SOLUTIONS OPERATOR: BN CDR, SJ OFFICER
 ECHELON: BN

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER ON	ACT DIS-	OPN GRAP	PFMT TEXT	FREE TEXT	AUDIO/ VISUAL	PRO- CESS	STORE DATA	DIGITAL MAP	POS/ NAV	AUTO TGT	BTFLD SENSOR	ATCH FREE	SEN DRW	PROC DATA
	MOVE	PLAY	PHICS	MSG	MSG	ALERT	DATA		BACKGRD	DATA	ACQ	INPUT	GRAPHICS		BUS
WARNING ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1	1
OPERATION ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1	1
FRAG ORDER	1	3	3	3	2	3	1	3	1	2	1	1	1	1	1
CALL FOR FIRE	1	3	1	3	3	3	3	3	1	3	1	1	1	1	1
POSITION/NAVIGATION	1	3	1	1	1	1	3	3	1	3	1	1	1	1	1
SPOT REPORT	1	3	1	3	2	3	1	3	1	3	1	1	1	1	1
SITUATION REPORTS (FRIENDLY/ENEMY)	1	3	2	3	1	3	1	3	1	1	1	1	1	1	1
CONTACT REPORT	1	3	1	3	3	3	1	3	1	3	1	1	1	1	1
MINFIELD REPORT	1	3	2	1	3	3	2	3	1	3	1	1	1	1	1
PATROL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OBSTACLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	1	3	1	3	2	2	1	3	1	1	1	1	1	1	1
WFOI REPORT	1	3	1	3	2	2	1	3	1	1	1	1	1	1	1
LOGISTIC REPORTS	1	3	1	3	1	2	2	3	1	1	1	1	1	1	1
EQUIPMENT STAT. REPORT	1	3	1	3	1	1	2	3	1	1	1	1	1	1	1
NET 1/4	1	3	3	3	1	3	3	3	1	3	1	1	1	1	1
NET 2/3/5	1	3	3	3	1	3	3	3	1	3	1	1	1	1	1
EFFECTIVE DOWN WIND MESSAGE	2	2	1	2	1	2	3	3	1	1	1	1	1	1	1
SHELL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INTELLIGENCE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	1	3	1	3	1	1	3	1	1	1	1	1	1	1	1

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS
 TYPE UNIT: MTZ/MECH (BRADLEY) ECHELON: CO OPERATOR: CO CDR/HQ/ISS

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TOH FREE GRAPHICS	SEN DRW DATA	PRCO DATA BUS
WARNING ORDER	3	3	3	3	2	3	1	3	1	2	1	1	3	1	1
OPERATION ORDER	3	3	3	3	2	3	1	3	3	2	1	1	3	1	1
FRAG ORDER	3	3	3	3	2	3	1	3	3	2	1	1	3	1	1
CALL FOR FIRE	3	3	1	3	3	3	3	3	3	3	1	1	3	1	1
POSITION/NAVIGATION	3	3	1	1	1	1	3	3	3	3	1	1	2	1	1
SPOT REPORT	3	3	1	3	2	3	1	3	1	3	1	1	3	1	1
SITUATION REPORTS (FRIENDLY/ENEMY)	3	3	2	3	1	3	1	3	1	3	1	1	1	1	1
CONTACT REPORT	3	3	1	3	3	3	1	3	1	3	1	1	3	1	1
WINEFIELD REPORT	3	3	2	1	3	3	2	3	1	3	1	1	3	1	1
PATROL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OBSTACLE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRIDGE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SENSITIVE ITEM REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1	1
MINI REPORT	3	3	1	3	2	2	1	3	1	1	1	1	1	1	1
LOGISTIC REPORTS	3	3	1	3	1	2	2	3	1	1	1	1	1	1	1
EQUIPMENT STATUS REPORT	3	3	1	3	1	1	1	3	1	1	1	1	1	1	1
NEC 1/4	3	3	3	3	1	3	3	3	1	3	1	1	1	1	1
NEC 2/3/6	3	3	3	3	1	3	3	3	1	3	1	1	1	1	1
EFFECTIVE DOWN WIND MESSAGE	2	2	1	2	1	2	2	3	1	1	1	1	1	1	1
SHELL REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INTELLIGENCE REPORT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	3	3	1	3	1	1	3	3	1	1	1	1	1	1	1

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH (BRADLEY) CANDIDATE SOLUTIONS
 ECHELON: PLT OPERATOR: SGT PLT LDR AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMF TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DRW BUS	PROC DATA
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	2	3	1	3	3	3	1	1	3	1	1
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	2	3	1	3	3	3	1	1	3	1	1
NBC 1	3	3	1	3	2	3	3	3	2	3	1	1	1	1	1
NBC 3	3	3	1	1	1	1	3	3	3	3	1	1	1	1	1
NBC 4	3	2	1	3	2	3	1	3	3	3	1	1	1	1	1
NBC 5	3	3	1	3	2	2	1	3	1	1	1	1	1	1	1
EFFECTIVE DOWNWIND MESSAGE	3	3	1	3	3	3	1	3	3	3	1	1	1	1	1
DOSIMETRY REPORT	1	2	3	3	2	3	1	3	3	3	1	1	1	1	1
STRIKEWARN	3	2	3	3	2	3	1	3	3	3	1	1	1	1	1
CHEMWARN	1	2	3	3	1	1	1	3	1	1	1	1	1	1	1
SHELL/MORT/BOVREP	3	2	2	3	1	3	2	3	2	3	1	1	1	1	1
SPOT REPORT	3	2	2	3	1	3	2	3	2	3	1	1	1	1	1
SITUATION REPORT	2	2	1	3	1	1	1	3	1	1	1	1	1	1	1
CONTACT REPORT	2	2	1	3	1	1	3	3	1	1	1	1	1	1	1

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MTZ/MECH (BRADLEY)

CANDIDATE SOLUTIONS
ECHELON: PLT

OPERATOR: PLT LDR, PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DRW GRAPHICS	PROC DATA BUS
WARNING ORDER	3	3	3	3	2	3	1	3	3	3	1	1	3	1
FRAG ORDER	3	3	3	3	2	3	1	3	3	3	1	1	3	1
CALL FOR FIRE	3	3	1	3	2	3	3	3	2	3	1	1	1	1
POSITION/NAVIGATION	3	3	1	1	1	1	3	3	3	3	1	1	1	1
SPOT REPORT	3	2	1	3	2	3	1	3	3	3	1	1	1	1
SITUATION REPORT (FRIENDLY/ENEMY)	3	3	1	3	2	2	1	3	1	1	1	1	1	1
CONTACT REPORT	3	3	1	3	3	3	1	3	3	3	1	1	1	1
WINEFIELD REPORT	1	2	3	3	2	3	1	3	3	3	1	1	1	1
PATROL REPORT	3	2	3	3	2	3	1	3	3	3	1	1	1	1
OBSTACLE REPORT	1	2	3	3	1	1	1	3	1	1	1	1	1	1
NBC 1/4	1	2	2	3	1	3	2	5	2	3	1	1	1	1
NBC 2/3/5	3	2	2	3	1	3	2	3	2	3	1	1	1	1
EQUIPMENT STATUS REPORT	2	2	1	3	1	1	1	3	1	1	1	1	1	1
PERSONNEL DAILY SUMMARY	2	3	1	3	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

SECTION III. OPERATIONAL BENEFITS

OPERATIONAL BENEFITS
INFANTRY UNITS

1. Bn Cdr (LT, Abn, AA, In, MTZ, M113, BFV) - Handheld Terminal Unit (HTU):

The Battalion Commander requires the capability to rapidly input and acquire tactical information from the Force Level Commander's Situation Report and the Force Level Data Base of the objective automated command and control system. In order to determine appropriate actions and direct the activities of subordinates, the commander must have the capability to access and/or to update and transmit formatted reports, messages, and graphics containing critical information. He requires this capability while not being tied to one location or operational facility.

2. Bn S3 Section (Lt, Abn, AA, In, MTZ, M113, BFV) - Portable Computer Unit (PCU) V2:

The Battalion S3 Section requires the capability to rapidly acquire and disseminate tactical information and to plan tactical operations. The Battalion S3 Section correlates, filters, processes, extracts, and formats operational information for the battalion and disseminates that information horizontally and vertically on the battlefield. The PCU will automate these functions, along with the functions of coordination of plans and guidance and the monitoring of operations. The PCU will assist the battalion staff by providing adequate memory capacity (1-10 Megabytes) and input/output channels for use in responding to critical information requirements of the Commander to include: Friendly Locations; Enemy Locations; Fire Support Plans; Intelligence Information; Air Defense Plans; Combat Support; Combat Service Support; NBC, Engineer Plans, and Aviation and Air Support.

3. S3 Officer (Lt, Abn, AA, In, MTZ, M113, BFV) - Handheld Terminal Unit (HTU):

The S3 Officer's HTU is needed to support the TAC CP when the Battalion Commander is not there with his HTU. Also, the S3 Officer's HTU will be used to automate the functions of coordination of plans and guidance, and the monitoring of operations. The HTU will assist the Battalion S3 Officer by providing 512 Kilobytes of memory and the capability to access and/or update the database of the PCU located at the Main CP.

4. Bn S2 (Lt, Abn, AA, In, MTZ, M113, BFV) - Portable Computer Unit (PCU):

The Battalion S2 requires the capability to rapidly acquire and disseminate intelligence information critical to successful execution of operations. The S2 must provide the Commander a realistic and complete picture of the battlefield. The PCU will

give the section the capability to access, update, and disseminate formatted reports, operational graphics, and intelligence overlays for the situation map maintained in the Force Level Data Base. The S2 must be able to view the Intelligence Summary, Appraisal Worksheet, and the Appraisal Map and to update the information contained in these documents relative to the battalion area of concern and area of influence. The S-2 will not be able to satellite off of the PCU in the S3 Section because of the amount of computer access time needed by both sections.

5. S1/S4 in the Combat Trains (MTZ, M113, BFV) - Portable Computer Unit (PCU):

The S1/S4 in the Combat Trains must provide the Battalion Commander up-to-date status of equipment and personnel resources. The PCU will assist these sections by automating the function of tracking classes of supply, personnel resources and/or a specific item of interest for the Commander. Additionally, the PCU will allow the S1/S4 to access and/or update the database maintained at the Brigade S1/S4. The PCU will allow display of either a detailed friendly forces status chart or a unit summary. The PCU will provide the necessary memory size required to support the S1/S4 requirements. A PCU will also provide the necessary capability to enable the Combat Trains to serve as the alternate main CP.

6. S1/S4 in the Combat Trains (Lt, Abn, AA, IN) - Handheld Terminal Unit (HTU):

An HTU is required because of weight, size, and cube considerations in Light Infantry Units. The memory capacity of an HTU should be sufficient for S1/S4 requirements of Light Forces.

7. HHC Cdr (Lt, Abn, AA, In, MTZ, M113, BFV) - Handheld Terminal Unit (HTU):

The HHC Cdr is provided an HTU to allow elements of the battalion located in the Field trains, access to the Force Level Data Base for tactical and operational information. Also, an HTU will allow the Battalion Commander, the TAC CP, Main CP, and Combat Trains to have a direct automated capability to pass and receive displayed graphic information, orders, reports, and messages to and from elements in the Field Trains.

8. Co Cdr (Lt, Abn, AA, In, MTZ, M113, BFV) - Handheld Terminal (HTU):

The Company Commander requires the capability to rapidly acquire or input information from the Force Level Data Base. In order to determine appropriate actions and direct the activities of his

subordinates, the Company Commander must access and/or update and transmit formatted reports, messages, and graphics of critical information. Also, an HTU will provide the Company Commander a direct automated capability to receive and send displayed graphic information from the Battalion Commander and the Battalion S3 Officer.

9. Platoon Ldr (MTZ, M113, BFV) - Handheld Terminal Unit (HTU):

An HTU automation device is provided to the Platoon Leader to increase the speed by which operational, logistical, and personnel reports are generated. Also, if a BFV Platoon is task organized with an Armor Company, enhanced C2 is maintained by providing the Platoon an automation device just as the Armor Company Commander and other Platoon Leaders.

10. Scout Plt Ldr (MTZ, M113, BFV) - Handheld Terminal Unit (HTU):

The scout platoon leader in all infantry units should be equipped with an HTU. Scouts are the eyes and ears of the battalion. When properly employed, they will generate information of a critical nature for the battalion. The availability of an HTU will provide a means to display what they are finding/seeing and of receiving changes to their missions based on the situation as it is unfolding. They will be busy and in many fast-moving situations, but their value to the Commander S2 and S3 will be greatly enhanced if they are in the automated system. This will be particularly true in nonmechanized units where the scouts (except for the Lt Inf Bn of the Lt Div) have organic mobility and the maneuver companies are foot mobile, once deployed.

SECTION IV. OPERATIONAL BURDENS

OPERATIONAL BURDENS
LT/ABN/AASLT/INF

Identify the operational burdens associated with fulfilling the requirement, all or in part.

a. Transportability: There is no apparent problem with the HTU itself or its portability. However, the need for and use of peripherals (a printer, for example) by staff elements does present a problem in that the host vehicles may not allow room for the system. Additional vehicles or major modification to existing vehicles may be required.

b. Training:

(1) POIs would be changed in the following USAIS courses to teach operation and operator maintenance of the system; Precommand, IOAC, IOBC, and ANCOC.

(2) New equipment training (NET) will have to be conducted.

(3) Units must develop a training program to ensure adequate personnel are trained to operate and maintain the equipment for combat sustainment.

c. Maintenance: Because of the sensitivity of the system and skilled personnel required to maintain it, units will have to carry a stock of replacement systems or simple plug-in replacement parts for those that require maintenance to ensure combat sustainment.

d. Manpower: May require additional manpower for maintenance, added vehicles or continuous monitoring, receipt of messages, and retrieval of information in the staff sections where peripherals are used and receive, reconfigure/consolidate, and send requirements exist.

e. Resource Impact: Until the precise task steps and elements to operate the equipment can be identified, definitive resource requirements cannot be identified. However, if use requires specialized training there will be resource impacts for institutional training because of expanded POIs, instructors/support personnel, equipment, and facility requirements.

f. Operating Impact: The use of digital traffic may necessitate the addition of radios and frequencies to users for the establishment of a separate digital net or the use of packet radio technology that will enable FM radios to pass both analog and digital traffic simultaneously.

OPERATIONAL BURDENS
MTZ/MECH

Identify the operational burdens associated with fulfilling the requirement, all or in part.

a. Transportability:

(1) For those vehicles where no peripherals (such as a printer) are required, organic vehicles may not provide adequate space for the system and still perform its assigned role without some internal reconfiguration.

(2) For staff use where peripherals would be required, additional vehicles or major modifications to existing vehicles may be required.

b. Training:

(1) POIs would be changed in the following USAIS courses to teach operation and operator maintenance of the system; Precommand, IOAC, IOBC, and ANCOC.

(2) New equipment training (NET) will have to be conducted.

(3) Units must develop a training program to ensure adequate personnel are trained to operate and maintain the equipment for combat sustainment.

c. Maintenance: Because of the sensitivity of the system and skilled personnel required to maintain it, units will have to carry a stock of replacement systems or simple plug-in replacement parts for those that require maintenance to ensure combat sustainment.

d. Manpower: May require additional manpower for maintenance, added vehicles or continuous monitoring, receipt of messages, and retrieval of information in the staff sections where peripherals are used and receive, reconfigure/consolidate, and send requirements exist.

e. Resource Impact: Until the precise task steps and elements to operate the equipment can be identified, definitive resource requirements cannot be identified. However, if use requires specialized training there will be resource impacts for institutional training because of expanded POIs, instructors/support personnel, equipment, and facility requirements.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

MFA MAA CORRECTIVE
ACTION SUMMARY

BDP DEF
(1986)

153
127
51

SECTION VI. USER INTERFACE REQUIREMENTS

INFORMATION EXCHANGE

INTERFACE NAME: MCS - CSSCS

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY 90

IOC: FY 90

TYPE IOC FY 90

TYPE SOURCE OF INTERFACE

OPFAC: CBT TRAINS

OPFAC: FSB

APPROVAL: MCS O & O PLAN

FORCE LEVEL:

FORCE LEVEL:

CORPS, DIV, BDE, BN

MESSAGE TITLE	MSG NO.	24 HR VOL			INIT			RECEPTION				TRAFFIC ANALYSIS				CHARACTERS			
		PD	1	2	M	C	A	R	S	X	P	CR	PR	CL	SP	PH	MIN	AVG	MAX
PERSONNEL REPORT	A055	6	1	0			X	X	X	X	3	PP	C		0	60	0	0	10467
		6	0	1			X	X	X	X	3	PP	C		0	60	0	0	10467
COMMANDER'S LOGISTICS REPORT	A066	0	0	0			X	X	X	X	0				0	0	0	0	0
		6	0	1			X	X	X	X	3	PP	S		0	60	0	0	9415
SUPPLY SHORTAGE AND OPN'L CONSTRAINTS	S034	24	1	0			X	X	X	X	4	OO	S		0	60	0	0	1458
		24	0	1			X	X	X	X	4	OO	S		0	60	0	0	1458

INFORMATION EXCHANGE

INTERFACE NAME: MCS - ASAS

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY

IOC: FY 90

TYPE IOC FY

TYPE SOURCE OF INTERFACE

OPFAC: MAIN CP

OPFAC: DIV MAIN/TAC CP

APPROVAL: MCS O & D PLAN

FORCE LEVEL:

FORCE LEVEL:

CORPS, DIV, BDE, BN

CORPS, DIV, BDE, BN

MESSAGE TITLE	MSG NO.	24 HR VOL			INIT			RECEPTION				TRAFFIC ANALYSIS					CHARACTERS		
		PD	1	2	M	C	A	R	S	X	P	CR	PR	CL	SP	PH	MIN	AVG	MAX
SPOT REPORT	A331	0	0	0			X	X	X	0					0	0	0	0	0
		0	0	0			X	X	X	0					0	0	0	0	0
INTSEM	G131	24	1	0			X	X	X	5	ZZ	S			0	30	0	0	13000
		0	0	0			X	X	X	0					0	0	0	0	13000
DISUM	G130	24	1	0			X	X	X	3	ER	C			0	180	0	0	1110
		0	0	0			X	X	X	0					0	0	0	0	1110
RECEXREP	C101	24	1	0			X	X	X	0					0	0	0	0	0
		24	0	1			X	X	X	0					0	0	0	0	0
REQUEST FOR INFORMATION	F014	24	8	0			X	X	X	4	PP	S			0	10	0	0	0
		24	0	8			X	X	X	4	PP	S			0	10	0	0	0
RETURN ON REQUEST FOR INFORMATION	F015	24	8	0			X	X	X	4	PP	S			0	10	0	0	0
		24	0	8			X	X	X	4	PP	S			0	10	0	0	0
TACREP	C111	24	4	0			X	X	X	4	00				0	0	0	0	0
		24	0	4			X	X	X	4	00				0	0	0	0	0
INTREP	C110	0	0	0			X	X	X	0					0	0	0	0	0
		24	0	2			X	X	X	3	PP				0	0	0	0	0

AD-A191 646

ANALYSIS OF TACTICAL AUTOMATION REQUIREMENTS FOR THE
MANEUVER FUNCTIONAL AREA(U) ARMY COMBINED ARMS COMBAT
DEVELOPMENT ACTIVITY FORT LEAVENWORTH. L J DACUNTO

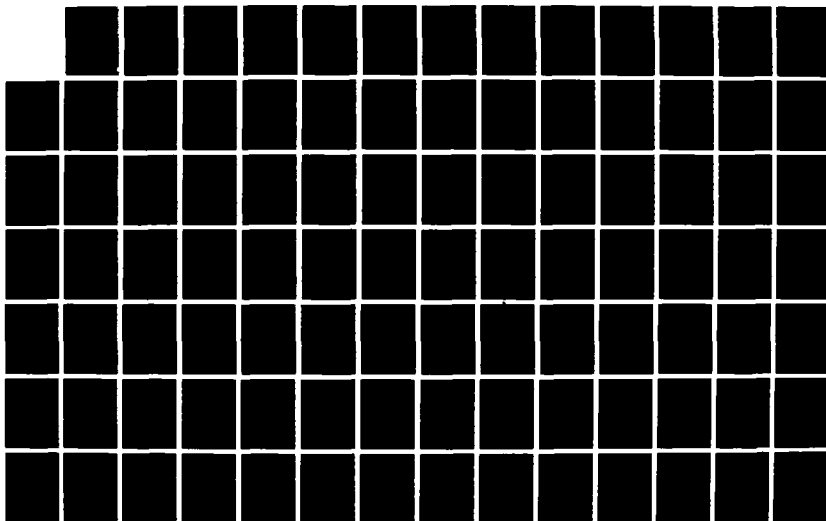
2/4

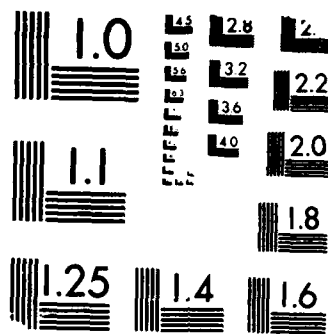
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MICROCOPY RESOLUTION TEST CHART
 (NBS 1963-A)

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

G-VII-1

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HHT	PCU		TCU		DEV ITEM	DESIGNATED USER
			COMPO		(V1)	(V2)	(V1)	(V2)		
			1-AA							
			2-NG							
3-AR										
07245J	DIV	INF BN MECH (M113)	8	3(24)	0(0)	3(24)	0(0)	0(0)	0(0)	HTU - BN CDR.
07245J			35	3(105)	0(0)	3(105)	0(0)	0(0)	0(0)	SGT PLT LDR & SGT
07245J			4	3(12)	0(0)	3(12)	0(0)	0(0)	0(0)	PCU - S3 SEC,S2,S1/4
07245J		RIFLE CO MECH (M113)	32	1(32)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07245J			140	1(140)	0(0)	0(0)	0(0)	0(0)	0(0)	
07245J			16	1(16)	0(0)	0(0)	0(0)	0(0)	0(0)	
07245J		AA CO. MECH (M113)	8	1(8)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07245J			35	1(35)	0(0)	0(0)	0(0)	0(0)	0(0)	
07245J			4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	64	0	24	0	0	0	
			2	280	0	105	0	0	0	
			3	32	0	12	0	0	0	
GRAND TOTALS:				376	0	141	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:	HHT	PCU		TCU		DEV ITEM	DESIGNATED USER
			COMPO		(V1)	(V2)	(V1)	(V2)		
			1-AA							
			2-NG							
3-AR										
072450	DIV	HHC, INF BN MECH (BRADLEY)	37	0(0)	0(0)	3(111)	0(0)	0(0)	4(148)	DEV ITEM - BN CDR/S3
072450			7	0(0)	0(0)	3(21)	0(0)	0(0)	4(28)	SCT PLT LDR/PLT SGT
072450			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC.S2,S1/4
072450		RIFLE CO, MECH	148	0(0)	0(0)	0(0)	0(0)	0(0)	1(148)	DEV ITEM - CO CDR
072450			28	0(0)	0(0)	0(0)	0(0)	0(0)	1(28)	
072450			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
072450		RIFLE PLT, MECH	444	0(0)	0(0)	0(0)	0(0)	0(0)	1(444)	DEV ITEM - PLT LDR
072450			84	0(0)	0(0)	0(0)	0(0)	0(0)	1(84)	
072450			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
072450		AA CO, MECH	37	0(0)	0(0)	0(0)	0(0)	0(0)	1(37)	DEV ITEM - CO CDR
072450			7	0(0)	0(0)	0(0)	0(0)	0(0)	1(7)	
072450			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
072450		AA PLT, MECH	111	0(0)	0(0)	0(0)	0(0)	0(0)	1(111)	DEV ITEM - PLT LDR
072450			21	0(0)	0(0)	0(0)	0(0)	0(0)	1(21)	
072450			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	0	0	111	0	0	588	
			2	0	0	21	0	0	168	
			3	0	0	0	0	0	0	
GRAND TOTALS:				0	0	132	0	0	1056	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
07015H	DIV	HHC, INF BN	5	3(15)	0(0)	3(15)	0(0)	0(0)	0(0)	HTU - BN CDR,
07015H			59	3(177)	0(0)	3(177)	0(0)	0(0)	0(0)	SCT PLT LDR & SGT
07015H			3	3(9)	0(0)	3(9)	0(0)	0(0)	0(0)	PCU - S3 SEC,S2,S1/4
07015H		RIFLE CO, INF BN	15	1(15)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07015H			177	1(177)	0(0)	0(0)	0(0)	0(0)	0(0)	
07015H			9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	
07015H		CSC, INF BN	5	1(5)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07015H			59	1(59)	0(0)	0(0)	0(0)	0(0)	0(0)	
07015H			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	35	0	15	0	0	0	
			2	413	0	177	0	0	0	
			3	21	0	9	0	0	0	
GRAND TOTALS:				469	0	201	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO		PCU		TCU		DEV ITEM		DESIGNATED
			1-AA	HHT							
			2-NG		(V1)	(V2)	(V1)	(V2)			USER
			3-AR								
07035L	DIV	HHC, ABN BN	10	3(30)	0(0)	3(30)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR,
07035L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	SCT PLT LDR & SGT
07035L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC,S2,S1/4
07035L		RIFLE CO, ABN BN	30	1(30)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07035L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
07035L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
07035L		AA CO, ABN BN	10	1(10)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07035L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
07035L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:											
			1	70	0	30	0	0	0	0	
			2	0	0	0	0	0	0	0	
			3	0	0	0	0	0	0	0	
GRAND TOTALS:				70	0	30	0	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
07055L	DIV	HHC, AASLT BN	11	3(33)	0(0)	3(33)	0(0)	0(0)	0(0)	HTU - BN CDR
07055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	SCT PLT LDR & SGT
07055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC,S2,S1/4
07055L		RIFLE CO AASLT	33	1(33)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
07055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
07055L		AA CO, AASLT	11	1(11)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
07055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	77	0	33	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				77	0	33	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	EHT	PCU		TCU		DEV ITEM DESIGNATED	
			COMPO							
			1-AA							
			2-WG							
			3-AR		(V1)	(V2)	(V1)	(V2)	USER	
07015L	DIV	HHC, INF BN (L)	29	3(87)	0(0)	3(87)	0(0)	0(0)	0(0)	HTU - BN CDR
07015L			11	3(33)	0(0)	3(33)	0(0)	0(0)	0(0)	SCT PLT LDR & SGT
07015L			3	3(9)	0(0)	3(9)	0(0)	0(0)	0(0)	PCU - S3 SEC.S2,S1/4
07015L		RIFLE CO, INF BN (L)	87	1(87)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07015L			33	1(33)	0(0)	0(0)	0(0)	0(0)	0(0)	
07015L			9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	
07015L		CSC	29	1(29)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
07015L			11	1(11)	0(0)	0(0)	0(0)	0(0)	0(0)	
07015L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	203	0	87	0	0	0	
			2	77	0	33	0	0	0	
			3	21	0	9	0	0	0	
GRAND TOTALS:				301	0	129	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

COE	LEVEL	TYPE OF UNIT	TAA 92:		PCU				TCU				DEV ITEM DESIGNATED	
			COMPO	HET										
			1-AA											
			2-NG											
			3-AR		(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	USER	
07065D	DIV	HHC, LAB	2	3(5)	0(0)	3(5)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR	
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	SGT PLT LDR & SGT	
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - SS SEC.S2,S1/4	
07065D		RIFLE CO	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07065D		CSC, LAB	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07065D		PLT, CSC	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - SGT PLT LDR	
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07065D			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
SUBTOTALS:														
			1	14	0	5	0	0	0	0	0	0		
			2	0	0	0	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0	0		
GRAND TOTALS:				14	0	5	1	1	0	0	0	0		

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:		PCU				TCU				DEV ITEM DESIGNATED	
			COMPO	HET										
			1-AA											
			2-NG		(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	USER	
073150	BN	HHC, MTN BN	0	01 01	01 01	31 31	01 01	01 01	01 01	01 01	01 01	01 01	HTU - BN CDR	
073150			1	31 31	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	SCT PLT LDR & SGT	
073150			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	PCU - S3 SEC,S2,S1/4	
073150		RIFLE CO	0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	HTU - CO CDR	
073150			3	11 31	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
073150			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
073150		CSC, MTN BN	0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
073150			1	11 11	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	HTU - CO CDR	
073150			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
SUBTOTALS:			1	0	0	3	0	0	0	0	0	0		
			2	7	0	0	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0	0		
GRAND TOTALS:				7	0	3	0	0	0	0	0	0		

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 90		PCU		TCU		DEV ITEM DESIGNATED	
			COMPO	HET						
			1-AA		(V1)	(V2)	(V1)	(V2)	USER	
			2-NG							
3-AR										
020950	DIV	HHC. CAB (L)	2	1(2)	0(0)	3(6)	0(0)	0(0)	0(0)	HTU - BN CDR
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - SS SEC.S2,S1/4
020950		ASSAULT GUN CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950		RIFLE CO	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950		CSC	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
020950		PLT. CSC	2	2(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - SGT PLT LDR
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	& PLT SGT
020950			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	14	0	6	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				14	0	6	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:											
			COMPO	HET		FCU		TCU					DEV ITEM DESIGNATED	
			1-AA											USER
			2-NG			(V1)	(V2)	(V1)	(V2)					
			3-AR											
07115H	CORPS	HHC, TLAT	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR	
07115H			4	1(4)	0(0)	3(12)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - SB SEC.S2,S1/4	
07115H			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07115H		AA CO, TLAT	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CC CDR	
07115H			20	1(20)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
07115H			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
SUBTOTALS:														
			1	0	0	0	0	0	0	0	0	0		
			2	24	0	12	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0	0		
GRAND TOTALS:				24	0	12	0	0	0	0	0	0		

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92			PCU				TCU				DEV ITEM DESIGNATED	
			COMPO	HHT		(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)		USER
			1-AA												
			2-NG												
			3-AR												
07215J	BDE	HHC, PII	1	1	1	0	0	3	3	0	0	0	0	0	HTU - BN CDR
07215J			0	0	0	0	0	0	0	0	0	0	0	0	PCU - S3 SEC, S2, S1/4
07215J			0	0	0	0	0	0	0	0	0	0	0	0	
07215J		RIFLE CO, PII	3	1	3	0	0	0	0	0	0	0	0	0	HTU - CO CDR
07215J			0	0	0	0	0	0	0	0	0	0	0	0	
07215J			0	0	0	0	0	0	0	0	0	0	0	0	
SUBTOTALS:			1	4	0	0	3	0	0	0	0	0	0		
			2	0	0	0	0	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0	0	0		
GRAND TOTALS:				4	0	0	3	0	0	0	0	0	0		

APPENDIX H

ARMOR SCHOOL STUDY DELIVERABLES

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: ARMOR AND CAV UNITS

ECHELON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	POSITION/NAVIGATION	X	
2	SYSTEMS INTERFACES	X	
3	GRAPHICS	X	
4	REQUEST/ADJUST FS (CALL FOR FIRE)	X	
5	FIRE SUPPORT PLANNING ELEMENTS	X	
6	ALERTS (NBC,FAAD,RECON STATUS)	X	
7	NBC 1	X	
8	NBC 3	X	
9	NBC 4	X	
10	NBC 5	X	
11	EFFECTIVE DOWNWIND MESSAGE	X	
12	DOSIMETRY REPORT	X	
13	STRIKEWARN	X	
14	CHEMWARN	X	
15	SHELL/MORT/BOMREP	X	
16	SPOT REPORT	X	
17	SITUATION REPORT	X	
18	CONTACT REPORT	X	
19	BRIDGE REPORT	X	
20	MINEFIELD REPORT	X	
21	OBSTACLE REPORT	X	
22	ROUTE RECON REPORT		X
23	AMMO STATUS REPORT	X	
24	POL STATUS REPORT	X	
25	AMMO REQUEST	X	
26	POL REQUEST	X	
27	EQUIPMENT STATUS REPORT	X	
28	BATTLE LOSS SPOT REPORT	X	
29	MEDICAL EVACUATION REQUEST	X	
30	PERSONNEL BATTLE LOSS REPORT	X	
31	WARNING ORDER	X	
32	OPERATIONS ORDER	X	
33	FRAGMENTARY ORDER (FRAGO)	X	
34	PLANS AND ANALYSIS AIDS	X	
35	INTELLIGENCE SUMMARY REPORT	X	
36	MIJI REPORT	X	
37	POW/CAPTURED MATERIAL REPORT	X	
38	PERSONNEL DAILY SUMMARY REPORT	X	
39	SENSITIVE ITEMS REPORT	X	
40	EMBEDDED TRAINING	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: ARMOR AND CAV UNITS

ECHELON: CO

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	POSITION/NAVIGATION	X	
2	SYSTEMS INTERFACES	X	
3	GRAPHICS	X	
4	REQUEST/ADJUST FS (CALL FOR FIRE)	X	
5	FIRE SUPPORT PLANNING ELEMENTS	X	
6	ALERTS (NBC,FAAD,RECON STATUS)	X	
7	NBC 1	X	
8	NBC 3	X	
9	NBC 4	X	
10	NBC 5	X	
11	EFFECTIVE DOWNWIND MESSAGE	X	
12	DOSIMETRY REPORT	X	
13	STRIKEWARN	X	
14	CHEMWARN	X	
15	SHELL/MORT/BOMREP	X	
16	SPOT REPORT	X	
17	SITUATION REPORT	X	
18	CONTACT REPORT	X	
19	BRIDGE REPORT	X	
20	MINEFIELD REPORT	X	
21	OBSTACLE REPORT	X	
22	ROUTE RECON REPORT		X
23	AMMO STATUS REPORT	X	
24	POL STATUS REPORT	X	
25	AMMO REQUEST	X	
26	POL REQUEST	X	
27	EQUIPMENT STATUS REPORT	X	
28	BATTLE LOSS SPOT REPORT	X	
29	MEDICAL EVACUATION REQUEST	X	
30	PERSONNEL BATTLE LOSS REPORT	X	
31	WARNING ORDER	X	
32	OPERATIONS ORDER	X	
33	FRAGMENTARY ORDER (FRAGO)	X	
34	PLANS AND ANALYSIS AIDS	X	
35	MICI REPORT	X	
36	POW/CAPTURED MATERIAL REPORT	X	
37	PERSONNEL DAILY SUMMARY REPORT	X	
38	SENSITIVE ITEMS REPORT	X	
39	EMBEDDED TRAINING	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: ARMOR AND CAV UNITS

ECHELON: PLT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	POSITION/NAVIGATION	X	
2	SYSTEMS INTERFACES	X	
3	GRAPHICS	X	
4	REQUEST/ADJUST FS (CALL FOR FIRE)	X	
5	FIRE SUPPORT PLANNING ELEMENTS	X	
6	ALERTS (NBC,FAAD,RECON STATUS)	X	
7	NBC 1	X	
8	NBC 3	X	
9	NBC 4	X	
10	NBC 5	X	
11	EFFECTIVE DOWNWIND MESSAGE	X	
12	DOSIMETRY REPORT	X	
13	STRIKEWARN	X	
14	CHEMWARN	X	
15	SHELL/MORT/BOMREP	X	
16	SPOT REPORT	X	
17	SITUATION REPORT	X	
18	CONTACT REPORT	X	
19	BRIDGE REPORT	X	
20	MINEFIELD REPORT	X	
21	OBSTACLE REPORT	X	
22	ROUTE RECON REPORT		X
23	AMMO STATUS REPORT	X	
24	POL STATUS REPORT	X	
25	AMMO REQUEST	X	
26	POL REQUEST	X	
27	EQUIPMENT STATUS REPORT	X	
28	BATTLE LOSS SPOT REPORT	X	
29	MEDICAL EVACUATION REQUEST	X	
30	PERSONNEL BATTLE LOSS REPORT	X	
31	WARNING ORDER	X	
32	OPERATIONS ORDER	X	
33	FRAGMENTARY ORDER (FRAGO)	X	
34	PLANS AND ANALYSIS AIDS	X	
35	MII REPORT	X	
36	POW/CAPTURED MATERIAL REPORT	X	
37	PERSONNEL DAILY SUMMARY REPORT	X	
38	SENSITIVE ITEMS REPORT	X	
39	EMBEDDED TRAINING	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: ARMOR AND CAV UNITS

ECHELON: IND VEH

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	POSITION/NAVIGATION	X	
2	SYSTEMS INTERFACES	X	
3	GRAPHICS	X	
4	REQUEST/ADJUST FS (CALL FOR FIRE)	X	
5	FIRE SUPPORT PLANNING ELEMENTS	X	
6	ALERTS (NBC,FAAD,RECON STATUS)	X	
7	NBC 1	X	
8	NBC 3	X	
9	NBC 4	X	
10	NBC 5	X	
11	EFFECTIVE DOWNWIND MESSAGE	X	
12	DOSIMETRY REPORT	X	
13	STRIKEWARN	X	
14	CHEMWARN	X	
15	SHELL/MORT/BOMREP	X	
16	SPOT REPORT	X	
17	SITUATION REPORT	X	
18	CONTACT REPORT	X	
19	BRIDGE REPORT	X	
20	MINEFIELD REPORT	X	
21	OBSTACLE REPORT	X	
22	ROUTE RECON REPORT		X
23	AMMO STATUS REPORT	X	
24	POL STATUS REPORT	X	
25	AMMO REQUEST	X	
26	POL REQUEST	X	
27	EQUIPMENT STATUS REPORT	X	
28	BATTLE LOSS SPOT REPORT	X	
29	MEDICAL EVACUATION REQUEST	X	
30	PERSONNEL BATTLE LOSS REPORT	X	
31	MIFF REPORT	X	
32	POW/CAPTURED MATERIAL REPORT	X	
33	SENSITIVE ITEMS REPORT	X	
34	EMBEDDED TRAINING	X	

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: MI ARMOR UNITS

ECHOLON: BN

OPERATOR: BN COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMET TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DEW GRAPHICS	PROC DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3
REQUEST ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	1	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	1	3
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3
AMMO REQUEST	3	3	1	3	1	3	3	3	2	1	1	1	1	3
POL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MEDICAL EVACUATION REQUEST	3	2	3	3	1	3	3	3	3	3	1	1	3	3
PERSONNEL BATTLE LOSS REPORT	3	2	1	1	1	3	3	3	1	1	1	1	1	3
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 ARMOR UNITS

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TOH SEN FREE GRAPHICS	PROG DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
INTELLIGENCE SUMMARY REPORT	3	1	3	1	1	3	3	3	3	3	1	2	2	3
MII REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: M60 ARMOR UNITS

ECHOLON: BN

OPERATOR: BN COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH FREE GRAPHICS	SEN DRW BUS	PROC DATA
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	1	3	3
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	3
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	3
SHELL/WORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	3	3	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	3
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	3	3
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3	3
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3	3
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	3
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	3
AMMO REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	3
POL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	3
EQUIPMENT STATUS REPORT	3	3	1	1	1	3	3	3	1	1	1	1	1	3	3
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	3	3	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	3
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	3	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M60 ARMOR UNITS

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
INTELLIGENCE SUMMARY REPORT	3	1	3	1	1	3	3	3	3	3	1	2	2	3
MIJI REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: ARMOR UNITS MI

ECHOLON: BN

OPERATOR: BN S3 OFFICER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH FREE GRAPHICS	SEM DRW DATA	PROC BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3	
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	2	1	3	
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3	
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	1	3	
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3	
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3	
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3	
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3	
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3	
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3	
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	3	
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3	
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3	
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	
AMMO REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	
POL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	3	3	
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	3	3	

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: ARMOR UNITS M1

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN S3 OFFICER

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	CH FREE GRAPHICS	SEN DBW BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
INTELLIGENCE SUMMARY REPORT	3	1	3	1	1	3	3	3	3	3	1	2	2	3
MIJI REPORT	3	3	2	1	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: ARMOR UNITS M60

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN S3 OFFICER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH FREE DRW GRAPHICS	SEN DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	2	1	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	3	3	1	3	1	3
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
SHELL/MORT/BOMBREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	3
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3
AMMO REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3
POL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	3	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: ARMOR UNITS M60

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN S3 OFFICER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DRW GRAPHICS	PROC DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
INTELLIGENCE SUMMARY REPORT	3	1	3	1	1	3	3	3	3	3	1	2	2	3
MIIC REPORT	3	3	2	1	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: M1 & M60 ARMOR UNITS

ECHOLON: BN

OPERATOR: BN S2 AND S3 SEC

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	3	3	2	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	3	3	2	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	3	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	3	3	3	3	3	1	1	2	3
ALERTS (NBC,PAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	1	2	3
NBC 3	3	3	3	3	1	3	3	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	3	1	3	3	3	3	3	1	1	2	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	3	1	3	3	3	3	3	1	1	2	3
DOXIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	1	1
STRIKWARN	3	3	3	3	1	3	3	3	3	3	1	1	2	3
CHEMWARN	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	1	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	2	1	1	1	2
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	2	3
OBSTACLE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	2	3
ROUTE RECON REPORT	3	3	3	2	3	3	3	3	3	2	1	1	2	2
AMMO STATUS REPORT	3	3	3	3	3	3	3	3	2	3	1	1	1	3
POL STATUS REPORT	3	3	3	3	3	3	3	3	2	3	1	1	1	3
AMMO REQUEST	3	1	3	3	3	3	3	3	2	3	1	1	1	3
POL REQUEST	3	3	3	3	3	3	3	3	3	3	1	1	1	3
EQUIPMENT STATUS REPORT	3	3	1	3	3	3	3	3	1	1	1	1	1	1
BATTLE LOSS SPOT REPORT	3	3	3	1	3	3	3	3	3	3	1	1	1	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	1	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	3	3	3	3	1	1	1	1	1	1
WARNING ORDER	3	3	3	3	3	3	3	3	3	3	1	1	1	1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 & M60 ARMOR UNITS

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN S2 AND S3

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DRW GRAPHICS	PROC DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	2	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	2	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	2	2
INTELLIGENCE SUMMARY REPORT	3	3	3	1	3	3	3	3	3	3	1	2	2	3
MIJI REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1
PCW/CAPTURED MATERIAL REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
PERSONNEL DAILY SUMMARY REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	2	3

HARDWARE SOLUTION: PCU(V2)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 & M60 ARMOR UNITS

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN S1/S4 CBT TRAINS

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH FREE GRAPHICS	SEN DRW BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	3	3	2	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	3	3	2	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	3	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	3	3	3	3	3	1	1	2	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	1	2	3
NBC 3	3	3	3	3	1	3	3	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	3	1	3	3	3	3	3	1	1	2	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	3	1	3	3	3	3	3	1	1	2	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	1	1
STRIKEWARN	3	3	3	3	1	3	3	3	3	3	1	1	2	3
CHEMWARN	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SHELL/WORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	1	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	2	1	1	1	2
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	2	3
OBSTACLE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
ROUTE RECON REPORT	3	3	3	2	3	3	3	3	3	2	1	1	2	2
AMMO STATUS REPORT	3	3	3	3	3	3	3	3	2	3	1	1	1	3
POL STATUS REPORT	3	3	3	3	3	3	3	3	2	3	1	1	1	3
AMMO REQUEST	3	3	3	3	3	3	3	3	2	3	1	1	1	3
POL REQUEST	3	3	3	3	3	3	3	3	3	3	1	1	1	3
EQUIPMENT STATUS REPORT	3	3	1	3	3	3	3	3	1	1	1	1	1	2
BATTLE LOSS SPOT REPORT	3	3	3	3	3	3	3	3	3	3	1	1	1	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	1	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	2	3	3	3	1	1	1	1	1	1
WARNING ORDER	3	3	3	3	3	3	3	3	3	3	1	1	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 & M60 ARMOR UNITS

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN S1/S4 CBT TRAINS

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON	ACT DIS-	OPN GRAP	FM TEXT	FREE TEXT	AUDIO/ VISUAL	PRO- CESS	STORE DATA	DIGITAL MAP	POS/ NAV	AUTO TGT	BTFLD SENSOR	ATCH FREE DRW	SEN DATA
	MOVE	PLAY	HICS	MSG	MSG	ALERT	DATA		BACKGRD	DATA	ACQ	INPUT	GRAPHICS	BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	2	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	2	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	2	2
INTELLIGENCE SUMMARY REPORT	3	3	3	1	3	3	3	3	3	3	1	2	2	3
MICT REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3-
PERSONNEL DAILY SUMMARY REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	2	3

HARDWARE SOLUTION: PCU(V2)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

ECHOLON: CO

TYPE UNIT: MI ARMOR UNITS

OPERATOR: CO CLR AND XC

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	PFMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TECH SEN FREE DRW GRAPHICS	PROC DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	1	3
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	3
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3
AMMO REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3
POL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	1	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 ARMOR UNITS

CANDIDATE SOLUTIONS
ECHOLON: CO

OPERATOR: CO CDR AND HQ

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DEW DATA	PROG DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3	
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3	
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2	
INTELLIGENCE SUMMARY REPORT	3	1	3	1	1	3	3	3	3	3	1	2	2	3	
MISC REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1	
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2	
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2	
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1	
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3	

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: M60 ARMOR UNITS

ECHOLON: CO

OPERATOR: CO CDR AND XO

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH FREE DRW GRAPHICS	SEN DATA	PROC BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3	
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3	
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3	
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3	
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3	
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3	
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3	
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3	
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	1	3	
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3	
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3	
BRIDGE REPORT	3	3	3	3	1	3	3	3	1	3	1	1	1	3	
MINFIELD REPORT	3	3	3	3	1	3	3	3	1	3	1	1	3	3	
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3	
ROUTE RECON REPORT	3	3	3	3	1	3	1	3	3	3	1	1	3	3	
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	
FUEL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	
AMMO REQUEST	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
FUEL REQUEST	3	3	1	3	1	3	1	3	1	1	1	1	1	3	
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
BATTLE LOSS SPOT REPORT	3	3	3	1	1	3	1	1	1	3	1	1	1	3	
MEDICAL EVACUATION REQUEST	3	3	3	1	1	3	3	3	1	3	1	1	1	3	
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
WARNING CRIBER	3	3	3	3	1	1	1	3	1	1	1	1	1	3	

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M60 ARMOR UNITS

CANDIDATE SOLUTIONS
ECHELON: CO

OPERATOR: CO, CDR AND XO

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER MON	ACT DIS- PLAY	COPY GRAPHICS	FORMAT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	STLFLD SENSOR INPUT	TOH SEN FREE DRW GRAPHICS	PROC DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
INTELLIGENCE SUMMARY REPORT	3	1	3	1	1	3	3	3	3	3	1	2	2	3
MIU REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 ARMOR UNITS

CANDIDATE SOLUTIONS

ECHOLON: PLT

OPERATOR: PLT LDR AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER MON	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	1	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	1	1	3	2	3	3	3	1	1	2	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3
DOSEMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	3	1
STRIKEMARK	3	3	3	1	1	3	2	3	3	3	1	1	2	3
THREATEN	3	3	3	1	1	3	2	3	3	3	1	1	1	3
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SPOT REPORT	3	3	3	3	1	3	3	1	1	1	2	2	3	1
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	1
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	1
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	1
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	1
AXMC STATUS REPORT	3	3	3	3	1	3	3	3	2	1	1	1	1	1
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	1
AXMC REQUEST	3	3	1	3	1	3	3	3	2	1	1	1	1	1
POL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	1
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	1
VEHICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	3	1
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
WARNING REEF	3	3	3	3	2	3	3	3	3	3	1	1	3	1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 ARMOR UNITS

CANDIDATE SOLUTIONS

ECHOLON: PLT

OPERATOR: PLT LOR AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	ETU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROG DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
MIUT REPORT	3	3	2	3	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	3	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	3	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: ARMOR UNITS MI

ECHOLON: PLT

OPERATOR: SGT PLT LDR AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	HTLFLD SENSOR INPUT	ATCH FREE DRW GRAPHICS	SEN DATA	PROC BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3	
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	2	1	3	
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3	
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3	
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3	
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3	
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3	
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3	
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	3	3	1	3	1	3	
STRIKEMARK	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
CHEMWARX	3	3	3	1	1	3	2	3	3	3	1	1	2	3	
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	3	3	
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3	
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3	
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3	
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	
POL STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	
AMMO REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	
POL REQUEST	3	3	1	3	1	3	3	3	1	2	1	1	1	3	
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	1	3	1	1	1	3	
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	
PWC/CACTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	1	2	1	1	1	3	

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: ARMOR UNITS MI

CANDIDATE SOLUTIONS
ECHOLON: PLT

OPERATOR: SGT PLT LIA AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	3	3
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
MIJ REPORT	3	3	2	1	1	3	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: ASMOR UNITS M60

ECHOLON: PLT

OPERATOR: SGT PLT LIE AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	CFMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DRW	PROC DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	2	1	3	3
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
NBC 5	3	3	3	3	1	3	2	3	3	3	1	1	2	3	3
EFFECTIVE LOWWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	3
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3	3
SHELL/MORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	3
MINFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	3
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	1	3	3
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3	3
AMMO STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	3
POU STATUS REPORT	3	3	3	3	1	3	3	3	1	1	1	1	1	3	3
AMMO REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	3
POU REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3	3
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	3
BATTLE LOSS SPOT REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	3	3	3	3	3	1	1	1	3	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3	3
WARNING ORDER	3	3	3	3	2	3	3	3	3	3	1	1	1	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: ARMOR UNITS M60

CANDIDATE SOLUTIONS

ECHOLON: PLT

OPERATOR: SGT PLT LDR AND PLT SGT

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DRW GRAPHICS	PROC DATA BUS
OPERATIONS ORDER	2	3	3	3	2	3	3	3	3	3	1	1	3	3
FRAGMENTARY ORDER (FRAGO)	3	3	3	3	2	3	3	3	3	3	1	1	3	3
PLANS AND ANALYSIS AIDS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
MISS REPORT	3	3	2	1	1	3	3	3	1	1	1	1	1	1
POW/CAPTURED MATERIAL REPORT	3	3	2	3	1	3	3	3	2	2	1	1	1	2
PERSONNEL DAILY SUMMARY REPORT	3	3	2	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: HTU (2)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MI ARMOR UNITS
 CANDIDATE SOLUTIONS
 ECHELON: 1ND VEH
 OPERATOR: TANK COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMPT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTCLFLD SENSOR INPUT	TCH SEM FREE DRW GRAPHICS	PROC DATA BUS
POSITION/NAVIGATION	3	3	3	2	2	2	3	3	3	3	2	2	3	3
SYSTEMS INTERFACES	3	3	2	2	2	3	3	3	2	3	3	3	1	3-
GRAPHICS	3	3	3	1	1	2	3	3	3	3	2	3	3	3
REQUEST/ADJUST FS (CALL FOR FIRE)	3	3	3	3	1	2	3	3	3	3	1	1	2	3
FIRE SUPPORT PLANNING ELEMENTS	3	3	3	3	1	2	3	3	3	2	1	1	3	3
ALERTS (NBC,FAAD,RECON STATUS)	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 1	3	3	3	3	1	3	3	3	3	3	1	3	3	3
NBC 3	3	2	3	1	1	3	2	3	3	3	1	1	2	3
NBC 4	3	3	3	3	1	3	3	3	3	3	1	3	1	3
NBC 5	3	3	3	1	1	3	2	3	3	3	1	1	2	3
EFFECTIVE DOWNWIND MESSAGE	3	3	3	1	1	3	2	3	3	3	1	1	2	3
DOSIMETRY REPORT	3	3	3	3	1	3	3	3	1	1	1	3	3	1
STRIKEWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
CHEMWARN	3	3	3	1	1	3	2	3	3	3	1	1	2	3
SHELL/WORT/BOMREP	3	3	3	3	1	3	3	3	3	3	1	1	2	3
SPOT REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
SITUATION REPORT	3	3	3	3	1	3	3	3	3	3	2	2	3	3
CONTACT REPORT	3	3	3	3	1	3	3	3	3	3	3	3	1	3
BRIDGE REPORT	3	3	3	3	1	3	3	3	3	3	1	1	1	3
MINEFIELD REPORT	3	3	3	3	1	3	3	3	3	3	1	1	3	3
OBSTACLE REPORT	3	3	3	3	2	3	3	3	3	3	1	1	3	3
ROUTE RECON REPORT	3	3	3	3	2	3	3	3	3	3	2	2	3	3
AXMO STATUS REPORT	3	3	3	3	1	3	3	3	2	1	1	1	1	3
FCL STATUS REPORT	3	3	3	3	1	3	3	3	2	1	1	1	1	3
AXMO REQUEST	3	3	1	3	1	3	1	3	1	2	1	1	1	3
FCL REQUEST	3	3	1	3	1	3	3	3	2	2	1	1	1	3
EQUIPMENT STATUS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
BATTLE LOSS SPOT REPORT	3	3	1	3	1	1	3	3	3	3	1	1	1	3
MEDICAL EVACUATION REQUEST	3	3	3	3	1	1	3	3	3	3	1	1	3	3
PERSONNEL BATTLE LOSS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	3
POW/CAPTURED MATERIAL REPORT	3	3	3	3	1	3	3	3	2	2	1	1	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: M1 ARMOR UNITS

CANDIDATE SOLUTIONS
ECHELON: IND VEH

OPERATOR: TANK COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
PERSONNEL DAILY SUMMARY REPORT	3	3	3	3	1	3	2	2	2	2	1	1	1	2
SENSITIVE ITEMS REPORT	3	3	1	3	1	3	3	3	1	1	1	1	1	1
EMBEDDED TRAINING	3	3	3	3	2	3	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: DEV ITEM

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

SECTION III. OPERATIONAL BENEFITS

OPERATIONAL BENEFITS

Type Units: Armor BN, Div Cav SQDN and ACR SQDN (M60A3/M901, M1 Series/BFVS, and better equipped units).

1. Summary Master Listing of Operational Benefits:

- a. Unburdens the user.
- b. Performs those manual, time-consuming functions which do not require cognitive thinking.
- c. Reduces manual errors associated with communicating information over voice radio.
- d. Provides timely, accurate information.
- e. Provides information to the user in readily usable formats (user can assimilate more information if properly packaged).
- f. Allows the user to quickly pass graphic information.
- g. Enhances unit synchronization to execute tactical operations.
- h. Enhances unit command and control
- i. Promotes the rapid passing of accurate, combat service support information.
- j. Enhances combat support (CS) and combat service support (CSS) for the forward deployed forces.
- k. Greatly reduces "stubby pencil" reporting.
- l. Provides the user with a near realtime tactical situational picture.
- m. Promotes rapid dissemination of FAAD alerts within the Close Combat Heavy Force.
- n. Reduces the time it takes to make tactical decisions.
- o. Standardizes certain tactical operating procedures (reporting) and reinforces certain military skills (military graphics and later map-reading).
- p. Assists in position location, orientation, and navigation.

- q. Provides some capability for identification of friend or foe.
- r. Assists in the performance of security (weapon system orientation and designation of sectors of fire).
- s. Assists in prognostics and diagnostics.
- t. Assists in planning, control, and distribution of direct fires.
- u. Provides rapid packaging and passing of indirect fire requests.
- v. Enhances operational planning.
- w. Provides rapid dissemination of alerts and orders.
- x. Promotes element synchronization to execute CSS operations.
- y. Provides for rapid collection, processing, and dissemination of combat, combat support, and combat service support information.
- z. Reduces the time spent on FM voice radio communications
- aa. Improves the content of FM voice radio communications.
- bb. Provides an immediate storage, updating, overlay, and reproductive capability.
- cc. Provides access into other functional area automated systems for applicable intelligence information.
- dd. Provides a capability rapidly generate combat power at the right time and place to exploit enemy weaknesses.
- ee. Increases kill percentages.

2. Operational Benefits by Key Bn/Sqdn Duty Positions:

- a. BN/SQDN CDR: a,b,c,d,e,f,g,h,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,dd,ee.
- b. BN/SQDN S3: a,b,c,d,e,f,g,h,j,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,dd,ee.
- c. BN/SQDN S3 SEC: a,b,c,d,e,f,g,j,k,l,m,o,p,q,t,u,v,w,z,aa,bb,cc.
- d. BN/SQDN S2: a,b,c,d,e,f,g,j,k,l,m,o,p,q,v,w,y,z,aa,bb,cc.
- e. BN/SQDN S1: a,b,c,d,e,f,g,i,j,k,l,m,o,p,v,w,x,y,z,aa,bb.
- f. BN/SQDN S4: a,b,c,d,e,f,g,i,j,k,l,m,o,p,v,w,x,y,z,aa,bb.

- g. HHC/HHT CDR: a,b,c,d,e,f,g,h,j,j,k,l,m,o,p,v,w,x,y,z,aa.
- h. BMO/SMO: a,b,c,d,e,f,g,i,j,k,m,o,p,s,v,w,x,y,z.
- i. SPT PLT LDR: a,b,c,d,e,f,g,h,i,j,k,m,o,p,v,w,x,y,z,aa.
- j. MORTAR FDCs: a,b,c,d,e,f,g,h,k,l,m,n,o,p,q,s,u,v,w,y,z,aa.
- k. CO/TRP CDR: a,b,c,d,e,f,g,h,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,dd,ee.
- l. CO/TRP XO: a,b,c,d,e,f,g,h,i,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,dd,ee.
- m. CO/TRP ISG: a,b,c,d,e,f,g,i,j,k,l,m,o,p,v,w,x,y,z,aa.
- n. TK PLT LDR: a,b,c,d,e,f,g,h,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,ee.
- o. TK PLT SGT: a,b,c,d,e,f,g,h,i,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,ee.
- p. SCT PLT LDR: a,b,c,d,e,f,g,h,i,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,ee.
- p. SCT PLT SGT: a,b,c,d,e,f,g,h,i,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,ee.
- r. TK WM TC: a,b,c,d,e,f,g,h,i,k,l,m,n,o,p,q,r,s,t,u,v,w,y,z,aa,ee.
- s. INDIVIDUAL SCT TC: a,b,c,d,e,f,g,k,l m,n,o,p,q,r,s,t,u,w,y,z,aa,ee.
- t. INDIVIDUAL MORTAR TC: a,b,c,d,e,g,k,l m,n,o,p,q,s,u,w,y,z,aa,ee.

SECTION IV. OPERATIONAL BURDENS

H-IV-1

POTENTIAL OPERATIONAL BURDENS

Type Unit: Armor BN, Div Cav SQDN, ACR SQDN (M60A3/M901, M1 series/BFVS and better equipped units).

1. Summary Master list of Operational Burdens:

- a. Inadequate system ruggedness.
- b. Poor design resulting in improper system configuration for tactical use.
- c. Possible training burden (TRADOC Schools, NET, unit, sustainment training).
- d. Potential combat service support burden for the system (personnel and materiel).
- e. Failing to utilize the C2 automated system to its full potential.
- f. System inability to withstand the combat environment.
- g. Space claim problems within the host vehicle (vehicle modifications may be required).

2. Potential Operational Burdens by BN/SQDN Key Duty Positions:

- a. BN/SQDN CDR: a,b,c,e,f,g.
- a. BN/SQDN S3: a,b,c,e,f,g.
- c. BN/SQDN S3 SEC: a,b,c,e,f,g.
- d. BN/SQDN S2: a,b,c,e,f,g.
- e. BN/SQDN S1: a,b,c,e,f,g.
- f. BN/SQDN S4: a,b,c,d,e,f,g.
- g. HHC/HHT CDR: a,b,c,d,e,f,g.
- h. BMO/SMO: a,b,c,d,e,f,g.
- i. SPT PLT LDR: a,b,c,e,f,g.
- j. Mortar FDCs: a,b,c,e,f,g.
- k. CO/TRP CDR: a,b,c,e,f,g.
- l. CO/TRP XO: a,b,c,e,f,g.

- m. CO/TRP ISG: a,b,c,e,f,g.
- n. TK PLT LDR: a,b,c,e,f,g.
- o. TK PLT SGT: a,b,c,e,f,g.
- p. SCT PLT LDR: a,b,c,e,f,g.
- q. SCT PLT SGT: a,b,c,e,f,g.
- r. TK WM TC: a,b,c,e,f,g.
- s. INDIVIDUAL SCT TC: a,b,c,e,f,g.
- t. INDIVIDUAL MORTAR CARRIER TC: a,b,c,e,f,g.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

MFA MAA CORRECTIVE
ACTION SUMMARY

BDP DEF
(1986)

3
4
8
10
12
28
33
40
49
50
84

H-V-6

SECTION VI. USER INTERFACE REQUIREMENTS

INFORMATION EXCHANGE

INTERFACE NAME: MCS (AR) - AFATADS

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY

IOC: FY

TYPE B IOC FY 91

TYPE B SOURCE OF INTERFACE

OPFAC: FSE, FSG & FIST

OPFAC: TOC, ALOC, & TC

APPROVAL: FM71-2, FM19-95 (H)

FORCE LEVEL:

FORCE LEVEL:

BN & CO

BN/SQDN, CO/TRP, PLT

MESSAGE TITLE	MSG			24 HR VOL			INIT			RECEPTION			TRAFFIC ANALYSIS			CHARACTERS				
	NO.	PD		1	2	M	C	A	B	S	X	P	CR	FR	CL	SP	PH	MIN	AVG	MAX
MUTUAL POS/NAV		0	0	0		X	X	X	X	X	X	3	ZZ			0	0	0	0	0
		0	0	0		X	X	X	X	X	X	5	CC			0	0	0	0	0
GRAPHICS		0	0	0		X		X	X	X	X	5	CC			0	0	0	0	0
		0	0	0		X		X	X	X	X	5	CC			0	0	0	0	0
REQUEST/AJUST FS		0	0	0				X	X	X	X	0				0	0	0	0	0
		0	0	0		X			X	X		5	CC			0	0	0	0	0
ALERTS		0	0	0				X	X	X	X	0				0	0	0	0	0
		0	0	0		X	X		X	X		5	ZZ			0	0	0	0	0
TARGETS IDENTIFIED IN MAX UNITS AC		0	0	0		X	X		X	X		5	ZZ			0	0	0	0	0
		0	0	0				X	X	X	X	0				0	0	0	0	0
POL STATUS REPORT		0	0	0	X	X			X	X		5	PP			0	0	0	0	0
		0	0	0				X	X	X	X	0				0	0	0	0	0
POL REQUEST		0	0	0		X	X		X	X		5	PP			0	0	0	0	0
		0	0	0				X	X	X	X	0				0	0	0	0	0
EQUIPMENT STATUS RPT		0	0	0		X	X		X	X		5	PP			0	0	0	0	0
		0	0	0				X	X	X	X	0				0	0	0	0	0
BATTLE LOSS STAT REPORT		0	0	0		X			X	X		5	PP			0	0	0	0	0
		0	0	0				X	X	X	X	0				0	0	0	0	0
VEHICAL EVAL REQUEST		0	0	0		X			X	X		5	CC			0	0	0	0	0
		0	0	0				X	X	X	X	0				0	0	0	0	0

MESSAGE TITLE	MSG : 24 HR VOL				INIT		RECEPTION					TRAFFIC ANALYSIS				CHARACTERS			
	NO.	PD	1	2	M	C	A	B	S	X	P	CR	PR	CL	SP	PH	MIN	AVG	MAX
PERSONNEL BATTLE LOSS REPORT		0	0	0		X			X	X		4	PP		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
WARNING ORDER		0	0	0				X	X	X	X	0			0	0	0	0	0
		0	0	0		X			X	X		4	PP		0	0	0	0	0
OPORD		0	0	0				X	X	X	X	0			0	0	0	0	0
		0	0	0		X			X	X		5	00		0	0	0	0	0
FRAGO		0	0	0				X	X	X	X	0			0	0	0	0	0
		0	0	0		X			X	X		5	ZZ		0	0	0	0	0
INTEL SUM RPT		0	0	0				X	X	X	X	0			0	0	0	0	0
		0	0	0		X			X	X		5	00		0	0	0	0	0
SENSITIVE ITFM REPORT		0	0	0		X			X	X		3	ER		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
FREE TEXT MESSAGE		0	0	0		X		X	X	X	X	0			0	0	0	0	0
		0	0	0		X		X	X	X	X	0			0	0	0	0	0
FIRE SUPPORT PLANNING/EXECUTION		0	0	0		X	X	X	X	X	X	5	00		0	0	0	0	0
		0	0	0		X	X	X	X	X	X	5	00		0	0	0	0	0
INTEL PREP OF BATTLEFIELD		0	0	0		X			X	X		4	00		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0

INFORMATION EXCHANGE

INTERFACE NAME: MCS (AR) - FAAD

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY

IOC: FY 93

TYPE B IOC FY 93

TYPE B SOURCE OF INTERFACE

OPFAC: FAAD (SENSOR)

OPFAC: TOC, ALOC, & BN CDR

APPROVAL: FY71-2, FY19-95

FORCE LEVEL:

FORCE LEVEL:

PLT & SEC

BN/SQDN, VEH

MESSAGE TITLE	MSG : 24 HR VOL			INIT			RECEPTION					TRAFFIC ANALYSIS					CHARACTERS		
	NO.	PD	1 2	M	C	A	B	S	X	P	CR	FR	CL	SP	PH	MIN	AVG	MAX	
MUTUAL POS/NAV		0	0	0		X	X	X	X	X	X	3	ZZ		0	0	0	0	0
		0	0	0		X	X	X	X	X	X	5	00		0	0	0	0	0
GRAPHICS		0	0	0		X		X	X	X	X	5	00		0	0	0	0	0
		0	0	0		X		X	X	X	X	5	00		0	0	0	0	0
AMMO STATUS REPORT		0	0	0				X	X	X	X	5	PP		0	0	0	0	0
		0	0	0		X			X	X		0			0	0	0	0	0
ALERTS		0	0	0				X	X	X	X	0			0	0	0	0	0
		0	0	0		X	X			X	X	5	ZZ		0	0	0	0	0
TARGETS IDENTIFIED IN MAN UNITS AC		0	0	0		X	X			X	X	5	ZZ		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
POL STATUS REPORT		0	0	0	X	X			X	X		5	PP		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
POL REQUEST		0	0	0		X	X		X	X		5	PP		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
EQUIPMENT STATUS RPT		0	0	0		X	X		X	X		5	PP		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
BATTLE LOSS SPOT REPORT		0	0	0		X			X	X		5	PP		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0
VEHICAL EVAC REQUEST		0	0	0		X			X	X		5	PP		0	0	0	0	0
		0	0	0				X	X	X	X	0			0	0	0	0	0

MESSAGE TITLE	MSG	24 HR VOL			INIT			RECEPTION					TRAFFIC ANALYSIS					CHARACTERS		
	NO.	PD	1	2	M	C	A	R	S	X	P	CR	PR	CL	SP	PH	MIN	AVG	MAX	
PERSONNEL BATTLE LOSS REPORT		0	0	0		X			X	X		4	PP		0	0	0	0	0	
		0	0	0				X	X	X	X	0			0	0	0	0	0	
WARNING ORDER		0	0	0				X	X	X	X	0			0	0	0	0	0	
		0	0	0		X			X	X		4	PP		0	0	0	0	0	
OPORD		0	0	0				X	X	X	X	0			0	0	0	0	0	
		0	0	0		X			X	X		5	00		0	0	0	0	0	
FRAGO		0	0	0				X	X	X	X	0			0	0	0	0	0	
		0	0	0		X			X	X		5	ZZ		0	0	0	0	0	
INTEL SUM RPT		0	0	0				X	X	X	X	0			0	0	0	0	0	
		0	0	0		X			X	X		5	00		0	0	0	0	0	
SENSITIVE ITEM REPORT		0	0	0		X			X	X		3	RR		0	0	0	0	0	
		0	0	0				X	X	X	X	0			0	0	0	0	0	
FREE TEXT MESSAGE		0	0	0		X		X	X	X	X	0			0	0	0	0	0	
		0	0	0		X		X	X	X	X	0			0	0	0	0	0	
AXMC REQUEST		0	0	0		X	X		X	X		5	PP		0	0	0	0	0	
		0	0	0				X	X	X	X	0			0	0	0	0	0	
INTEL PREP OF BATTLEFIELD		0	0	0		X			X	X		4	00		0	0	0	0	0	
		0	0	0				X	X	X	X	0			0	0	0	0	0	

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

H-VII-1

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HHT		PCU		TCU		DEV ITEM DESIGNATED	USER
			COMPO								
			1-AA								
			2-NG								
			3-AR	(V1)	(V2)	(V1)	(V2)				
17235J	DIV	ARMOR BN MI/MIAI	54	0(0)	0(0)	3(162)	0(0)	0(0)	0(0)	4(315)	DEV ITEM - BN CDR/SG
17235J			7	0(0)	0(0)	3(21)	0(0)	0(0)	0(0)	4(29)	OFF, SGT PLT LIE/SGT
17235J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC.S2,S1/4
17237J		ARMOR CO, MI	215	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	2(432)	DEV ITEM - CO CDR
17237J			28	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	2(55)	AND CO HQ
17237J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17237J		ARMOR PLT MI	548	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	4(2592)	DEV ITEM - ALL TANKS
17237J			84	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	4(336)	
17237J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:											
			1	0	0	162	0	0	0	3240	
			2	0	0	21	0	0	0	420	
			3	0	0	0	0	0	0	0	
GRAND TOTALS:				0	0	183	0	0	0	3650	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HET	PCU		TCU		DEV ITEM DESIGNATED	
			COMPO							
			1-AA							
			2-NG							
			3-AR		(V1)	(V2)	(V1)	(V2)		USER
17236J	DIV	ARMOR BN M60	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU- BN CDR, S3 OFF.
17236J			47	4(138)	0(0)	3(141)	0(0)	0(0)	0(0)	SCT PLT LDR & SGT
17236J			2	4(8)	0(0)	3(6)	0(0)	0(0)	0(0)	PCU - S3 SEC.S2.S1/4
17236J		ARMOR CO M60	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17236J			188	2(376)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR & XO
17236J			8	2(16)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	0	0	0	0	0	0	
			2	564	0	141	0	0	0	
			3	24	0	6	0	0	0	
GRAND TOTALS:				588	0	147	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU		TCU		DEV ITEM DESIGNATED		USER	
			COMPO	HET								
			1-AA		(V1)	(V2)	(V1)	(V2)				
			2-NG									
			3-AR									
172050	DIV	CALAVLEY SQDN M3	3	0	0	0	0	0	0	0	0	DEV ITEM - BN CDR,S3
172050			0	0	0	0	0	0	0	0	0	OFF
172050			0	0	0	0	0	0	0	0	0	ECU - S3 SEC.S2,S1,4
172070		CAV TRP M3	16	0	0	0	0	0	0	0	0	DEV ITEM - TRP CDR
172070			0	0	0	0	0	0	0	0	0	
172070			0	0	0	0	0	0	0	0	0	
172070		CAV SGT PLT M3	48	0	0	0	0	0	0	0	0	DEV ITEM - SGT PLT
172070			0	0	0	0	0	0	0	0	0	LDR & SGT
172070			0	0	0	0	0	0	0	0	0	
SUBTOTALS:			1	0	0	24	0	0	0	0	0	
			2	0	0	0	0	0	0	0	0	
			3	0	0	0	0	0	0	0	0	
GRAND TOTALS:				0	0	24	0	0	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU				TCU				DEV ITEM		DESIGNATED
			COMPO		HHT										
			1-AA			(V1)	(V2)	(V1)	(V2)						
			2-NG												
			3-AR									USER			
17205J	DIV	CAVALRY SQDN M60	2	2(4)	0(0)	3(6)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR, S3 OFF		
17205J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC,S2,S1/4		
17205J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)			
17207J		CAV TRP M60	4	2(8)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR & XO		
17207J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)			
17207J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)			
17207J		CAV SCT PLT	8	2(16)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - SCT PLT LDR &		
17207J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	SGT		
17207J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)			
SUBTOTALS:															
			1	28	0	6	0	0	0	0	0	0			
			2	0	0	0	0	0	0	0	0	0			
			3	0	0	0	0	0	0	0	0	0			
GRAND TOTALS:				28	0	6	0	0	0	0	0	0			

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU				TCU				DEV ITEM	DESIGNATION	
			COMFO	HET											
			1-AA												
			2-AG		VL	VL	VL	VL	VL	VL	VL				
1-AR	VL	VL	VL	VL	VL	VL	VL	VL	USER						

17205L	DIV	CAV SQDN M60 M501	0	0	0	0	0	0	0	0	0	0	0		
17205L			9	2	13	0	0	3	27	0	0	0	0	HTU - BN CDR/ SS OFF	
17205L			0	0	0	0	0	0	0	0	0	0	0	PCU - SS SEC, S2, S1/4	
17207L		CAV TRF M50	0	0	0	0	0	0	0	0	0	0	0		
17207L			18	2	35	0	0	0	0	0	0	0	0	HTU - TRF CDR & XO	
17207L			0	0	0	0	0	0	0	0	0	0	0		
17207L		SQT CAV PLT	0	0	0	0	0	0	0	0	0	0	0		
17207L			36	2	72	0	0	0	0	0	0	0	0	HTU - SQT PLT LDR &	
17207L			0	0	0	0	0	0	0	0	0	0	0	SGT	
SUBTOTALS:															
			1	0	0	0	0	0	0	0	0	0	0		
			2	126	0	27	0	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0	0	0		
GRAND TOTALS:				126	0	27	0	0	0	0	0	0	0		

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92 COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
17485L	CORPS	CAVALRY SQDN MIAI	9	0(0)	0(0)	3(27)	0(0)	0(0)	2(18)	DEV ITEM - BN CDR & S3 OFFICER
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC.S2,S1/4
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L	CAV TRP M3		27	0(0)	0(0)	0(0)	0(0)	0(0)	1(27)	DEV ITEM - TRP CDR
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L	CAV SCT PLT		54	0(0)	0(0)	0(0)	0(0)	0(0)	2(108)	DEV ITEM - SCT PLT LDR & SGT
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L	CAV PLT M1		54	0(0)	0(0)	0(0)	0(0)	0(0)	4(216)	DEV ITEM - ALL TANKS
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L	TANK CO. CAV SQDN		9	0(0)	0(0)	0(0)	0(0)	0(0)	2(18)	DEV ITEM - CO CDR AND CO XO
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L	TANK PLT CAV SQDN		27	0(0)	0(0)	0(0)	0(0)	0(0)	4(108)	DEV ITEM - ALL TANKS
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17485L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	0	0	27	0	0	495	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				0	0	27	0	0	495	

QUANTITY/DISTRIBUTION OF DEVICES

FOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
17055J	CORPS	CAVALRY SQDN M60	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17055J			6	2(12)	0(0)	3(18)	0(0)	0(0)	0(0)	HTU - BN CDR & S3 OFF
17055J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3 SEC.S2,S1/4
17055J		CAV TRP	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17055J			18	2(36)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR & XO
17055J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17055J		CAV SGT PLT	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17055J			36	2(72)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - SGT PLT LDR
17055J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	& SGT
17055J		TANK CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
17055J			6	2(12)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR & XO
17055J			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	0	0	0	0	0	0	
			2	132	0	18	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				132	0	18	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 93 COMPO	HET	PCU				TCU				DEV ITEM DESIGNATED		USER
			1-AA		(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)			
17207J	BDE	ARM CAV TRP (M1)	3	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	21 01	DEV ITEM - TRP CO	
17207J			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	AND TRP XO	
17207J			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
17207J		SCT PLT (M3)	6	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	21 12	DEV ITEM - SCT PLT	
17207J			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	LDR & SGT	
17207J			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
17207J		TANK PLT (M1)	6	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	41 24	DEV ITEM - PLT LDR	
17207J			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
17207J			0	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01	01 01		
SUBTOTALS:			1	0	0	0	0	0	0	0	0	0	42		
			2	0	0	0	0	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0	0	0		
GRAND TOTALS:				0	0	0	0	0	0	0	0	0	42		

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HET				PCU				TCU				DEV ITEM: DESIGNATED		USER
			COMPO															
			1-AA															
			2-NG															
			3-AR					(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)			
17387L	BDE	ARM CAV TRP (M1/M3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17387L			3	0	0	0	0	0	0	0	0	0	0	0	2	6	DEV ITEM - TRP CO	
17387L			0	0	0	0	0	0	0	0	0	0	0	0	0	0	AND TRP XO	
17387L		SCOUT PLT (M3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17387L			6	0	0	0	0	0	0	0	0	0	0	0	2	12	DEV ITEM - SGT PLT	
17387L			0	0	0	0	0	0	0	0	0	0	0	0	0	0	LDR & SGT	
17387L		TANK PLT (M1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
17387L			6	0	0	0	0	0	0	0	0	0	0	0	4	24	DEV ITEM - ALL TANKS	
17387L			0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SUBTOTALS:																		
			1	0		0		0		0		0		0		0		
			2	0		0		0		0		0		0		42		
			3	0		0		0		0		0		0		0		
GRAND TOTALS:				0		0		0		0		0		0		42		

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU				TCU				DEV ITEM DESIGNATED	
			COMPO	HHT										
			1-AA											
			2-NG											
			3-AR		(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)	USER	
17387L	BDE	ARM CAV TRP (M60)	0	0	0	0	0	0	0	0	0	0	0	
17387L			4	2	8	0	0	0	0	0	0	0	0	HTU - TRP CDR & XO
17387L			0	0	0	0	0	0	0	0	0	0	0	
17387L		SCT PLT (M901)	0	0	0	0	0	0	0	0	0	0	0	
17387L			8	2	16	0	0	0	0	0	0	0	0	HTU - SCT PLT LDR
17387L			0	0	0	0	0	0	0	0	0	0	0	& SGT
SUBTOTALS:														
			1	0	0	0	0	0	0	0	0	0	0	
			2	24	0	0	0	0	0	0	0	0	0	
			3	0	0	0	0	0	0	0	0	0	0	
GRAND TOTALS:				24	0	0	0	0	0	0	0	0	0	

APPENDIX I

ENGINEER SCHOOL STUDY DELIVERABLES

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: COMBAT ENGR

ECHELON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	OBSTACLE REPORT	X	
2	MINEFIELD REPORT	X	
3	RIVER CROSSING REPORT	X	
4	ENEMY OBSTACLE REPORT	X	
5	SEND/REC OPERATIONS ORDER	X	
6	RECON REP - ALL TYPES		X
7	LOGISTIC SUPPORT REPORT	X	
8	EQUIPMENT STATUS (2406)	X	
9	SUBMIT FRIENDLY LOC/STATUS REPORT	X	
10	SCATTERABLE MINEFIELD REPORT	X	
11	ZONE-BELT PROGRESS	X	
12	NBC REPORT	X	
13	SPOT REPORT	X	
14	DAMAGE REPORT	X	
15	REC ENEMY INFO FROM HIGHER	X	
16	TRANSFER OF AUTHORITY MSG	X	
17	DENIAL OPNS REPORT	X	
18	SITUATION REPORT	X	
19	DEMO EXECUTION REPORT		X
20	ENGR MISSION REPORT		X
21	CHANGE IN ENGR MISSION REPORT		X
22	ACTIVITY LIST W/ RESOURCES	X	
23	ACTIVITY STATUS	X	
24	ACTIVITY SCHEDULE	X	
25	CRITICAL EQUIPMENT STATUS		X
26	GENERAL REPORT	X	
27	CONSTRUCTION DESIGN		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: COMBAT ENGR

ECHELON: CO

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	OBSTACLE REPORT	X	
2	MINEFIELD REPORT	X	
3	RIVER CROSSING REPORT	X	
4	ENEMY OBSTACLE REPORT	X	
5	SEND/REC OPERATIONS ORDER	X	
6	RECON REPORT - ALL TYPES		X
7	LOGISTIC SUPPORT REPORT	X	
8	EQUIPMENT STATUS (2406)	X	
9	SUBMIT FRIENDLY LOC/STATUS REP	X	
10	SCATTERABEL MINEFIELD REP	X	
11	ZONE-BELT PROGRESS	X	
12	NBC REPORT	X	
13	SPOT REPORT	X	
14	DAMAGE REPORT	X	
15	REC ENEMY INFO FORM HIGHER	X	
16	TRANSFER OF AUTHORITY MSG	X	
17	DENIAL OPNS REPORT	X	
18	SITUATION REPORT	X	
19	DEMO EXECUTION REPORT		X
20	ENGR MISSION REP		X
21	CHANGE IN ENGR MISSION REP		X
22	ACTIVITY LIST W/RESOURCES	X	
23	ACTIVITY STATUS	X	
24	ACTIVITY SCHEDULE	X	
25	CRITICAL EQUIPMENT STATUS		X
26	GENERAL REPORT	X	
27	CONSTRUCTION DESIGN		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: COMBAT ENGR

ECHOLON: FLT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	OBSTACLE REPORT	X	
2	MINEFIELD REPORT	X	
3	RECON REP - ALL TYPES		X
4	ENEMY OBSTACLE REPORT	X	
5	RIVER CROSSING REPORT	X	
6	SPOT REPORT	X	
7	NBC REPORT	X	
8	SEND/REC OPERATIONS ORDER	X	
9	LOGISTIC SUPPORT REPORT	X	
10	EQUIPMENT STATUS (2406)	X	
11	SUBMIT FRIENDLY LOC/STATUS REPORT	X	
12	DAMAGE REPORT	X	
13	TRANSFER OF AUTHORITY MSG	X	
14	SITUATION REPORT	X	
15	DEMO EXECUTION REPORT		X
16	GENERAL REPORT	X	

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: COMBAT ENGR

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN CDR

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	STFLD SENSOR INPUT	ATCH FREE GRAPHICS	SEN DEW DATA	PROC DATA BUS
OBSTACLE REPORT	2	2	3	3	2	2	2	3	3	3	1	1	3	1	1
MINEFIELD REPORT	2	2	3	3	2	2	2	3	3	3	1	1	3	1	1
RIVER CROSSING REPORT	2	2	3	3	2	2	3	3	3	3	1	1	3	1	1
ENEMY OBSTACLE REPORT	2	2	3	3	2	2	2	3	3	3	1	1	2	1	1
SEND/REC OPERATIONS ORDER	2	2	2	3	2	2	1	3	2	2	1	1	3	1	1
RECON REP - ALL TYPES	2	2	3	3	2	2	2	3	3	3	1	1	2	1	1
LOGISTIC SUPPORT REPORT	2	2	3	3	2	2	3	3	1	1	1	1	1	1	1
EQUIPMENT STATUS (2406)	2	2	2	3	2	1	3	3	1	1	1	1	1	1	1
SUBMIT FRIENDLY LOC/STATUS REPORT	2	2	3	3	2	2	1	3	3	3	1	1	2	1	1
SCATTERABLE MINEFIELD REPORT	2	2	3	3	2	2	1	3	3	3	1	1	3	1	1
ZONE-BELT PROGRESS	2	2	3	3	2	1	2	3	3	2	1	1	3	1	1
DAMAGE REPORT	2	2	2	3	2	1	1	3	2	1	1	1	2	1	1
REC ENEMY INFO FROM HIGHER	2	2	1	3	2	2	1	2	2	2	1	1	2	1	1
TRANSFER OF AUTHORITY MSG	2	2	1	3	2	1	1	2	1	1	1	1	3	1	1
DENIAL OPNS REPORT	2	2	1	3	2	1	1	2	2	2	1	1	2	1	1
SITUATION REPORT	2	2	2	3	2	2	1	3	2	3	1	1	2	1	1
DEMO EXECUTION REPORT	2	2	1	3	2	1	1	2	1	1	1	1	2	1	1
ENGR MISSION REPORT	2	2	2	3	2	1	1	2	2	2	1	1	2	1	1
CHANGE IN ENGR MISSION REPORT	2	2	2	3	2	1	1	2	2	2	1	1	2	1	1
ACTIVITY LIST W/ RESOURCES	1	2	1	3	2	1	2	3	1	1	1	1	1	1	1
ACTIVITY STATUS	2	2	1	3	2	1	2	3	1	1	1	1	1	1	1
ACTIVITY SCHEDULE	2	2	1	3	2	1	2	3	1	1	1	1	1	1	1
CRITICAL EQUIPMENT STATUS	2	2	1	3	2	1	2	3	1	1	1	1	1	1	1
NBC REPORT	2	2	1	3	2	2	1	2	1	3	1	1	3	1	1
SPOT REPORT	2	2	1	3	2	2	1	2	1	3	1	1	3	1	1
GENERAL REPORT	1	2	1	2	3	1	1	3	1	1	1	1	1	1	1
CONSTRUCTION DESIGN	1	2	2	2	3	1	2	3	1	1	1	1	2	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: COMBAT ENGR

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN S3

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON	ACT DIS- MOVE	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH FREE DEW GRAPHICS	SEN DATA BUS
OBSTACLE REPORT	2	2	3	3	2	2	2	3	3	3	1	1	3	1
MINEFIELD REPORT	2	2	3	3	2	2	2	3	3	3	1	1	3	1
RIVER CROSSING REPORT	2	2	3	3	2	2	3	3	3	3	1	1	3	1
ENEMY OBSTACLE REPORT	2	2	3	3	2	2	2	3	3	3	1	1	2	1
SEND/REC OPERATIONS ORDER	2	2	2	3	2	2	1	3	2	2	1	1	3	1
RECON REP - ALL TYPES	2	2	3	3	2	2	2	3	3	2	1	1	2	1
LOGISTIC SUPPORT REPORT	2	2	3	3	2	2	3	3	1	1	1	1	1	1
EQUIPMENT STATUS (2406)	2	2	2	3	2	1	3	3	1	1	1	1	1	1
SUBMIT FRIENDLY LOC/STATUS REPORT	2	2	3	3	2	2	1	3	3	3	1	1	2	1
SCATTERABLE MINEFIELD REPORT	2	2	3	3	2	2	1	3	3	3	1	1	3	1
ZONE-BELT PROGRESS	2	2	3	3	2	1	2	3	3	2	1	1	3	1
NBC REPORT	2	2	1	3	2	2	1	2	1	3	1	1	3	1
SPOT REPORT	2	2	1	3	2	2	1	2	1	3	1	1	3	1
DAMAGE REPORT	2	2	2	3	2	1	1	3	2	1	1	1	2	1
REC ENEMY INFO FROM HIGHER	2	2	1	3	2	2	1	2	2	2	1	1	2	1
TRANSFER OF AUTHORITY MSG	2	2	1	3	2	1	1	2	1	1	1	1	3	1
DENIAL OPNS REPORT	2	2	1	3	2	1	1	2	2	1	1	1	2	1
SITUATION REPORT	2	2	1	3	2	2	1	3	2	3	1	1	2	1
DEMO EXECUTION REPORT	2	2	1	3	2	1	1	2	1	1	1	1	2	1
ENGR MISSION REPORT	2	2	2	3	2	1	1	2	2	2	1	1	2	1
CHANGE IN ENGR MISSION REPORT	2	2	2	3	2	1	1	2	2	2	1	1	2	1
ACTIVITY LIST W/ RESOURCES	1	2	1	3	2	1	2	3	1	1	1	1	1	1
ACTIVITY STATUS	2	2	1	3	2	1	2	3	1	1	1	1	1	1
ACTIVITY SCHEDULE	2	2	1	3	2	1	2	3	1	1	1	1	1	1
CRITICAL EQUIPMENT STATUS	2	2	1	3	2	1	2	3	1	1	1	1	1	1
CONSTRUCTION DESIGN	1	2	2	2	3	1	2	3	1	1	1	1	2	1
GENERAL REPORT	1	2	1	2	3	1	1	3	1	1	1	1	1	1

HARDWARE SOLUTION: TCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: COMBAT ENGR

ECHOLON: BM

OPERATOR: BM S2

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCN FREE GRAPHICS	SEN DEW DATA	PROC DATA BUS
OBSTACLE REPORT	2	2	3	3	2	2	2	3	3	3	1	1	3	1	1
MINEFIELD REPORT	2	2	3	3	2	2	2	3	3	3	1	1	3	1	1
RIVER CROSSING REPORT	2	2	3	3	2	2	3	3	3	3	1	1	3	1	1
ENEMY OBSTACLE REPORT	2	2	3	3	2	2	2	3	3	3	1	1	2	1	1
SEND/REC OPERATIONS ORDER	2	2	2	3	2	2	1	3	2	2	1	1	3	1	1
RECON REP - ALL TYPES	2	2	3	3	2	2	2	3	3	2	1	1	2	1	1
LOGISTIC SUPPORT REPORT	2	2	3	3	2	2	3	3	1	1	1	1	1	1	1
EQUIPMENT STATUS (2406)	2	2	2	3	2	1	3	3	1	1	1	1	1	1	1
SUBMIT FRIENDLY LOC/STATUS REPORT	2	2	3	3	2	2	1	3	3	3	1	1	2	1	1
SCATTERABLE MINEFIELD REPORT	2	2	3	3	2	2	1	3	3	3	1	1	3	1	1
ZONE-BELT PROGRESS	2	2	3	3	2	1	2	3	3	2	1	1	3	1	1
NBC REPORT	2	2	1	3	2	2	1	2	1	3	1	1	3	1	1
SPOT REPORT	2	2	1	3	2	2	1	2	1	3	1	1	3	1	1
DAMAGE REPORT	2	2	2	3	2	1	1	3	2	1	1	1	2	1	1
REC ENEMY INFO FROM HIGHER	2	2	1	3	2	2	1	2	2	2	1	1	2	1	1
TRANSFER OF AUTHORITY MSG	2	2	1	3	2	1	1	2	1	1	1	1	3	1	1
DENIAL OPNS REPORT	2	2	1	3	2	1	1	2	2	1	1	1	2	1	1
SITUATION REPORT	2	2	1	3	2	2	1	3	2	3	1	1	2	1	1
DEMO EXECUTION REPORT	2	2	1	3	2	1	1	2	1	1	1	1	2	1	1
ENGR MISSION REPORT	2	2	2	3	2	1	1	2	2	2	1	1	2	1	1
CHANGE IN ENGR MISSION REPORT	2	2	2	3	2	1	1	2	2	2	1	1	2	1	1
ACTIVITY LIST W/ RESOURCES	1	2	1	3	2	1	2	3	1	1	1	1	1	1	1
ACTIVITY STATUS	2	2	1	3	2	1	2	3	1	1	1	1	1	1	1
ACTIVITY SCHEDULE	2	2	1	3	2	1	2	3	1	1	1	1	1	1	1
CRITICAL EQUIPMENT STATUS	2	2	1	3	2	1	2	3	1	1	1	1	1	1	1
CONSTRUCTION DESIGN	1	2	2	2	3	1	2	3	1	1	1	1	2	1	1
GENERAL REPORT	1	2	1	2	3	1	1	3	1	1	1	1	1	1	1

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: COMBAT ENGR
 CANDIDATE SOLUTIONS
 ECHELON: CO
 OPERATOR: CO COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
OBSTACLE REPORT	2	3	3	3	2	3	3	3	3	3	1	1	3	1
MINEFIELD REPORT	2	3	3	3	2	3	3	3	3	3	1	1	3	1
RIVER CROSSING REPORT	2	3	3	3	2	3	3	3	3	3	1	1	3	1
ENEMY OBSTACLE REPORT	2	3	3	3	2	3	2	3	3	3	1	1	3	1
SEND/REC OPERATIONS ORDER	2	3	3	3	2	2	2	3	2	2	1	1	2	1
RECON REPORT - ALL TYPES	2	3	3	3	2	3	2	3	3	3	1	1	3	1
LOGISTIC SUPPORT REPORT	2	3	1	3	2	3	3	3	1	1	1	1	1	1
EQUIPMENT STATUS (2406)	2	3	1	3	2	2	3	3	1	1	1	1	1	1
SUBMIT FRIENDLY LOC/STATUS REP	2	3	3	3	2	2	2	3	3	3	1	1	2	1
SCATTERABEL MINEFIELD REP	2	3	3	3	2	2	2	3	3	3	1	1	3	1
ZONE-BELT PROGRESS	2	3	3	3	2	2	2	3	3	2	1	1	3	1
DAMAGE REPORT	2	3	2	3	2	2	2	3	2	2	1	1	2	1
REC ENEMY INFO FORM HIGHER	2	3	1	3	2	2	2	2	2	2	1	1	2	1
TRANSFER OF AUTHORITY MSG	2	3	3	3	2	3	3	2	2	3	1	1	3	1
DENIAL OPNS REPORT	2	3	2	3	2	2	2	2	2	2	1	1	2	1
SITUATION REPORT	2	3	2	3	2	3	2	3	2	3	1	1	2	1
DEMO EXECUTION REPORT	2	3	1	3	2	2	2	2	2	2	1	1	2	1
ENGR MISSION REP	2	3	2	3	2	2	2	2	2	2	1	1	2	1
CHANGE IN ENGR MISSION REP	2	3	2	3	2	2	2	2	2	2	1	1	2	1
ACTIVITY LIST W/RESOURCES	2	3	1	3	2	2	3	3	1	1	1	1	1	1
ACTIVITY STATUS	2	3	1	3	2	2	3	3	1	1	1	1	1	1
ACTIVITY SCHEDULE	2	3	1	3	2	2	3	3	1	1	1	1	1	1
CRITICAL EQUIPMENT STATUS	2	3	1	3	2	2	3	3	1	1	1	1	1	1
NBC REPORT	2	3	3	3	2	3	3	2	3	3	1	2	3	1
SPOT REPORT	2	3	3	3	2	3	3	2	3	3	1	1	3	1
GENERAL REPORT	2	3	1	2	3	2	2	3	1	1	1	1	1	1
CONSTRUCTION DESIGN	2	3	2	2	3	1	3	3	1	1	1	1	2	1

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: COMBAT ENGR

ECHOLON: PLT

OPERATOR: PLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BTS
OBSTACLE REPORT	3	3	3	3	3	2	3	3	3	3	1	1	3	1
MINFIELD REPORT	3	3	3	3	3	2	3	3	3	3	1	1	3	1
RECON REP - ALL TYPES	3	3	3	3	3	2	3	2	3	3	1	1	3	1
ENEMY OBSTACLE REPORT	3	3	3	3	3	2	3	2	3	3	1	1	2	1
RIVER CROSSING REPORT	3	3	3	3	3	2	3	2	3	3	1	1	3	1
SPOT REPORT	3	3	2	3	3	2	3	2	2	3	1	1	2	1
NBC REPORT	3	3	3	3	3	3	3	2	3	3	1	1	3	1
SEND/REC OPERATIONS ORDER	3	3	2	3	3	2	3	2	2	2	1	1	2	1
LOGISTIC SUPPORT REPORT	3	3	1	3	3	2	3	2	1	1	1	1	1	1
EQUIPMENT STATUS (2406)	3	3	1	3	3	2	3	2	1	1	1	1	1	1
SUBMIT FRIENDLY LOC/STATUS REPORT	3	3	3	3	3	2	3	2	3	3	1	1	3	1
DAMAGE REPORT	3	3	2	3	3	2	3	2	2	2	1	1	2	1
TRANSFER OF AUTHORITY MSG	3	3	2	3	3	3	3	2	3	3	1	1	2	1
SITUATION REPORT	3	3	2	3	3	2	3	2	2	2	1	1	1	1
DEMO EXECUTION REPORT	3	3	2	3	3	2	3	2	2	2	1	1	1	1
GENERAL REPORT	3	3	2	3	3	2	3	2	2	2	1	1	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

SECTION III. OPERATIONAL BENEFITS

OPERATIONAL BENEFITS ENGINEER UNITS

1. Operational benefits gained from providing automation.

a. The present manual system for acquiring, analyzing, processing and reporting critical engineer data is tedious, time consuming and manpower intensive due to the use of line reports sent via FM radios or courier. The lack of accurate engineer information (i.e., status of units, personnel, equipment, engineer supplies (Class IV and V), extent of damage to facilities and status of repair, status of sustainment engineering activities, and the status of enemy and friendly obstacles undermines the ability of engineer and force level staffs to provide engineer and force level commanders the information needed to execute their concept of operation, react inside the enemy's decision, cycle, and make use of the combat multiplier effect that engineers provide the maneuver force. The manual tracking of critical information and resources creates an unacceptable time lag in the flow of information resulting in the untimely execution of instructions. In addition, the decision to reallocate engineer assets is often made on the basis of incomplete status reports. The inability to automatically balance near real time status of engineer resources against the commander's guidance and pass critical engineer information to the force level staff and commander significantly degrade the management of engineer battlefield information.

b. Increased time efficiency.

c. Decreased manpower requirements.

d. Stores large amounts of critical terrain and obstacle data.

e. Stores and manipulates decision graphics.

f. Optimizes the allocation of critical engineer equipment.

g. Provides instantaneous assimilation/processing of engineer data.

h. Incorporates a streamlined command and control system which is necessary to keep pace with modern AirLand Battle doctrine.

SECTION IV. OPERATIONAL BURDENS

OPERATIONAL BURDENS

1. Operational burdens associated with fulfilling the requirement.

a. Transportability: This system is designed for either standard air, ground, or water transportation. It will not overburden existing transportation requirements nor impede the speed of displacing units in tactical situations.

b. Training:

1) Training will be conducted at a central site in each corps, division, or regiment/separate brigade area and at the necessary school/center training institutions.

2) Initial Unit Training. The initial training on operation of MCS components will be provided by the MCS New Equipment Training (NET) Team based at Fort Leavenworth, Kansas. This training consists of an eighty hour, hands on course of instruction. Once a unit has received its initial training, it becomes the responsibility of the unit to manage and sustain the program.

3) Sustainment training. The sustainment program has two components. First, is the development of a program to provide initial training to new MCS operators. Second, is the maintenance of operator proficiency through periodic training and the use of MCS in unit exercises. To assist the unit in this program, the NET team will leave with each unit the necessary training materials, i.e., instructor and student guides, program of instruction, lesson plans and manuals required to conduct the sustainment program.

4) Institutional Training. MCS equipment training will be included at selected Army schools and centers. Combined Arms Center (CAC) will provide these schools and centers individual and collective tasks, conditions, and standards to facilitate the incorporation of MCS training into their program of instruction. MCS-ENG instruction will be incorporated into the Engineer Officer Basic and Advanced Courses as well as the Advanced Noncommissioned Officer Course.

5) Training Devices. The actual MCS hardware will be used for training and no new training devices will be required.

c. Maintenance:

1) Operator/Organizational. Operators will perform PMCS IAW the appropriate operators manual. Using Build-In Test Equipment (BITE) and diagnostic software, operators will perform organizational maintenance troubleshooting. Equipment will incorporate fault detection and isolation programs to identify malfunctions. Operators will evacuate defective components through their organic maintenance section.

2) Intermediate Direct Support Maintenance. Intermediate direct support maintenance personnel will repair MCS equipment as specified in the appropriate maintenance publication. Maintain ASL stock of TCP or AC components.

3) Intermediate General Support Maintenance. Military personnel will perform this level of maintenance, which will be limited to the repair of printed circuit boards.

4) Depot Maintenance. Government employed civilians and contract personnel will be responsible for TCP and AC Repairs.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

MFA MAA CORRECTIVE
ACTION SUMMARY

BDP DEF
(1986)

28
41
61
86
94
106
132
133
145
237
306
332

SECTION VI. USER INTERFACE REQUIREMENTS

INFORMATION EXCHANGE

INTERFACE NAME: ENGR - CSSCS

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY

IOC: FY

TYPE IOC FY

TYPE SOURCE OF INTERFACE

OPFAC: MAIN, REAR

OPFAC: CSS

APPROVAL:

FORCE LEVEL:

FORCE LEVEL:

CORPS, DIV, BDE

CORPS. DIV, BDE

MESSAGE TITLE	MSG	24 HR VOL			INIT		RECEPTION					TRAFFIC ANALYSIS					CHARACTERS		
	NO.	PD	1	2	M	C	A	R	S	X	P	CR	PR	CL	SP	PH	MIN	AVG	MAX
ASSETS STATUS REPORT	S004	3	1	0		X		X				3		PP	0	50	0	0	0
		3	0	1		X		X	X		X	3	PP	C	0	60	0	0	0
LOGISTIC SUPPORT REP	A030	3	1	0		X		X				3	PP	C	0	30	0	0	0
		3	0	1		X		X	X		X	3	PP	C	0	60	0	0	0

INFORMATION EXCHANGE

INTERFACE NAME: ENGR - AFATDS

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY

IOC: FY

TYPE IOC FY

TYPE SOURCE OF INTERFACE

OPFAC: MAIN, REAR

OPFAC: FSE

APPROVAL:

FORCE LEVEL:

FORCE LEVEL:

CORPS, DIV, BDE

CORPS, DIV, BDE

MESSAGE TITLE	MSG		24 HR VOL				INIT			RECEPTION				TRAFFIC ANALYSIS					CHARACTERS		
	NO.	PD	1	2		M	C	A	R	S	X	P	CR	PR	CL	SP	PE	MIN	AVG	MAX	
MINEFIELD OPNS	C440	8	2	0		X			X				4	00	S	0	60	0	0	11334	
& SCATTERABLE MINES		8	0	2		X			X	X		X	4	00	S	0	60	0	0	11334	

INFORMATION EXCHANGE

INTERFACE NAME: ENGR - ASAS

SYSTEM 1

SYSTEM 2

INTERFACE IOC: FY

IOC: FY

TYPE IOC FY

TYPE SOURCE OF INTERFACE

OPFAC: MAIN, REAR

OPFAC: ASAS

APPROVAL:

FORCE LEVEL:

FORCE LEVEL:

CORPS, DIV, BDE

CORPS, DIV, BDE

MESSAGE TITLE	MSG NO.	24 HR VOL			INIT			RECEPTION				TRAFFIC ANALYSIS					CHARACTERS		
		PD	1	2	M	C	A	R	S	X	P	CR	PR	CL	SP	PH	MIN	AVG	MAX
MOBILITY STATUS	S012	6	3	0		X		X	X	X		5	00	C	0	30	0	0	1421
		6	0	3		X		X	X	X	X	5	00	C	0	30	0	0	1632
BATTLEFIELD GEOMETRY	S021	6	2	0		X		X	X	X		4	00	C	0	30	0	0	1632
		6	0	2		X		X	X	X	X	4	00	C	0	30	0	0	1632
SURFACE TRANSPORTATION CAP.	S020	6	1	0		X		X	X	X		4	00	C	0	30	0	0	0
		6	0	1		X		X	X	X	X	4	00	C	0	30	0	0	0

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

I-VII-1

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92 COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
05026L	DIV	EN BN, ABN	1	1(1)	1(1)	0(0)	1(1)	0(0)	0(0)	PCU - S2
05026L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	TCU - S3
05026L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
05027L		EN CO, EN BN, ABN	3	0(0)	0(0)	1(3)	0(0)	0(0)	0(0)	PCU - CO OPNS
05027L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05027L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05027L		EN PLT, EN CO	9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05027L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05027L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05443L		EN CO, LT EQ, ABN	2	0(0)	1(2)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05443L			1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	
05443L			2	0(0)	1(2)	0(0)	0(0)	0(0)	0(0)	
05443L		EN PLT, EN CO, LT EQ	6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05443L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	
05443L			6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	
05446L		EN CBT BN, ABN	2	1(2)	1(2)	0(0)	1(2)	0(0)	0(0)	PCU - S2
05446L			1	1(1)	1(1)	0(0)	1(1)	0(0)	0(0)	TCU - S3
05446L			2	1(2)	1(2)	0(0)	1(2)	0(0)	0(0)	HTU - BN CDR
05447L		EN CBT CO, EN BN, ABN	6	0(0)	1(6)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05447L			3	0(0)	1(3)	0(0)	0(0)	0(0)	0(0)	
05447L			6	0(0)	1(6)	0(0)	0(0)	0(0)	0(0)	
05447L		EN CBT PLT, EN CO	18	1(18)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05447L			9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	
05447L			18	1(18)	0(0)	0(0)	0(0)	0(0)	0(0)	

SUBTOTALS:

1	36	11	3	3	0	0
2	13	5	0	1	0	0
3	26	10	0	2	0	0

GRAND TOTALS:

75	26	3	6	0	0

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92 COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
05146L	DIV	EN BN	10	1(10)	1(10)	0(0)	1(10)	0(0)	0(0)	PCU - S2
05146L	EVY		4	1(4)	0(0)	1(4)	0(0)	1(4)	0(0)	TCU - S3
05146L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
05147L		EN CO, EN BN	42	0(0)	0(0)	1(42)	0(0)	0(0)	0(0)	PCU - CO OPNS
05147L			19	0(0)	0(0)	1(19)	0(0)	0(0)	0(0)	
05147L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05147L		EN PLT, EN CO	168	1(168)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05147L			76	1(76)	0(0)	0(0)	0(0)	0(0)	0(0)	
05147L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	178	10	42	10	0	0	
			2	80	0	23	0	4	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				258	10	65	10	4	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM: DESIGNATED	
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
05156L	DIV	EN BN INF DIV	6	1(6)	1(6)	0(0)	1(6)	0(0)	0(0)	PCU - S2
05156L	INF		6	1(6)	1(6)	0(0)	1(6)	0(0)	0(0)	TCU - S3
05156L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
05157L		EN CO, EN BN	18	0(0)	0(0)	1(18)	0(0)	0(0)	0(0)	PCU - CO OPNS
05157L			18	0(0)	0(0)	1(18)	0(0)	0(0)	0(0)	
05157L			1	0(0)	0(0)	1(1)	0(0)	0(0)	0(0)	
05157L		EN PLT, EN CO	54	1(54)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05157L			54	1(54)	0(0)	0(0)	0(0)	0(0)	0(0)	
05157L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	
05434L		EN CO, PIPE CONST	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05434L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05434L			3	0(0)	1(3)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	60	7	18	6	0	0	
			2	60	6	18	6	0	0	
			3	3	3	1	0	0	0	
GRAND TOTALS:				123	16	37	12	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92 COMPO	HHT	PCU		TCU		DEV ITEM		DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)			USER
05216L	DIV	EN BN, AA DIV	1	1(1)	1(1)	0(0)	1(1)	0(0)	0(0)		PCU - S2
05216L	AA		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		TCU - S3
05216L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		HTU - BN CDR
05217L		EN CO, EN BN	3	0(0)	0(0)	1(3)	0(0)	0(0)	0(0)		PCU - CO OPNS
05217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
05217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
05217L		EN PLT, EN CO	9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)		HTU - PLT LDR
05217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
05217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
SUBTOTALS:			1	10	1	3	1	0	0		
			2	0	0	0	0	0	0		
			3	0	0	0	0	0	0		
GRAND TOTALS:				10	1	3	1	0	0		

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
05256L	DIV	EN CBT BN, MTZ	1	1(1)	1(1)	0(0)	1(1)	0(0)	0(0)	PCU - S2
05256L	MTZ		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	TCU - S3
05256L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
05257L		EN CO, EN CBT BN	3	0(0)	0(0)	1(3)	0(0)	0(0)	0(0)	PCU - CO OPNS
05257L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05257L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05257L		EN PLT, EN CO	12	1(12)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05257L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05257L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05258L		EN CO, EN CBT BN	1	0(0)	0(0)	1(1)	0(0)	0(0)	0(0)	PCU - CO OPNS
05258L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05258L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05258L		EN PLT, EN CO	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05258L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05258L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	16	1	4	1	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				16	1	4	1	0	0	

AD-A191 646

ANALYSIS OF TACTICAL AUTOMATION REQUIREMENTS FOR THE
MANEUVER FUNCTIONAL AREA(U) ARMY COMBINED ARMS COMBAT
DEVELOPMENT ACTIVITY FORT LEAVENWORTH L J DACUNTO

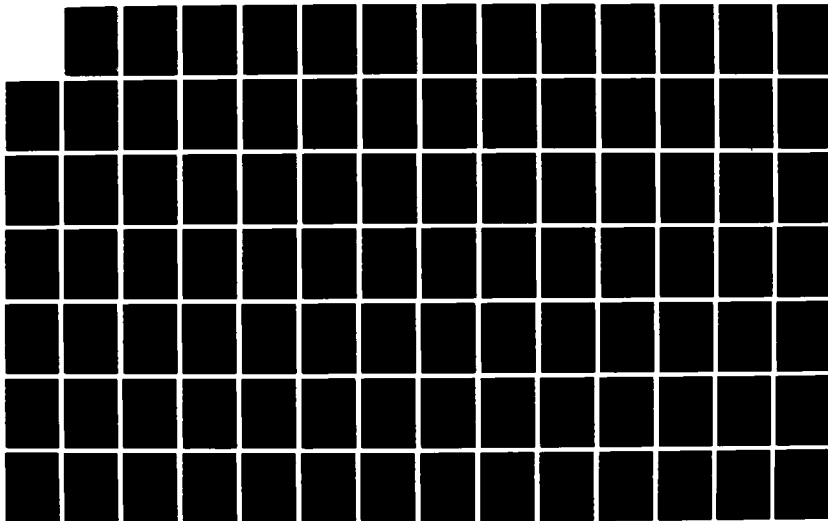
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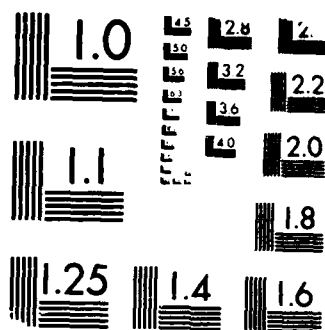
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MICROCOPY RESOLUTION TEST CHART
 (NBS 1010-A) - STANDARD - 1963 - A

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HRT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
05426L	CORPS	EN CBT BN	8	1(6)	1(6)	0(0)	1(6)	0(0)	0(0)	PCU - S2
05426L			17	1(17)	1(17)	0(0)	1(17)	0(0)	0(0)	TCU - S3
05426L			10	1(10)	1(10)	0(0)	1(10)	0(0)	0(0)	HTU - BN CDR
05427L		EN CBT CO	24	0(0)	1(24)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05427L			68	0(0)	1(68)	0(0)	0(0)	0(0)	0(0)	
05427L			44	0(0)	1(44)	0(0)	0(0)	0(0)	0(0)	
05427L		EN CBT PLT, EN CO	72	1(72)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05427L			204	1(204)	0(0)	0(0)	0(0)	0(0)	0(0)	
05427L			132	1(132)	0(0)	0(0)	0(0)	0(0)	0(0)	
05436L		EN CBT BN	8	1(8)	1(8)	0(0)	1(8)	0(0)	0(0)	PCU - S2
05436L			15	1(15)	1(15)	0(0)	1(15)	0(0)	0(0)	TCU - S3
05436L			4	1(4)	1(4)	0(0)	1(4)	0(0)	0(0)	HTU - BN CDR
05437L		EN CBT CO, EN BN	32	0(0)	0(0)	1(32)	0(0)	0(0)	0(0)	PCU - CO OPNS
05437L			60	0(0)	0(0)	1(60)	0(0)	0(0)	0(0)	
05437L			16	0(0)	0(0)	1(16)	0(0)	0(0)	0(0)	
05437L		EN CBT PLT	96	1(96)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05437L			180	1(180)	0(0)	0(0)	0(0)	0(0)	0(0)	
05437L			48	1(48)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	182	38	32	14	0	0	
			2	416	100	60	32	0	0	
			3	194	58	16	14	0	0	
GRAND TOTALS:				792	196	108	60	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92 COMPO	HET	PCU		TCU		DEV ITEM. DESIGNATED	
			1-AA							
			2-NG							
			3-AR		(V1)	(V2)	(V1)	(V2)		USER
05416L		EN CBT BN (HVY)	14	1(14)	1(14)	0(0)	1(14)	0(0)	0(0)	PCU - S2
05416L			14	1(14)	1(14)	0(0)	1(14)	0(0)	0(0)	TCU - S3
05416L			18	1(18)	1(18)	0(0)	1(18)	0(0)	0(0)	HTU - BN CDR
05417L		EN CO, EN CBT BN	44	0(0)	1(44)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05417L			43	0(0)	1(43)	0(0)	0(0)	0(0)	0(0)	
05417L			54	0(0)	1(54)	0(0)	0(0)	0(0)	0(0)	
05417L		EN PLT, EN CO	132	1(132)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05417L			129	1(129)	0(0)	0(0)	0(0)	0(0)	0(0)	
05417L			162	1(162)	0(0)	0(0)	0(0)	0(0)	0(0)	
05424L		EN CO, DUMP TRK	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05424L			3	0(0)	1(3)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05424L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	146	58	0	14	0	0	
			2	143	60	0	14	0	0	
			3	180	72	0	18	0	0	
GRAND TOTALS:				469	190	0	46	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		USER
			3-AR							
05103L	BDE	EN CO, SEP IN BDE	1	0(0)	0(0)	1(1)	0(0)	0(0)	0(0)	PCU - CO OPNS
05103L			7	0(0)	0(0)	1(7)	0(0)	0(0)	0(0)	
05103L			1	0(0)	0(0)	1(1)	0(0)	0(0)	0(0)	
05103L		EN PLT, EN CO	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05103L			28	1(28)	0(0)	0(0)	0(0)	0(0)	0(0)	
05103L			4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	
05113L		EN CO, ACR	3	0(0)	0(0)	1(3)	0(0)	0(0)	0(0)	PCU - CO OPNS
05113L			2	0(0)	0(0)	1(2)	0(0)	0(0)	0(0)	
05113L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05113L		EN PLT, EN CO	9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05113L			6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	
05113L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05114L		EN CO, CONST SPT	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05114L			3	0(0)	1(3)	0(0)	0(0)	0(0)	0(0)	
05114L			3	0(0)	1(3)	0(0)	0(0)	0(0)	0(0)	
05143L		EN CO, SEP AR BDE	3	0(0)	0(0)	1(3)	0(0)	0(0)	0(0)	PCU - CO OPNS
05143L			8	0(0)	0(0)	1(8)	0(0)	0(0)	0(0)	
05143L			1	0(0)	0(0)	1(1)	0(0)	0(0)	0(0)	
05143L		EN PLT, EN CO	15	1(15)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
05143L			40	1(40)	0(0)	0(0)	0(0)	0(0)	0(0)	
05143L			5	1(5)	0(0)	0(0)	0(0)	0(0)	0(0)	
05603L		EN PORT CONST CO	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
05603L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05603L			2	0(0)	1(2)	0(0)	0(0)	0(0)	0(0)	

SUBTOTALS:

1	28	2	7	0	0	0
2	74	3	17	0	0	0
3	9	5	2	0	0	0

GRAND TOTALS:

111	10	26	0	0	0

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:		PCU		TCU		DEV ITEM	DESIGNATED
			COMPO	HHT						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		USER
05423L		EN CBT SPT EQ CO	7	0(0)	1(7)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
			16	0(0)	1(16)	0(0)	0(0)	0(0)	0(0)	
			5	0(0)	1(5)	0(0)	0(0)	0(0)	0(0)	
05423L		EN PLT, EN CO	42	1(42)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
			96	1(96)	0(0)	0(0)	0(0)	0(0)	0(0)	
			30	1(30)	0(0)	0(0)	0(0)	0(0)	0(0)	
05453L		EN CO, PANEL BRG	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
			10	0(0)	1(10)	0(0)	0(0)	0(0)	0(0)	
			9	0(0)	1(9)	0(0)	0(0)	0(0)	0(0)	
05453L		EN PLT, EN CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
			20	1(20)	0(0)	0(0)	0(0)	0(0)	0(0)	
			18	1(18)	0(0)	0(0)	0(0)	0(0)	0(0)	
05463L		EN CO, MDM GDR BR	4	0(0)	1(4)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
			4	0(0)	1(4)	0(0)	0(0)	0(0)	0(0)	
			1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	
05463L		EN PLT, EN CO	8	1(8)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
			8	1(8)	0(0)	0(0)	0(0)	0(0)	0(0)	
			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	
05493L		EN CO, ASLT FLT BR	5	0(0)	1(5)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPNS
			12	0(0)	1(12)	0(0)	0(0)	0(0)	0(0)	
			5	0(0)	1(5)	0(0)	0(0)	0(0)	0(0)	
05493L		EN PLT, EN CO	10	1(10)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - PLT LDR
			24	1(24)	0(0)	0(0)	0(0)	0(0)	0(0)	
			10	1(10)	0(0)	0(0)	0(0)	0(0)	0(0)	
05500L		EN BN, ADMIN TM	10	1(10)	1(10)	0(0)	1(10)	0(0)	0(0)	PCU - S2
			16	1(16)	1(16)	0(0)	1(16)	0(0)	0(0)	
			4	1(4)	1(4)	0(0)	1(4)	0(0)	0(0)	
05605L		EN TOPO BN	3	0(0)	1(3)	0(0)	0(0)	0(0)	0(0)	PCU - S2
			1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	
			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HHT		PCU		TCU		DEV ITEM		DESIGNATED
			COMPO									
			1-AA									
			2-NG									
			3-AR			(V1)	(V2)	(V1)	(V2)			USER
05607L		CARTO. EN TOPO BN	6	0(0)	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - CO OPKS
05607L			1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
05607L			2	0(0)	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:												
			1	70	35	0	10	0	0			
			2	164	60	0	16	0	0			
			3	64	25	0	4	0	0			
GRAND TOTALS:				298	121	0	30	0	0			

APPENDIX J

CHEMICAL SCHOOL STUDY DELIVERABLES

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: BN COMMANI SECT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	EVALUATE MISSION	X	X
2	CONDUCT PRELIMINARY MISSION ANAL.	X	X
3	DEV TASK ORGANIZATION/CONCEPT OF OP	X	X
4	FORMULATE TENTATIVE PLAN	X	X
5	PLAN MANEUVER CONTROL MEASURES	X	
6	ISSUE OPORD	X	
7	PREPARE FOR OPERATIONS	X	X
8	CONTROL & COORDINATE BN OPERATIONS	X	
9	CONTROL UNIT OPS BY GRAPHIC CONTROL	X	
10	ISSUE FRAGO	X	
11	REPORT THREAT	X	
12	MAKE SPOT REPORTS	X	
13	RPT BOMB, SHELL, ROCKET, AIRCRAFT FIRE	X	
14	REPORT SAEDA	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: BN S2/S3 SECT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	EVAULATE MISSION	X	X
2	ANALYZE TERRAIN USING METT-T	X	
3	CONDUCT PRELIMINARY MISSION ANAL.	X	X
4	EST ENVIRONMENT EFFECTS ON NBC OPNS	X	X
5	ANALYSIS OF FRIENDLY TRP POSITIONS	X	X
6	PREPARE INTELLIGENCE ESTIMATES	X	
7	PREPARE ANALYSIS OF AREA OF OPNS	X	
8	FORMULATE TENTATIVE PLAN	X	
9	PREPARE BN OPERATIONS ESTIMATE	X	
10	DEV TASK ORGANIZATION/CONCEPT OF OP	X	
11	TASK ORGANIZE NBC UNITS	X	X
12	PLAN MANEUVER CONTROL MEASURES	X	
13	OBTAIN/PROCESS/ISSUE INTEL INFO	X	
14	COORDINATE WITHIN BN HEADQUARTERS	X	
15	MAINTAIN ENEMY/FRIENDLY SIT MAP	X	
16	PREPARE NBC SIT MAPS & OVERLAYS	X	X
17	PREPARE FOR NBC OPERATIONS	X	
18	PLAN/PREPARE FOR NBC RECONNAISSANCE	X	X
19	PLAN FOR BIOLOGICAL SAMPLING	X	X
20	PLAN/PREPARE FOR NBC SURVEY	X	X
21	SELECT PERS/EQUIP DECON SITE	X	X
22	PLAN FOR USE OF CONTROL MEASURES	X	X
23	EST QTY OF FUEL/FOG OIL REQUIRED	X	X
24	DETERMINE SMOKE POT REQUIREMENTS	X	X
25	DEV STORAGE REQUIREMENT FOR FOG OIL	X	X
26	DET PERSONNEL REQ TO DO DECON TASKS	X	X
27	FORECAST DECON MATERIAL REQUIREMENT	X	X
28	DEV STORAGE REQ FOR DECONTAMINANTS	X	X
29	PREPARE FOR OPNS IN A NBC ENVIR.	X	X
30	PREPARE AN OPERATIONS OVERLAY	X	
31	PREPARE AND ISSUE ORDERS	X	
32	MAINTAIN MOVEMENT PLANS & SOPs	X	
33	DET OPT POSTION FOR NBC ALARM EQUIP	X	X
34	ADVISE USE OF SMOKE IN SM UNIT OPNS	X	X
35	ANALYSIS TO SELECT SMOKE POSITIONS	X	X
36	CONTROL SMOKE OPERATIONS	X	X
37	PREPARE FOR NBC ATTACK	X	X
38	IMPLEMENT MOFP	X	X
39	PREPARE WIND VECTOR PLOTS	X	X
40	PREPARE EFFECTIVE DOWNWIND MESSAGE	X	X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHELON: BN BC BT BDDT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
41	PREPARE/ISSUE CHEM DOWNWIND MSG	X	X
42	PREPARE/PROCESS NED 1 & 2 REPORTS	X	X
43	CALCULATE NUCLEAR WEAPONS YIELD	X	X
44	CALCULATE GROUND ZERO LOCATIONS	X	X
45	PREPARE/ISSUE FALLOUT PREDICTION	X	X
46	IMMEDIATE WARNING OF CONTAMINATION	X	X
47	DET TEMP EFFECTS ON CHEM/BIO AGENT	X	X
48	DET WIND EFF ON CHEM/BIO CLOUD TWL	X	X
49	CALCULATE DOWNWIND VAPOR HAZARD	X	X
50	PREPARE/ISSUE NED 3 REPORTS	X	X
51	REAL UNIT DOSEMETERS	X	X
52	RPT INITIAL RADIATION EXPOSURE DOSE	X	X
53	RPT RECORD PERSONNEL DOSE RATES	X	X
54	EST DOSAGE EXPOSURE IN FALLOUT AREA	X	X
55	SELECT RADIOLOGICAL/CHEM SURVEY ATE	X	X
56	MAKE RAD/CHEM SURVEY OVERLAYS	X	X
57	COLLECT REPORT TOTAL RADIATION DOSE	X	X
58	REC. MAINTAIN RADIATION DOSE STATUS	X	X
59	PREPARE, PROCESS, & ISSUE NED 4 RPT	X	X
60	COMPUTE AIR/GND CORRELATION FACTORS	X	X
61	READ AND REPORT RADIATION DISAGGS	X	X
62	RECORD DATA IN DA 1901-R & 1901-R-R	X	X
63	COMPUTE TRANS CORRELATION FACTORS	X	X
64	DETERMINE RADIATION DECAY FACTORS	X	X
65	CONVERT RAD DATA TO GND DOSE RATES	X	X
66	DET DOSE RATE IN FALLOUT AREA	X	X
67	DET DOSE RATE CONTOUR FROM RAD DATA	X	X
68	REC PROCESS PLUT CHEM BII RESON RPT	X	X
69	PREPARE ISSUE NED 5 REPORTS	X	X
70	CAL TIME IF ENTRY FOR FALLOUT AREA	X	X
71	CAL TIME IF STAY IN FALLOUT AREA	X	X
72	CAL RPT TIME IF EXIT FROM FALLOUT	X	X
73	COMPUTE TOTAL DOSE	X	X
74	PREPARE RADIATION DOSE STATUS CHART	X	X
75	DETERMINE ENEMY TARGET LOCATIONS	X	X
76	PREPARE FRIENDLY YRD CHEM STRIKE	X	X
77	ESTABLISH WTRK & REST INTERVALS	X	X
78	PREPARE UNIT MOVEMENT PLAN	X	X
79	MAINTAIN NED DEF TEAM RESS CHARTS	X	X
80	MAINTAIN CHEM EQUIP STATUS CHART	X	X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: BN SC/ST SECT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
81	ADVICE ON CHEM AGENTS/COMPOUNDS	X	X
82	PROVIDE ADVICE ON BIOLOGICAL DEF	X	X
83	ADVISE SUPPLY/DIST OF NBC EQUIP	X	X
84	CONTROL & COORDINATE BN OPERATIONS	X	
85	CONTROL UNIT OPN BY GRAPHIC CONTROL	X	
86	PREPARE/ISSUE FRAGMENTARY ORDER	X	
87	REPORT THREAT	X	
88	REPORT AIR ATTACK	X	X
89	REPORT INTERFERENCE & INCIDENTS	X	X
90	MAKE SPOT REPORTS	X	
91	RPT BOMB, SHELL, ROCKET, AIRCRAFT FIRE	X	
92	PROCESS EPW	X	
93	PROCESS CAPTURED DOCUMENTS & EQUIP	X	
94	REPORT MIA/DA INCIDENTS	X	
95	PREPARE/POST DAILY STAFF JOURNAL	X	
96	ENCODE/DECODE MESSAGES	X	
97	PREPARE FOR FUTURE OPERATIONS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: BN S1 SECTION

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	EVALUATE MISSION	X	
2	FORMULATE TENTATIVE PLAN	X	
3	PLAN MANEUVER CONTROL MEASURES	X	
4	FORECAST LOSSES	X	
5	COORDINATE WITHIN BN HEADQUARTERS	X	
6	PREPARE FOR OPERATIONS	X	
7	CONTROL UNIT OPS BY GRAPHIC MEASURE	X	
8	MAINTAIN MOVEMENT PLANS & SOPs	X	
9	PROCESS EPW	X	
10	REPORT SAEDA INCIDENTS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: BN S4 SECTION

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	EVAULATE MISSION	X	
2	FORMULATE TENTATIVE PLAN	X	
3	PREPARE A LOGISTICS ESTIMATE	X	
4	PLAN & COORDINATE LOGISTICAL SPT	X	
5	PLAN MANEUVER CONTROL MEASURES	X	
6	COORDINATE WITHIN BN HEADQUARTERS	X	
7	MAINTAIN MOVEMENT PLANS & SOPs	X	
8	PREPARE FOR OPERATIONS	X	
9	CONTROL UNIT OPN BY GRAPHIC CONTROL	X	
10	INVENTORY LIST SETS, KIT. & OUTFITS	X	
11	MAINTAIN PROPERTY RECEIPTS & RECORD	X	
12	MAINTAIN TAMMS RECORDS	X	
13	PROCESS MATERIAL READINESS REPORTS	X	
14	REPORT VEHICLE/EQUIPMENT STATUS	X	
15	REPORT SUPPLY STATUS/REQUEST SUPPLY	X	
16	REQUEST RATIONS & COOR FOOD SERVICE	X	
17	PROCESS REQUEST FOR AMMUNITION	X	
18	REQUEST SUPPLIES	X	
19	PERFORM GRAVES REGISTRATION ACTIONS	X	
20	TRANSACTIONS WITH SUPPORT MAINT.	X	
21	OBTAIN RELIEF ON LOST/DAMAGE EQUIP	X	
22	REPORT SAEDA INCIDENTS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHELON: CO HQ

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	MAINTAIN ENEMY/FRIENDLY SIT MAP	X	
2	PLAN/PREPARE/CONTROL FOR NBC OPNS	X	X
3	PLAN/PREPARE FOR NBC RECONNAISSANCE	X	X
4	PLAN FOR BIOLOGICAL SAMPLING	X	X
5	PLAN/PREPARE FOR NBC SURVEY	X	X
6	EVALUATE MISSION	X	X
7	FORMULATE TENTATIVE PLAN	X	X
8	PLAN MANEUVER CONTROL MEASURES	X	X
9	EST QTY OF FUEL/FOG OIL REQUIRED	X	X
10	DETERMINE SMOKE POT REQUIREMENTS	X	X
11	DEV STORAGE REQUIREMENT FOR FOG OIL	X	X
12	DET PERSONNEL REQ TO DO DECON TASKS	X	X
13	FORECAST DECON MATERIAL REQUIREMENT	X	X
14	DEV STORAGE REQ FOR DECONTAMINANTS	X	X
15	TASK ORGANIZE NBC UNITS	X	X
16	ISSUE OPORD	X	X
17	PREPARE FOR NBC OPERATIONS	X	X
18	PREPARE FOR OPNS IN AN NBC ENVIR.	X	X
19	ANALYZE TERRAIN USING METT-T	X	
20	EST ENVIRONMENT EFFECTS ON NBC OPNS	X	X
21	ANALYSIS OF FRIENDLY TRP POSITIONS	X	X
22	DET OPT POSTION FOR NBC ALARM EQUIP	X	X
23	CONTROL UNIT OPN BY GRAPHIC CONTROL	X	X
24	ANALYSIS TO SELECT SMOKE POSITIONS	X	X
25	REPORT NBC ATTACK	X	X
26	PREPARE FOR NBC ATTACK	X	X
27	IMPLEMENT MOPP	X	X
28	PREPARE WIND VECTOR PLOTS	X	X
29	PREPARE EFFECTIVE DOWNWIND MESSAGE	X	X
30	PREPARE/ISSUE CHEM DOWNWIND MSG	X	X
31	PREPARE/PROCESS NBC 1 & 2 REPORTS	X	X
32	CALCULATE NUCLEAR WEAPONS YIELD	X	X
33	CALCULATE GROUND ZERO LOCATIONS	X	X
34	PREPARE/ISSUE FALLOUT PREDICTION	X	X
35	IMMEDIATE WARNING OF CONTAMINATION	X	X
36	DET TEMP EFFECTS ON CHEM/BIO AGENT	X	X
37	DET WIND EFF ON CHEM/BIO CLOUD TVL	X	X
38	CALCULATE DOWNWIND VAPOR HAZARD	X	X
39	PREPARE/ISSUE NBC 3 REPORTS	X	X
40	READ UNIT DOSIMETERS	X	X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: CC HQ

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
41	RPT INITIAL RADIATION EXPOSURE DOSE	X	
42	RPT & RECORD PERSONNEL DOSE RATES	X	
43	EST DOSAGE EXPOSURE IN FALLOUT AREA	X	X
44	SELECT RADIOLOGICAL/CHEM SURVEY RTE	X	X
45	MAKE RAD/CHEM SURVEY OVERLAYS	X	X
46	COLLECT/REPORT TOTAL RADIATION DOSE	X	X
47	REC. MAINTAIN RADIATION DOSE STATUS	X	X
48	PREPARE, PROCESS, & ISSUE NBC 4 RPT	X	X
49	COMPUTE AIR/GND CORRELATION FACTORS	X	X
50	READ AND REPORT RADIATION DOSAGES	X	X
51	RECORD DATA ON DA 1971-R & 1971-1-R	X	X
52	COMPUTE TRANS/CORRELATION FACTORS	X	X
53	DETERMINE RADIATION DECAY FACTORS	X	X
54	CONVERT RAD DATA TO GND DOSE RATES	X	X
55	DET DOSE RATE IN FALLOUT AREA	X	X
56	DET DOSE RATE CONTOUR FROM RAD DATA	X	X
57	REC/PROCESS/PLOT CHEM/BIO RECON RPT	X	X
58	PREPARE/ISSUE NBC 5 REPORTS	X	X
59	CAL TIME OF ENTRY FOR FALLOUT AREA	X	X
60	CAL TIME OF STAY IN FALLOUT AREA	X	X
61	CAL OPT TIME OF EXIT FROM FALLOUT	X	X
62	COMPUTE TOTAL DOSE	X	X
63	PREPARE RADIATION DOSE STATUS CHART	X	X
64	PREPARE AN OPERATIONS OVERLAY	X	
65	PREPARE FRIENDLY NUC/CHEM STRIKE	X	X
66	SELECT PERS/EQUIP DECON SITE	X	X
67	ESTABLISH WORK AND REST INTERVALS	X	X
68	MAINTAIN NBC DEF TEAM PERS CHARTS	X	X
69	MAINTAIN CHEM EQUIP STATUS CHART	X	X
70	ESTABLISH SUPPORT REQUIREMENTS	X	X
71	PREPARE/PLAN UNIT MOVEMENT PLANS	X	
72	REPORT AIR ATTACK	X	X
73	REPORT INTERFERENCE AND INCIDENTS	X	
74	MAINTAIN PRESCRIBED AMT OF SUPPLIES	X	X
75	MAKE SPOT REPORTS	X	
76	PREPARE A SITUATION REPORT (SITREP)	X	
77	RPT BOMB, SHELL, MORTAR, AIRCRAFT FIRE	X	
78	PREPARE/ISSUE FRAGMENTARY ORDER	X	
79	REPORT THREAT	X	
80	REPORT SABIA INCIDENTS	X	

HIGH PAYOFF TASK FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: CO HQ

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
81	MAINTAIN UNIT STRENGTH REPORTS	X	
82	REPORT PERSONNEL STATUS	X	
83	PROVIDE UNIT LEVEL CASUALTY MGT	X	
84	PERFORM UNIT LEVEL GRREG FUNCTIONS	X	
85	CONDUCT SUPPLY TRANSACTIONS	X	X
86	COORDINATE FOOD SERVICE/REQ RATIONS	X	
87	REQUEST SUPPLIES/LOGISTIC SERVICES	X	
88	REQUEST AMMUNITION	X	
89	INVENTORY SETS, KITS, AND OUTFITS	X	
90	MAINTAIN PROPERTY RECEIPTS & RECORD	X	
91	MAINTAIN TAMMS RECORDS	X	
92	MAINTAIN THE PLL	X	
93	ESTABLISH PRIORITIES FOR GEN MAINT.	X	
94	CONDUCT TRANSACTIONS WITH SUP MAINT	X	
95	LOST OR DESTROYED PROPERTY RELIEF	X	
96	PROCESS EPW	X	
97	PREFARE POST DAILY STAFF JOURNAL	X	
98	ENCODE/DECODE MESSAGES	X	
99	PREPARE FOR FUTURE OPERATIONS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: PLT RECON

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PLAN/PREPARE/DIRECT A NBC RECON	X	
2	PLAN/PREPARE FOR NBC SURVEY	X	X
3	PLAN/PREPARE BIOLOGICAL SAMPLING	X	X
4	DEPLOY FIXED EMPLACEMENT ALARM UNIT	X	X
5	IMPLEMENT MOPP	X	X
6	REPORT CHEMICAL/BIOLOGICAL ATTACK	X	X
7	PREPARE AND SUBMIT NBC 1 REPORT	X	X
8	READ UNIT DOSIMETERS	X	X
9	REPORT INIT RADIATION EXPOSURE DOSE	X	X
10	RPT & RECORD PERSONNEL DOSE RATE	X	X
11	PREPARE AND SUBMIT NBC 4 REPORT	X	X
12	ESTABLISH AIR-GND CORRELATION FACT.		X
13	READ & REPORT RADIATION DOSAGES	X	X
14	RECORD DATA ON DA 1971-R & 1971-1-R	X	X
15	COMPUTE TRANS/CORRELATION FACTORS	X	X
16	PREPARE RADIO/CHEM SURVEY OVERLAYS	X	X
17	SUBMIT NBC CONTAMINATION REPORTS	X	X
18	SELECT/REPORT EQUIP/PER DECON SITE	X	X
19	PLAN/PREPARE AREA/ROUTE/ZONE RECON	X	
20	ANALYZE TERRAIN USING METT-T	X	
21	SELECT A MOVEMENT ROUTE USING A MAP	X	
22	COLLECT/REPORT INFORMATION - SALUTE	X	
23	PREPARE AN OPERATION OVERLAY	X	
24	CALL FOR/ADJUST INDIRECT FIRE	X	
25	MAINTAIN PERSONNEL ACCOUNTABILITY	X	
26	REQUEST SUPPLIES/LOGISTICAL SERVICE	X	
27	ENCODE/DECODE MESSAGES	X	
28	REPORT INTERFERENCE & INCIDENTS	X	

HIGH PAYOFF TASK/FUNCTIONS TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: PLT DECON

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PLAN DECONTAMINATION OPERATIONS	X	X
2	ANALYZE TERRAIN USING METT-T	X	
3	ENVIRONMENT'S EFFECTS NBC & SMOKE OPN	X	
4	DETERMINE SMOKE POT REQUIREMENTS	X	X
5	DET. PERSONNEL REQ FOR DECON TASKS	X	X
6	FORECAST DECON MATERIAL REQUIREMENT	X	X
7	DEV STORAGE REQ FOR DECONTAMINANTS	X	X
8	PREPARE FOR OPNS IN NBC ENVIRONMENT	X	
9	PREPARE FOR NBC ATTACK	X	
10	IMPLEMENT MOPP	X	X
11	DEPLOY FIXED EMPLACEMENT ALARM UNIT		X
12	REPORT CHEMICAL/BIOLOGICAL ATTACK	X	X
13	PREPARE AND SUBMIT NBC 1&2 REPORTS	X	X
14	PREPARE FALLOUT PREDICTION	X	X
15	READ UNIT DOSIMETERS	X	X
16	RET INIT RADIATION EXPOSURE DOSE	X	X
17	READ/REPORT RADIATION DOSE RATE	X	X
18	PREPARE AND SUBMIT NBC 4 REPORTS	X	X
19	ESTIMATE TOTAL DOSE EXPOSURE	X	X
20	PLAN A RADIOLOGICAL SURVEY	X	X
21	COMPUTE TOTAL DOSE	X	X
22	COLLECT/REPORT TOTAL RADIATION DOSE	X	X
23	CAL TIME OF STAY IN FALLOUT AREA	X	X
24	CAL OPT TIME OF EXIT FROM AREA	X	X
25	REPORT/RECORD PERSONNEL DOSE RATES	X	X
26	PREPARE FRIENDLY NUC/CHEM STRIKE	X	X
27	REPORT AIR ATTACK	X	
28	MAINTAIN STATUS CHART ON CHEM EQUIP	X	X
29	ADVISE ON REQUISITION/DIST OF EQUIP	X	X
30	MAINTAIN PRESCRIBED AMT OF SUPPLIES	X	X
31	SELECT A MOVEMENT ROUTE USING A MAP	X	
32	SELECT SMOKE POT POSITIONS	X	X
33	ESTABLISH WORK AND REST INTERVALS	X	X
34	SUSTAIN OPNS (PERS.EQUIP.AMMO.ETC)	X	
35	PREPARE FOR OPERATIONS	X	
36	PREPARE A FRAG ORDR	X	
37	PREPARE UNIT MOVEMENT PLANS	X	
38	PREPARE A PLATOON SECTOR SKETCH	X	
39	PLAN FOR USE OF CONTROL MEASURES	X	
40	PREPARE AN OPERATION OVERLAY	X	

HIGH PRIORITY TASKS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: PLT DECON

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MSA UNIQUE
41	PREPARE A SITUATION REPORT (SITREP)	X	
42	PREPARE PLT DEFENSIVE FIRE PLAN	X	
43	COLLECT/REPORT INFO - SALUATE	X	
44	REPORT INFORMATION OF INTELL VALUE	X	
45	SUBMIT SHELL, MORTAR, BOMB REPORTS	X	
46	REPORT INTERFERENCE & INCIDENTS	X	
47	MAINTAIN PERSONNEL ACCOUNTABILITY	X	
48	ESTABLISH PRIORITIES FOR GEN MAINT.	X	
49	REQUEST SUPPLIES/LOGISTIC SERVICES	X	
50	INITIATE CASUALTY REPORTING	X	
51	PROCESS EPW, CAPTURED DOC & EQUIP	X	
52	ENCODE/DECODE MESSAGES	X	
53	PREPARE FOR FUTURE OPERATIONS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: FLT SMOKE

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PLAN/PREPARE/SUSTAIN SMOKE OPN	X	X
2	ANALYZE TERRAIN USING METT-T	X	
3	ENVIRONMENT EFFECTS ON SMOKE/DECON	X	X
4	PERFORM NUC VULNERABILITY ANALYSIS	X	X
5	EST QTY OF FUEL/FOG OIL REQUIRED	X	X
6	DETERMINE SMOKE POT REQUIREMENTS	X	X
7	DEV STORAGE REQUIREMENT FOR FOG OIL	X	X
8	PREPARE FOR OPNS IN NBC ENVIRONMENT	X	X
9	PREPARE FOR NBC ATTACK	X	X
10	IMPLEMENT MOPP	X	X
11	POSITION OF FIXED ALARM UNITS	X	X
12	REPORT CHEMICAL/BIOLOGICAL ATTACK	X	X
13	PREPARE/DISSEMINATE NBC 1/2 REPORTS	X	X
14	MAKE SIMPLIFIED FALLOUT PREDICTION	X	X
15	READ UNIT DOSIMETERS	X	X
16	RPT INITIAL RADIATION EXPOSURE DOSE	X	X
17	READ & REPORT RADIATION DOSAGES	X	X
18	PREPARE/DISSEMINATE NBC 4 REPORT	X	X
19	EST TOTAL DOSE EXPOSURE		X
20	PLAN A RADIOLOGICAL SURVEY	X	X
21	COMPUTE TOTAL DOSE		X
22	COLLECT/REPORT TOTAL RADIATION DOSE	X	X
23	CAL TIME OF STAY CONTAMINATED AREA		X
24	CAL TIME OF EXIT FROM FALLOUT AREA		X
25	RPT/RECORD PERSONNEL DOSE RATES	X	X
26	PREPARE FOR FRIENDLY NBC STRIKE	X	
27	REPORT AIR ATTACK	X	X
28	MAINTAIN CHEM EQUIP STATUS CHART	X	X
29	ADVISE ON REQ/DIST OF NBC EQUIP	X	X
30	MAINTAIN PRESCRIBED AMT OF SUPPLIES	X	X
31	SELECT A MOVEMENT ROUTE USING A MAP	X	X
32	ADVISE ON USE OF SMOKE		X
33	SELECT SMOKE POSITIONS	X	X
34	RECOMMENDED WORK/REST INTERVALS	X	X
35	POSITION EQUIPMENT & MATERIAL	X	X
36	SUSTAIN OPNS (PERS, EQUIP, AMMO, ETC)	X	
37	PREPARE FOR OPERATIONS	X	
38	REQUEST SUPPLIES & LOGISTIC SERVICE	X	
39	PREPARE A FRAGMENTARY ORDER	X	X
40	PREPARE/PLAN UNIT MOVEMENT PLANS	X	

HIGH PAYOFF TASK FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHELON: PLT SWINE

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MSA UNIQUE
41	PREPARE A PLT ELEMENT SECTOR SKETCH	X	
42	PLAN FOR USE OF CONTROL MEASURE	X	
43	PREPARE AN OPERATIONS OVERLAY	X	
44	PREPARE SITUATION REPORT (SITREP)	X	
45	PREPARE A DEFENSIVE FIRE PLAN	X	
46	COLLECT/REPORT INFORMATION - SALUTE	X	
47	REPORT INFORMATION OF INTEL VALUE	X	
48	SUBMIT SHELL, MORTAR, & BOMB REPORT	X	
49	REPORT INTERFERENCE AND INCIDENTS	X	
50	MAINTAIN PERSONNEL ACCOUNTABILITY	X	
51	ESTABLISH PRIORITIES FOR GEN MAINT.	X	
52	INITIATE CASUALTY REPORTING	X	
53	PROCESS EPW, CAPTURED DOC/EQUIP	X	
54	ENCODE/DECODE MESSAGES	X	
55	PREPARE FOR FUTURE OPERATIONS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: PLT SMOKE DECON

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PLAN/PREPARE/CONTROL NBC OPERATIONS	X	X
2	ANALYZE TERRAIN USING METT-T	X	
3	EFFECT WEATHER/TERRAIN ON NBC/SMOKE	X	X
4	PERFORM NUC VULNERABILITY ANALYSIS	X	X
5	EST. QUANTITIES FUEL/FOG OIL NEEDED	X	X
6	DETERMINE SMOKE POT REQUIREMENTS	X	X
7	DEV STORAGE REQUIREMENT FOR FOG OIL	X	X
8	DET PERSONNEL REQUIRED FOR DECON OF	X	X
9	FORECAST DECON MATERIAL REQUIREMENT	X	X
10	DEV. STORAGE REQUIREMENTS FOR DECON	X	X
11	PREPARE FOR OPN IN NBC ENVIRONMENT	X	X
12	PREPARE FOR A NBC ATTACK	X	X
13	IMPLEMENT MOPPS LEVELS	X	X
14	POSITION OF FIXED ALARM SYSTEMS	X	X
15	REPORT CHEMICAL/BIOLOGICAL ATTACK	X	X
16	PREPARE/DISSEMINATE NBC 1/2 REPORT	X	X
17	MAKE SIMPLIFIED FALLOUT PREDICTION	X	X
18	READ UNIT DOSIMETERS	X	X
19	RPT INITIAL RADIATION EXPOSURE DOSE	X	X
20	READ & REPORT RADIATION DOSAGES	X	X
21	PREPARE/DISSEMINATE NBC 4 REPORT	X	X
22	EST TOTAL DOSE EXP. IN FALLOUT AREA	X	X
23	PLAN A RADIOLOGICAL SURVEY	X	X
24	COMPUTE TOTAL DOSE	X	X
25	COLLECT/REPORT TOTAL RADIATION DOSE	X	X
26	CALCULATE TIME OF STAY IN FALLOUT	X	X
27	CAL OPT TIME OF EXIT FROM AREA	X	X
28	RPT/RECORD PERSONNEL DOSE RATES	X	X
29	PREPARE FOR FRIENDLY NBC STRIKE	X	X
30	REPORT AIR ATTACK	X	X
31	MAINTAIN CHEM EQUIP STATUS CHART	X	X
32	ADVISE ON REQ/DIST OF NBC EQUIP	X	X
33	MAINTAIN PRESCRIBED AMT OF SUPPLIES	X	X
34	SELECT A MOVEMENT ROUTE USING A MAP	X	X
35	ADVISE ON USE OF SMOKE FOR UNIT OPS	X	X
36	SELECT SMOKE POSITIONS	X	X
37	SELECT & REPORT DECONT SITE	X	X
38	ESTABLISH WORK AND REST INTERVALS	X	X
39	POSITION EQUIPMENT & MATERIAL	X	X
40	DETERMINE FIELD SERVICE SUPPORT	X	X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: PLT SMOKE DECON

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
41	PREPARE A FRAGMENTARY ORDER	X	X
42	PREPARE/PLAN UNIT MOVEMENT PLANS	X	
43	PREPARE A PLT/ELEMENT SECTOR SKETCH	X	X
44	PLAN FOR USE OF CONTROL MEASURES	X	X
45	PREPARE AN OPERATIONS OVERLAY	X	
46	PREPARE A SITUATION REPORT (SITREP)	X	
47	PREPARE PLT DEFENSIVE FIRE PLAN	X	X
48	COLLECT/REPORT INFORMATION - SALUTE	X	
49	REPORT INFORMATION OF INTEL VALUE	X	X
50	SUBMIT SHELL, MORTAR, BOMB REPORT	X	X
51	REPORT INTERFERENCE AND INCIDENTS	X	
52	MAINTAIN PERSONNEL ACCOUNTABILITY	X	
53	ESTABLISH PRIORITIES FOR GEN MAINT.	X	
54	REQUEST SUPPLIES & LOGISTIC SERVICE	X	
55	INITIATE CASUALTY REPORTING	X	
56	PROCESS ENEMY PRISONERS OF WAR	X	
57	ENCODE/DECODE MESSAGES	X	
58	PREPARE FOR FUTURE OPERATIONS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHELON: INT CHEM TM CA JB

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PREPARE ENEMY/FRIEND SITUATION MAP	X	
2	PREPARE NBC SITUATION MAP & OVERLAY		X
3	ADVISE THE CDR ON NBC SITUATION	X	X
4	PLAN/PREPARE/CONTROL SMOKE OPNS	X	X
5	PLAN/DIRECT NBC RECONNAISSANCE OPNS	X	X
6	PLAN BIOLOGICAL SAMPLING OPERATIONS	X	X
7	PLAN/PREPARE NBC SURVEY	X	X
8	PLAN/SUSTAIN DECONTAMINATION OPNS	X	X
9	PLAN FOR USE OF NBC WEAPONS	X	X
10	PLAN FOR USE OF CONTROL MEASURE	X	
11	EST QTY OF FUEL/FOG OIL REQUIRED	X	X
12	DETERMINE SMOKE POT REQUIREMENTS	X	X
13	DEV STORAGE REQUIREMENT FOR FOG OIL	X	X
14	DET PERSONNEL REQUIRED FOR DECON OF	X	X
15	FORECAST DECON MATERIAL REQUIREMENT	X	X
16	DEV STORAGE REQUIREMENT FOR DECON	X	X
17	TASK ORGANIZE NBC UNITS	X	X
18	PREPARE FOR OPERATIONS	X	
19	PREPARE FOR OPNS IN NBC ENVIRONMENT	X	X
20	ANALYZE TERRAIN USING METT-T	X	
21	EST ENVIRONMENT EFF ON NBC/SMOKE OP	X	X
22	ANALYZE VULNERABILITY TRP POSITION	X	X
23	ANALYZE POSITION OF NBC ALARM UNITS	X	X
24	ADVISE ON USE OF SMOKE FOR UNIT OPS	X	X
25	SELECT SMOKE POSITIONS	X	X
26	PREPARE FOR A NBC ATTACK	X	X
27	IMPLEMENT MOPP LEVELS	X	X
28	PREPARE WIND VECTOR PLOTS	X	X
29	PREPARE AN EFFECTIVE DOWNWIND MSG	X	X
30	PREPARE CHEMICAL DOWNWIND MSG	X	X
31	PROCESS NBC I/C REPORTS	X	X
32	CALCULATE NUCLEAR WEAPONS YIELD	X	X
33	CALCULATE GROUND ZERO LOCATIONS	X	X
34	MAKE FALLOUT PREDICTIONS	X	X
35	PROVIDE IMMED WARNING CONTAMINATION	X	X
36	ASSESS TEMP EFFECTS CHEM/BIO AGENTS		X
37	ASSESS WIND EFF CHEM/BIO CLOUD TVL		X
38	CALCULATE DOWNWIND VAPOR HAZARD	X	X
39	MAKE/ISSUE NBC B CHEM/BIO REPORTS	X	X
40	REAT UNIT DOSIMETERS	X	X

HIGH PAYOFF TASK FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: IND CHEM TM CA/JB

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
41	RPT INITIAL RADIATION EXPOSURE DOSE	X	X
42	RPT/RECORD PERSONNEL DOSE RATES	X	X
43	EST TOTAL DOSE EXP. IN FALLOUT AREA	X	X
44	SELECT RADIOLOGICAL/CHEM SURVEY RTE	X	X
45	SUPERVISE MONITORING/SURVEY GFNS	X	X
46	PREPARE RAD/CHEM SURVEY OVERLAYS	X	X
47	COLLECT/REPORT TOTAL DOSE RADIATION	X	X
48	REC/MAINTAIN RADIATION DOSE STATUS	X	X
49	PREPARE/SUBMIT NBC 4 REPORT	X	X
50	COMPUTE AIR/GND CORRELATION FACTORS		X
51	READ & REPORT RADIATION DOSAGES	X	X
52	RECORD DATA ON DA 1971-R & 1971-1-R	X	X
53	COMPUTE TRANS/CORRELATION FACTORS		X
54	DETERMINE RADIATION DECAY FACTORS		X
55	CHG RADIATION DATA TO DOSE RATES		X
56	INTERPOLATE DOSE RATES FALLOUT AREA		X
57	DET DOSE RATE CONTOURS	X	X
58	PROCESS CHEM/BIO RECON REPORTS	X	X
59	PREPARE NBC 5 REPORT	X	X
60	CAL TIME OF ENTRY FOR FALLOUT AREA		X
61	CAL TIME OF STAY FROM FALLOUT AREA	X	X
62	CAL TIME OF EXIT FOR FALLOUT AREA		X
63	COMPUTE TOTAL DOSE	X	X
64	MAINT RADIATION DOSE STATUS CHART	X	X
65	DET ENEMY TARGET LOCATIONS	X	
66	ANALYZE NBC TARGETS FOR ENGAGEMENT	X	X
67	PREPARE AN OPERATION OVERLAY	X	
68	PREPARE FOR FRIENDLY NBC STRIKE	X	X
69	ANALYZE PERS & EQUIP DECON SITE	X	X
70	ESTABLISH WORK AND REST INTERVALS	X	X
71	ANALYZE POSITIONS OF EQUIP/MATERIAL	X	X
72	MAINTAIN NBC DEF TM PERSONNEL CHART		X
73	MAINTAIN CHEM EQUIP STATUS CHART		X
74	PROVIDE ADVISE ON CHEM AGENTS		X
75	PROVIDE TECH ADVISE ON BIO DEFENSE		X
76	ADVISE ON REQ/DIST OF NBC EQUIP	X	X
77	SELECT A MOVEMENT ROUTE USING A MAP	X	X
78	PREPARE/PLAN UNIT MOVEMENT PLANS	X	
79	REPORT INFORMATION OF INTEL VALUE	X	
80	REPORT AIR ATTACK	X	X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL UNITS

ECHOLON: INI CHEM TM JA JB

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
91	REPORT INTERFERENCE AND INCIDENTS	X	
92	MAINTAIN PRESCRIBED AMT OF SUPPLIES	X	X
93	SUSTAIN OPERATIONS (PERS.EQUIP,ETC)	X	X
94	PREPARE A FRAGMENTARY ORDER	X	X
95	MAINTAIN PERSONNEL ACCOUNTABILITY	X	
96	ESTABLISH PRIORITIES FOR GEN MAINT.	X	
97	REQUEST SUPPLIES & LOGISTIC SERVICE	X	
98	INITIATE CASUALTY REPORTING	X	
99	PREPARE/POST DAILY STAFF JOURNAL	X	
90	ENCODE/DECODE MESSAGES	X	
91	PREPARE FOR FUTURE OPERATIONS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL DET FA/FB

ECHOLON: 1ND DETACHMENT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PLAN/SUSTAIN DECONTAMINATION OPNS	X	X
2	ANALYZE TERRAIN USING METT-T	X	X
3	EST ENVIRONMENT EFF ON NBC/SMOKE OP	X	X
4	DETERMINE SMOKE POT REQUIREMENTS	X	X
5	DET PERSONNEL TO PERFORM DECON MSN		X
6	FORECAST DECON MATERIAL REQUIREMENT	X	X
7	DEV STORAGE REQUIREMENT FOR DECON	X	X
8	PREPARE FOR OPNS IN NBC ENVIRONMENT	X	X
9	PREPARE FOR A NBC ATTACK	X	X
10	IMPLEMENT MOPP LEVELS	X	X
11	POSITION FIXED ALARM UNITS	X	X
12	REPORT CHEMICAL/BIOLOGICAL ATTACK	X	X
13	PREPARE AND SUBMIT NBC 1/2 REPORTS	X	X
14	MAKE SIMPLIFIED FALLOUT PREDICTION	X	X
15	READ UNIT DOSIMETERS	X	X
16	RPT INITIAL RADIATION EXPOSURE DOSE	X	X
17	READ/REPORT RADIATION DOSAGES	X	X
18	PREPARE AND SUBMIT NBC 4 REPORTS	X	X
19	EST TOTAL DOSE EXP. IN FALLOUT AREA	X	X
20	PLAN A RADIOLOGICAL SURVEY	X	X
21	COMPUTE TOTAL DOSE	X	X
22	COLLECT/REPORT TOTAL RADIATION DOSE	X	X
23	CALCULATE TIME OF STAY IN FALLOUT	X	X
24	CAL OPT TIME OF EXIT FROM AREA	X	X
25	RPT/RECORD PERSONNEL DOSE RATES	X	X
26	PREPARE FOR FRIENDLY NBC STRIKE	X	X
27	REPORT AIR ATTACK	X	X
28	MAINTAIN UNIT CHEMICAL EQUIP STATUS		X
29	ADVISE CN DIST. OF NBC EQUIP/SUPPLY		X
30	MAINTAIN PRESCRIBED AMT OF SUPPLIES	X	
31	SELECT A MOVEMENT ROUTE USING A MAP	X	
32	SELECT SMOKE POT POSITIONS	X	X
33	REPORT DECONTAMINATION SITE	X	X
34	ESTABLISH WORK & REST INTERVALS	X	X
35	POSITION EQUIPMENT & MATERIAL	X	X
36	SUSTAIN OPERATIONS (PERS.EQUIP.ETC)	X	X
37	PREPARE FOR OPERATIONS	X	
38	REQUEST SUPPLY & LOGISTICAL SERVICE	X	
39	PREPARE A FRAGO	X	
40	PREPARE PLAN UNIT MOVEMENT PLAN	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: CHEMICAL DET FA/FB

ECHOLON: IND DETACHMENT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
41	PREPARE A PLT/ELEMENT SECTOR SKETCH	X	
42	PLAN FOR USE OF CONTROL MEASURE	X	
43	PREPARE AN OPERATION OVERLAY	X	
44	PREPARE A SITUATION REPORT (SITREP)	X	
45	PREPARE A DEFENSIVE FIRE PLAN	X	
46	COLLECT/REPORT INFORMATION - SALUTE	X	
47	REPORT INFORMATION OF INTEL VALUE	X	
48	SUBMIT SHELL, MORTAR, & BOMB REPORT .	X	
49	REPORT INTERFERENCE AND INCIDENTS	X	
50	MAINTAIN PERSONNEL ACCOUNTABILITY	X	
51	ESTABLISH PRIORITY FOR MAINTENANCE	X	
52	INITIATE CASUALTY REPORTING	X	
53	PROCESS ENEMY PRISONERS OF WAR	X	
54	ENCODE/DECODE MSG BY TAC OPS CODES	X	
55	PREPARE FOR FUTURE OPERATIONS	X	

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

J-II-1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHELON: BN COMMAND SECT

OPERATOR: BN CDR

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON	ACT DIS- MOVE	OPN GRAP HICS	ISMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	POS/ NAV DATA	ANTO TGT ACQ	ECUPLI SENSOR INPUT	TCH BEN FREE DRW GRAPHICS	PROC DATA PTS
EVALUATE MISSION	3	3	3	1	1	1	3	3	3	2	1	2	3	2
CONDUCT PRELIMINARY MISSION ANAL.	3	3	3	1	1	1	3	3	3	2	1	1	3	2
DEV TASK ORGANIZATION/CONCEPT OF OP	3	3	3	1	1	1	3	3	3	1	1	1	1	1
FORMULATE TENTATIVE PLAN	3	3	3	1	1	1	3	3	3	1	1	1	1	1
PLAN MANEUVER CONTROL MEASURES	3	3	3	1	1	1	3	3	3	2	1	2	2	2
ISSUE OPORD	3	3	3	3	2	1	3	3	3	3	1	3	2	3
PREPARE FOR OPERATIONS	3	3	3	2	1	1	3	3	3	3	1	3	3	3
CONTROL & COORDINATE BY OPERATIONS	3	3	3	3	2	1	3	3	3	3	1	3	2	3
CONTROL UNIT OPS BY GRAPHIC CONTROL	3	3	3	2	1	1	3	3	3	3	1	3	2	3
ISSUE FRAGO	3	3	3	3	2	1	3	3	3	3	1	3	2	3
REPORT THREAT	3	3	3	3	2	1	3	3	3	3	1	3	3	3
MAKE SPOT REPORTS	3	3	1	3	2	1	3	3	1	3	1	1	1	3
RPT BOMB, SHELL, ROCKET, AIRCRAFT FIRE	3	3	1	3	2	1	3	3	3	3	1	1	3	3
REPORT SAEIA	3	3	1	2	3	1	3	3	1	2	1	1	3	1

HARDWARE SOLUTION: USES SC 83

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: BN S1 SECTION

OPERATOR: BN S1

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON	ACT DIS- PLAY	OPN GRAP HICS	AFMT TEXT MSG	AFREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO STGT ACQ	RTLSFLD SENSOR INPUT	TOCH SEN PHICS	PROG DATA BUS
EVALUATE MISSION	2	3	3	1	1	1	3	3	3	2	1	2	3	2
FORMULATE TENTATIVE PLAN	2	3	3	1	1	1	3	3	3	2	1	2	3	2
PLAN MANEUVER CONTROL MEASURES	2	3	3	1	1	1	3	3	3	2	1	2	2	2
FORECAST LOSSES	2	3	2	1	1	1	3	3	2	2	1	2	2	2
COORDINATE WITHIN BN HEADQUARTERS	2	1	1	1	1	1	1	1	1	1	1	1	1	1
PREPARE FOR OPERATIONS	2	3	3	2	1	1	3	3	3	3	1	3	3	3
CONTROL UNIT OPS BY GRAPHIC MEASURE	2	3	3	1	1	1	3	3	3	3	1	3	3	3
MAINTAIN MOVEMENT PLANS & SOPs	1	3	2	1	1	1	3	3	1	1	1	1	1	1
PROCESS EPW	2	3	1	3	2	1	3	3	1	2	1	1	1	2
REPORT SAEDA INCIDENTS	2	3	1	2	3	1	3	3	2	2	1	1	3	2

HARDWARE SOLUTION: USES S2/S3

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: CHEMICAL UNITS

ECHOLON: BN S2/SS SECT

OPERATOR: BN S2/SS

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

FCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP PACKAGED	SIG NAV DATA	AUTO TGT ACQ	STIPPL SENSOR INPUT	TCH FREE GRAPHICS	SEN DEW DATA	PROC DATA BUS
EVALUATE MISSION	2	3	3	1	1	1	3	3	3	2	2	2	3	2	2
ANALYZE TERRAIN USING METT-7	2	3	3	1	1	1	2	2	3	2	1	2	3	2	2
CONDUCT PRELIMINARY MISSION ANAL.	2	3	3	1	1	1	3	3	3	2	1	2	3	2	2
EST ENVIRONMENT EFFECTS ON NBC OPNS	2	3	3	3	2	2	3	3	3	3	1	3	2	3	3
ANALYSIS OF FRIENDLY TRP POSITIONS	2	3	3	1	1	1	3	3	3	2	1	2	3	2	2
PREPARE INTELLIGENCE ESTIMATES	2	3	3	1	1	1	3	3	3	2	1	2	3	2	2
PREPARE ANALYSIS OF AREA OF OPNS	2	3	2	1	1	1	3	3	3	2	1	2	3	2	2
FORMULATE TENTATIVE PLAN	2	3	3	1	1	1	3	3	3	2	1	2	3	2	2
PREPARE BN OPERATIONS ESTIMATE	2	3	3	1	1	1	3	3	3	2	1	2	3	2	2
DEV TASK ORGANIZATION/CONCEPT OF OP	2	3	3	1	1	1	3	3	3	1	1	1	3	2	2
TASK ORGANIZE NBC UNITS	2	3	2	1	1	1	3	3	3	1	1	1	3	2	2
PLAN MANEUVER CONTROL MEASURES	2	3	3	1	1	1	3	3	3	1	1	1	3	2	2
OBTAIN PROCESS/ISSUE INTEL INFO	2	3	3	3	3	1	3	3	3	2	1	3	2	3	3
COORDINATE WITHIN BN HEADQUARTERS	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MAINTAIN ENEMY/FRIENDLY SIT MAP	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
PREPARE NBC SIT MAPS & OVERLAYS	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
PREPARE FOR NBC OPERATIONS	2	3	3	2	1	1	3	3	3	1	1	2	3	2	2
PLAN/PREPARE FOR NBC RECONNAISSANCE	2	3	3	1	1	1	3	3	3	1	1	2	3	2	2
PLAN FOR BIOLOGICAL SAMPLING	2	3	3	1	1	1	3	3	3	1	1	2	3	2	2
PLAN/PREPARE FOR NBC SURVEY	2	3	3	1	1	1	3	3	3	1	1	2	3	2	2
PLAN/PREPARE FOR NBC SURVEY	2	3	3	1	1	1	3	3	3	1	1	2	3	2	2
PLAN FOR USE OF CONTROL MEASURES	2	3	3	1	1	1	3	3	3	1	1	2	3	2	2
EST QTY OF FUEL/FOG OIL REQUIRED	2	3	1	1	1	1	3	3	3	1	1	2	3	2	2
DETERMINE SMOKE POT REQUIREMENTS	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
DEV STORAGE REQUIREMENT FOR FOG OIL	2	3	1	1	1	1	3	3	3	1	1	2	3	2	2
EST PERSONNEL REQ TO DO DECON TASKS	2	1	1	1	1	1	3	3	3	1	1	2	3	2	2
PREDICT DECON MATERIAL REQUIREMENT	2	3	1	1	1	1	3	3	3	1	1	2	3	2	2
DEV STORAGE REQ FOR DECONTAMINANTS	2	3	1	1	1	1	3	3	3	1	1	2	3	2	2
PREPARE FOR OPNS IN A NBC ENVIR.	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
PREPARE AN OPERATIONS OVERLAY	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
PREPARE AND ISSUE ORDERS	2	3	3	1	2	1	3	3	3	3	1	3	3	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: EN 80/83 SECT

OPERATION: EN 80/83

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	PMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	POS NAV DATA	AUTO TGT ACQ	SCFOLD SENSOR INPUT	TCH SEN FREE PRW GRAPHICS	PROC DATA BUS
MAINTAIN MOVEMENT PLANS & SOPs	2	3	2	1	1	1	3	3	2	1	1	1	1	1
DET DET POSITION FOR NBC ALARM EQUIP	2	3	3	1	1	1	3	3	3	3	1	1	1	3
ADVISE USE OF SMOKE IN EM UNIT OPNS	2	3	3	1	1	1	3	3	3	3	1	1	1	3
ANALYSIS TO SELECT SMOKE POSITIONS	2	3	3	1	1	1	3	3	3	3	1	1	1	3
CONTROL SMOKE OPERATIONS	2	3	3	2	3	2	3	3	3	3	1	1	1	3
PREPARE FOR NBC ATTACK	2	3	1	3	2	3	3	3	1	3	1	1	1	3
IMPLEMENT MOPP	2	3	1	1	2	2	3	3	1	2	1	1	1	1
PREPARE WIND VECTOR PLOTS	2	3	2	2	1	1	3	3	2	2	1	1	1	3
PREPARE EFFECTIVE DOWNWIND MESSAGE	2	3	1	3	2	1	3	3	1	1	1	1	1	1
PREPARE/ISSUE CHEM DOWNWIND MSG	2	3	1	3	2	1	3	3	3	1	1	1	1	1
PREPARE PROCESS NBC 1 & 2 REPORTS	2	3	3	3	2	3	3	3	3	3	1	1	1	3
CALCULATE NUCLEAR WEAPONS YIELD	2	3	3	1	1	1	3	3	3	1	1	1	1	1
CALCULATE GROUND ZERO LOCATIONS	2	3	3	1	1	1	3	3	3	1	1	1	1	1
PREPARE/ISSUE FALLOUT PREDICTION	2	3	3	3	2	1	3	3	3	3	1	1	1	3
IMMEDIATE WARNING OF CONTAMINATION	2	3	3	3	2	1	3	3	3	3	1	1	1	3
DET TEMP EFFECTS ON CHEM BIO AGENT	2	3	2	1	1	1	3	3	2	1	1	3	2	3
DET WIND EFF ON CHEM/BIO CLOUD TVL	2	3	2	1	1	1	3	3	2	1	1	3	2	3
CALCULATE DOWNWIND VAPOR HAZARD	2	3	3	1	1	1	3	3	3	3	1	1	1	3
PREPARE/ISSUE NBC 3 REPORTS	2	3	3	3	2	1	3	3	3	3	1	1	1	3
READ UNIT DOSIMETERS	2	3	1	1	1	3	3	3	1	1	1	3	1	3
RPT INITIAL RADIATION EXPOSURE DOSE	2	3	1	3	2	3	3	3	1	3	1	3	1	3
RPT RECORD PERSONNEL DOSE RATES	2	3	1	3	2	1	3	3	1	1	1	3	1	3
EST DOSEAGE EXPOSURE IN FALLOUT AREA	2	3	3	1	1	1	3	3	3	2	1	1	3	3
SELECT RADIOLOGICAL/CHEM SURVEY RTE	2	3	3	1	1	1	3	3	3	3	1	1	1	3
MAKE RAD/CHEM SURVEY OVERLAYS	2	3	3	3	1	1	3	3	3	3	1	1	1	3
ANALYST REPORT TOTAL RADIATION DOSE	2	3	1	3	2	1	3	3	1	1	1	3	1	3
REP. MAINTAIN RADIATION DOSE STATUS	2	3	1	1	1	1	3	3	1	1	1	1	1	1
PREPARE, PROCESS, & ISSUE NBC 4 RPT	2	3	3	3	1	1	3	3	1	1	1	3	1	3
CORRELATE AIR AND GROUND RADIATION FACTORS	2	3	1	1	1	1	3	3	1	1	1	1	1	1
READ AND REPORT RADIATION DOSEAGE	2	3	1	3	2	1	3	3	1	1	1	3	1	3
REPORT DATA IN DA FORMS 1 & 1071-1-2	2	3	1	1	1	1	3	3	1	1	1	1	1	1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

BOHELOM: BN 81 83 SEPT

OPERATOR: BN 81 83

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	PMT TEXT MSG	FREE TEXT MSG	AUDIO VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	PID- NAV DATA	AUTO TGT ACQ	HELPFLI SENSOR INPUT	TTS SEN FREE LSW GRAPHICS	PRIO DATA BUS
COMPLETE TRANS CORRELATION FACTORS	2	3	1	1	1	1	3	3	1	1	1	3	1	3
DETERMINE RADIATION DELAY FACTORS	2	3	1	1	1	1	3	3	1	1	1	3	1	3
CONVERT RAL DATA TO GNT DOSE RATES	2	3	1	1	1	1	3	3	1	1	1	3	1	3
DET DOSE RATE IN FALLOUT AREA	2	3	1	1	1	1	3	3	1	1	1	3	1	3
DET DOSE RATE CONTOUR FROM RAL DATA	2	3	3	3	2	1	3	3	1	1	1	3	1	3
RPT PROCESS PLOT CHEM BIO RECON RPT	2	3	3	3	2	1	3	3	1	1	1	3	1	3
PREPARE ISSUE NED 5 REPORTS	2	3	3	3	2	1	3	3	1	1	1	3	1	3
CAL TIME OF ENTRY FOR FALLOUT AREA	2	3	3	1	1	1	3	3	1	1	1	3	1	3
CAL TIME OF STAY IN FALLOUT AREA	2	3	3	1	1	1	3	3	1	1	1	3	1	3
CAL NET TIME OF EXIT FROM FALLOUT	2	3	3	1	1	1	3	3	1	1	1	3	1	3
CONVERT TOTAL DOSE	2	3	3	1	1	1	3	3	1	1	1	3	1	3
PREPARE RADIATION DOSE STATUS CHART	2	3	1	1	1	1	3	3	1	1	1	3	1	3
DETERMINE ENEMY TARGET LOCATIONS	2	3	3	1	1	1	3	3	1	1	1	3	1	3
PREPARE FRIENDLY NUC/CHEM STRIKE	2	3	3	3	2	1	3	3	1	1	1	3	1	3
ESTABLISH WARN & REST INTERVALS	2	3	1	1	1	1	3	3	1	1	1	3	1	3
PREPARE UNIT MOVEMENT PLAN	2	3	1	1	1	1	3	3	1	1	1	3	1	3
MAINTAIN NED IEF TEAM PERS CHARTS	2	3	1	1	1	1	3	3	1	1	1	3	1	3
MAINTAIN CHEM EQUIP STATUS CHART	2	3	1	1	1	1	3	3	1	1	1	3	1	3
ADVISE ON CHEM AGENTS DANGERS	2	3	1	1	1	1	3	3	1	1	1	3	1	3
PROVIDE ADVISE ON BIOLOGICAL IEF	2	3	1	1	1	1	3	3	1	1	1	3	1	3
ADVISE SUPPLY COST OF NED EQUIP	2	3	1	1	1	1	3	3	1	1	1	3	1	3
CONTROL & COORDINATE BN OPERATIONS	2	3	3	3	2	1	3	3	1	1	1	3	1	3
CONTROL UNIT OPN BY GRAPHIC CONTROL	2	3	3	2	1	1	3	3	1	1	1	3	1	3
PREPARE ISSUE FRAGMENTARY ORDER	2	3	3	3	2	1	3	3	1	1	1	3	1	3
REPORT THREAT	2	3	3	3	2	1	3	3	1	1	1	3	1	3
REPORT AIR ATTACK	2	3	3	3	2	1	3	3	1	1	1	3	1	3
REPORT INTERFERENCE & INCIDENTS	2	3	3	3	2	1	3	3	1	1	1	3	1	3
MAKE SPOT REPORTS	2	3	3	3	2	1	3	3	1	1	1	3	1	3
RPT BOMB SHELL ROCKETS AIRCRAFT FIRE	2	3	3	3	2	1	3	3	1	1	1	3	1	3
PROCESS EPA	2	3	3	3	2	1	3	3	1	1	1	3	1	3
PREPARE CAPTURED DOCUMENTS & EQUIP	2	3	3	3	2	1	3	3	1	1	1	3	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHELON: EN 82/83 SENT

OPERATOR: EN 82/83

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON	ACT DIS-	OPN GRAP	FMT TEXT	FREE TEXT	AUDIO VISUAL	PRO- CESS	STORE DATA	DIGITAL MAP	FOR NAV	AUTO TST	STUFFED SENSE	FOR SEN FREE	SEN DATA	PROC DATA
	MOVE	PLAY	CHICS	MSG	MSG	ALERT	DATA		BACKGROUND	DATA	ACQ	INPUT	GRAPHICS	BTS	
REPORT AREA INCIDENTS	2	3	1	2	3	1	3	3	1	2	1	1	3	1	
PREPARE/POST DAILY STAFF JOURNAL	2	3	1	2	1	1	3	1	1	2	1	1	1	1	
EXCHG SERVICE MESSAGES	2	3	1	3	3	1	3	1	1	1	1	1	1	1	
PREPARE FOR FUTURE OPERATIONS	2	3	3	2	1	1	3	3	3	1	1	1	3	1	

HARDWARE SOLUTION: PCU (71)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

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IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: BN 84 SECTION

OPERATOR: BN 84

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCB (V1/V2) OR TCU (V1/V2)

HTC

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	PMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	STUFFED SENSOR INPUT	TOH SEN FREE DRW GRAPHICS	PROD DATA BUS
EVALUATE MISSION	2	3	3	1	1	1	3	3	3	2	1	1	3	1
FORMULATE TENTATIVE PLAN	2	3	3	1	1	1	3	3	3	1	1	1	3	1
PREPARE A LOGISTICS ESTIMATE	2	3	3	1	1	1	3	3	3	2	1	1	3	1
PLAN & COORDINATE LOGISTICAL SPT	2	3	3	3	2	1	3	3	3	3	1	1	2	1
PLAN MANEUVER CONTROL MEASURES	2	3	3	1	1	1	3	3	3	1	1	1	2	1
COORDINATE WITHIN BN HEADQUARTERS	2	1	1	1	1	1	1	1	1	1	1	1	1	1
MAINTAIN MOVEMENT PLANS & SOPs	1	3	2	1	1	1	3	3	2	1	1	1	1	1
PREPARE FOR OPERATIONS	2	3	3	2	1	1	3	3	3	3	1	1	3	3
CONTROL UNIT OPN BY GRAPHIC CONTROL	2	3	3	1	1	1	3	3	3	3	1	1	3	3
INVENTORY LIST SETS, KIT, & OUTFITS	1	3	1	1	1	1	3	3	1	1	1	1	1	1
MAINTAIN PROPERTY RECEIPTS & RECORD	1	3	1	1	1	1	3	3	1	1	1	1	1	1
MAINTAIN TAXIS RECORDS	1	3	1	1	1	1	3	3	1	1	1	1	1	1
PROCESS MATERIAL READINESS REPORTS	2	1	1	3	2	1	3	3	1	1	1	1	1	1
REPORT VEHICLE/EQUIPMENT STATUS	2	3	1	3	2	1	3	3	1	1	1	1	1	1
REPORT SUPPLY STATUS/REQUEST SUPPLY	2	3	1	3	2	1	3	3	1	1	1	1	1	1
REQUEST RATIONS & COOR FOOD SERVICE	2	3	1	3	2	1	3	3	1	1	1	1	1	1
PROCESS REQUEST FOR AMMUNITION	1	3	1	3	2	1	3	3	1	1	1	1	1	1
REQUEST SUPPLIES	2	3	1	3	2	1	3	3	1	1	1	1	1	1
PERFORM BRAVER REGISTRATION ACTIONS	2	3	1	3	2	1	3	3	1	1	1	1	1	1
TRANSACTIONS WITH SUPPORT MAINT.	2	3	1	3	2	1	3	3	1	1	1	1	1	1
OBTAIN RELIEF ON LOST DAMAGE EQUIP	1	3	1	3	2	1	3	3	1	1	1	1	1	1
REPORT SADA INCIDENTS	2	3	1	1	1	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: USES BN 84

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNIT
 CANDIDATE SOLUTIONS
 SYMBOL: CCH
 OPERATOR: CCH

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTT

	OPER CON	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGR	FOG NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TOH BEN FREE PRW GRAPHICS	AFROO DATA BUS
MAINTAIN ENEMY/FRIENDLY SIT MAP	3	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN/PREPARE/CONTROL FOR NBC OPNS	3	3	3	2	1	1	3	3	3	1	1	2	3	1
PLAN/PREPARE FOR NBC RECONNAISSANCE	3	3	3	1	1	1	3	3	3	2	1	1	3	1
PLAN FOR BIOLOGICAL SAMPLING	3	3	3	1	1	1	3	3	3	1	1	1	3	2
PLAN/PREPARE FOR NBC SURVEY	3	3	3	1	1	1	3	3	3	1	1	2	3	1
EVALUATE MISSION	2	3	3	1	1	1	3	3	3	2	1	2	3	2
FORMULATE TENTATIVE PLAN	2	3	3	1	1	1	3	3	3	2	1	1	3	2
PLAN MANEUVER CONTROL MEASURES	2	3	3	1	1	1	3	3	3	2	1	2	2	2
EST QTY OF FUEL/FOG OIL REQUIRED	3	3	3	1	1	1	3	3	3	2	1	2	2	2
DETERMINE SMOKE POT REQUIREMENTS	3	3	3	1	1	1	3	3	3	3	1	3	3	1
DEV STORAGE REQUIREMENT FOR FOG OIL	3	3	2	1	1	1	3	3	3	2	1	1	2	1
DET PERSONNEL REQ TO DO DECON TASKS	3	2	1	1	2	1	1	3	1	1	1	1	1	1
PREDICT DECON MATERIAL REQUIREMENT	3	3	1	1	2	1	1	3	1	1	1	1	1	1
DEV STORAGE REQ FOR DECONTAMINANTS	3	3	2	1	2	1	1	3	1	1	1	1	2	1
TASK DECONTAMINATE NBC UNIT	2	3	2	1	1	1	1	3	1	1	1	1	1	1
ISSUE ORDER	1	3	1	3	2	1	3	3	1	1	1	1	1	1
PREPARE FOR NBC OPERATIONS	2	3	3	2	1	1	3	3	3	3	1	3	1	1
PREPARE FOR OPNS IN AN NBC ENVIR.	3	3	3	2	2	1	3	3	3	3	1	2	3	1
ANALYZE TERRAIN USING METT-C	1	3	2	1	1	1	1	3	1	1	1	1	3	1
EST ENVIRONMENT EFFECTS ON NBC OPNS	3	3	3	3	2	2	3	3	3	2	1	3	1	1
ANALYSIS OF FRIENDLY TRP POSITIONS	2	3	3	1	1	1	2	3	3	2	1	1	3	1
DET OPT POSITION FOR NBC ALARM EQUIP	2	2	3	1	2	2	1	3	3	3	1	3	2	3
CONTROL UNIT OPN BY GRAPHIC CONTROL	3	1	3	1	1	1	1	3	3	2	1	2	3	3
ANALYSIS TO SELECT SMOKE POSITIONS	3	3	3	1	1	1	3	3	3	2	1	1	3	3
REPORT NBC ATTACK	3	3	1	3	2	1	3	3	1	2	1	3	1	1
PREPARE FOR NBC ATTACK	3	3	1	3	2	1	3	3	1	2	1	3	1	1
IMPLEMENT WARP	3	3	1	1	1	1	3	3	1	1	1	3	1	1
PREPARE WIND VECTOR PLOTS	3	3	1	2	1	1	1	3	1	1	1	3	1	1
PREPARE EFFECTIVE DOWNWIND MESSAGE	1	3	1	3	1	1	1	3	1	1	1	1	1	1
PREPARE ISSUE DIRM DOWNWIND MSG	1	3	1	3	1	1	1	3	1	1	1	1	1	1
PREPARE PRINTED NBC 1 & 2 REPORTS	3	3	3	3	2	3	3	3	3	1	1	3	1	1

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IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS
ECHELON: CO HQ

OPERATOR: CO CDR

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

FCU (V1/V2) OR TCU (V1/V2)

HTC

	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	PFMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS. NAV DATA	AUTO TGT ACQ	STILLS SENSOR INPUT	CON SEN FREE DEW GRAPHICS	PROC DATA BUS
CALCULATE NUCLEAR WEAPONS YIELD	3	3	3	1	1	1	3	3	3	1	1	1	3	1
CALCULATE GROUND ZERO LOCATIONS	3	3	3	1	1	1	3	3	3	1	1	1	3	1
PREPARE/ISSUE FALLOUT PREDICTION	3	3	3	3	2	1	3	3	3	3	1	2	2	3
IMMEDIATE WARNING OF CONTAMINATION	3	3	3	3	2	1	3	3	3	3	1	1	3	3
EST TEMP EFFECTS ON CHEM/BIO AGENT	3	3	2	1	1	1	3	3	2	1	1	3	2	3
EST WIND EFF ON CHEM/BIO CLOUD TVL	3	3	2	1	1	1	3	3	1	1	1	3	2	3
CALCULATE DOWNWIND VAPOR HAZARD	3	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE/ISSUE NBC 3 REPORTS	3	3	3	3	3	1	3	3	3	3	1	3	2	3
READ UNIT DOSIMETERS	3	3	1	1	1	3	3	3	1	1	1	3	1	3
RPT INITIAL RADIATION EXPOSURE DOSE	3	3	1	3	2	3	3	1	1	3	1	3	1	3
RPT & RECORD PERSONNEL DOSE RATES	3	3	1	3	2	1	3	3	1	1	1	1	1	1
EST DOSEAGE EXPOSURE IN FALLOUT AREA	3	3	3	1	1	1	3	3	3	3	1	1	3	3
SELECT RADIOLOGICAL/CHEM SURVEY RTE	3	3	3	1	1	1	3	3	3	3	1	2	2	3
MAKE RAD/CHEM SURVEY OVERLAYS	3	3	3	3	1	1	3	3	3	3	1	1	1	3
COLLECT REPORT TOTAL RADIATION DOSE	3	3	1	3	2	1	3	1	1	1	1	3	1	3
REC. MAINTAIN RADIATION DOSE STATUS	3	3	1	1	1	1	3	1	1	1	1	1	1	1
PREPARE, PROCESS, & ISSUE NBC 4 RPT	3	3	3	3	2	1	3	3	3	3	1	3	1	3
COMPUTE AIR GND CORRELATION FACTORS	3	3	1	1	1	1	3	1	1	1	1	3	1	3
READ AND REPORT RADIATION DOSEAGE	3	3	1	3	2	1	3	1	1	1	1	1	1	1
RECORD DATA ON DA 1970-1 & 1970-1-E	3	3	1	1	1	1	3	1	3	1	1	3	1	3
COMPUTE TRANS CORRELATION FACTORS	3	3	1	1	1	1	3	1	1	1	1	3	1	3
DETERMINE RADIATION DECAY FACTORS	3	3	1	1	1	1	3	1	1	1	1	1	1	3
CONVERT RAD DATA TO GND DOSE RATES	3	3	1	1	1	1	3	1	1	1	1	1	1	1
EST DOSE RATE IN FALLOUT AREA	3	3	1	1	1	1	3	1	1	1	1	1	1	1
EST DOSE RATE CONTINUE FROM RAD DATA	3	3	3	1	2	1	3	1	3	1	1	1	1	1
REC PROCESS/PLOT CHEM/BIO RECON RPT	3	3	3	3	1	1	3	1	3	1	1	1	1	1
PREPARE/ISSUE NBC 5 REPORTS	3	3	3	3	1	1	3	3	3	3	1	3	3	3
CAL TIME OF ENTRY FOR FALLOUT AREA	3	3	3	1	1	1	3	3	3	1	1	1	1	3
CAL TIME OF STAY IN FALLOUT AREA	3	3	3	1	1	1	3	1	3	1	1	1	3	1
CAL OFF TIME OF EXIT FROM FALLOUT	3	3	3	1	1	1	3	1	3	1	1	1	1	1
COMPUTE TOTAL DOSE	3	3	2	1	1	1	3	1	3	1	1	3	1	1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

BOMELON: CC HQ

OPERATOR: CC HQ

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	PRG TEXT MSG	AUDIO VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	PIC NAV DATA	AUTO TGT ACC	STUFF SENSES INPUT	TOH SEN GRAPHICS	PRG DATA BUS
PREPARE RADIATION DOSE STATUS CHART	2	3	1	2	2	1	3	3	1	1	1	1	1	1
PREPARE AN OPERATIONS OVERLAY	3	3	3	1	1	3	3	3	3	3	1	3	3	3
PREPARE FRIENDLY NUC/CHEM STRIKE	3	3	3	3	2	1	3	3	3	1	1	1	2	3
SELECT PERS/EQUIP DECON SITE	3	3	3	3	2	1	3	3	3	3	1	3	2	3
ESTABLISH WORK AND REST INTERVALS	3	3	1	1	1	1	3	3	1	1	1	3	1	3
MAINTAIN NBC DEF TEAM PERS CHARTS	2	3	1	1	1	1	3	3	1	1	1	1	1	3
MAINTAIN CHEM EQUIP STATUS CHART	1	3	1	1	1	1	3	3	1	1	1	1	1	1
ESTABLISH SUPPORT REQUIREMENTS	3	3	1	2	1	1	3	3	1	1	1	1	1	1
PREPARE/PLAY UNIT MOVEMENT PLANS	3	3	3	2	1	1	3	1	3	3	1	3	2	3
REPORT AIR ATTACK	3	3	1	3	2	1	3	3	1	3	1	1	1	3
REPORT INTERFERENCE AND INCIDENTS	3	3	1	3	2	1	3	3	1	2	1	3	3	2
MAINTAIN PRESCRIBED AMT OF SUPPLIES	1	3	1	1	1	2	3	3	1	1	1	1	1	1
MAKE SPOT REPORTS	3	3	2	1	2	1	3	1	1	3	1	1	1	2
PREPARE A SITUATION REPORT (SITREP)	3	3	1	3	2	1	3	3	1	3	1	3	1	3
RPT BOMB, SHELL, MORTAR, AIRCRAFT FIRE	3	3	1	3	2	1	3	3	3	3	1	1	3	3
PREPARE/ISSUE FRAGMENTARY ORDER	3	3	3	3	2	1	3	3	3	3	1	3	3	3
REPORT THREAT	3	3	1	2	3	1	3	1	1	1	1	1	3	2
REPORT SAEDA INCIDENTS	3	3	1	2	3	1	3	3	1	1	1	1	3	2
MAINTAIN UNIT STRENGTH REPORTS	2	3	1	3	2	1	3	3	1	1	1	1	1	1
REPORT PERSONNEL STATUS	3	3	1	3	2	1	3	3	1	1	1	1	1	1
PROVIDE UNIT LEVEL CASUALTY MGT	3	3	2	2	3	1	3	3	1	1	1	1	1	2
PERFORM UNIT LEVEL SEREG FUNCTIONS	2	3	1	3	2	1	3	3	1	1	1	1	1	1
CONDUCT SUPPLY TRANSACTIONS	2	3	1	3	1	1	3	3	1	1	1	1	1	1
COORDINATE FOOD SERVICE/REQ RATIONS	3	3	1	3	1	1	3	1	1	1	1	1	1	1
REQUEST SUPPLIES/LOGISTIC SERVICES	1	3	1	1	1	1	3	1	1	1	1	1	1	1
REQUEST AMMUNITION	3	3	1	1	1	1	3	1	1	1	1	1	1	1
INVENTORY SETS, MITS, ANT OUTSIDE	1	3	1	1	1	1	3	1	1	1	1	1	1	1
MAINTAIN PROPERTY RECEIPTS & RECORD	1	3	1	1	1	1	3	1	1	1	1	1	1	1
MAINTAIN TANKS RECORDS	2	3	1	1	1	1	3	1	1	1	1	1	1	1
MAINTAIN THE PDL	3	3	1	1	1	1	3	1	1	1	1	1	1	1
ESTABLISH PRIORITIES FOR GEN MAINT.	1	3	1	1	1	1	3	1	1	1	1	1	1	1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS
ECHOLOGY: CO HQ

OPERATOR: CO HQ

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMF TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	POS/ NAV DATA	AUTO TGT ACQ	BTU/FLL SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROO DATA BUS
CONDUCT TRANSACTIONS WITH SUP MAINT	2	3	1	3	2	1	3	3	1	1	1	1	1	1
LOST OR DESTROYED PROPERTY RELIEF	1	3	1	3	2	1	3	3	1	1	1	1	1	1
PROCESS EFW	2	3	1	3	2	1	3	3	1	1	1	1	1	1
PREPARE POST DAILY STAFF JOURNAL	3	3	1	2	1	1	3	3	1	1	1	1	1	1
ENTER PHONE MESSAGES	3	3	1	3	3	1	3	3	1	1	1	1	1	1
PREPARE FOR FUTURE OPERATIONS	3	3	3	2	1	1	3	3	3	3	1	1	3	3

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS
 TYPE UNIT: CHEMICAL UNITS
 BOMELON: FLT DECON
 OPERATOR: FLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER MOV	ACT DIS- PLAY	OPN GRAPHICS	FM TEXT MSG	FREE TEXT MSG	VIDEO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	POS/ NAV DATA	AUTO TGT ACQ	BTDFLD SENSOR INPUT	TOR FREE GRAPHICS	SEN DEW DATA	PROC DATA
PLAN DECONTAMINATION OPERATIONS	3	3	3	1	1	1	3	3	3	2	1	1	3	2	2
ANALYZE TERRAIN USING METT-7	2	3	2	1	1	1	2	1	3	2	1	1	3	2	2
ENVIRONMENT EFFECTS NBC & SMOKE OPN	3	3	3	3	2	2	3	3	3	3	1	3	2	3	3
DETERMINE SMOKE POT REQUIREMENTS	3	3	3	1	1	1	3	3	3	3	1	3	3	3	3
DET PERSONNEL REQ FOR DECON TASKS	3	2	1	1	2	1	3	3	1	1	1	1	1	1	1
FORECAST DECON MATERIAL REQUIREMENT	3	3	1	1	2	1	3	3	1	1	1	1	1	1	1
DEV STORAGE REQ FOR DECONTAMINANTS	3	3	2	1	2	1	3	3	2	2	1	2	2	2	2
PREPARE FOR OPNS IN NBC ENVIRONMENT	3	3	3	2	2	2	3	3	3	3	1	1	3	2	2
PREPARE FOR NBC ATTACK	3	3	1	3	2	3	3	3	2	3	1	3	2	3	3
IMPLEMENT MOPP	3	3	1	1	2	2	3	3	1	2	1	1	3	1	1
DEPLOY FIXED EMPLACEMENT ALARM UNIT	2	2	3	1	2	2	3	3	3	3	1	3	2	3	3
REPORT CHEMICAL/BIOLOGICAL ATTACK	3	3	1	3	2	3	3	3	1	3	1	3	1	3	3
PREPARE AND SUBMIT NBC I&I REPORTS	3	3	3	3	2	3	3	3	3	3	1	3	1	3	3
PREPARE FALLOUT PREDICTION	3	3	3	3	1	1	3	3	3	3	1	1	1	1	1
REAL UNIT DOSIMETERS	3	3	1	1	1	3	3	3	1	1	1	1	1	1	1
RPT UNIT RADIATION EXPOSURE DOSE	3	3	1	3	2	3	3	3	1	3	1	3	1	3	3
READ REPORT RADIATION DOSE RATE	3	3	1	3	2	1	3	3	1	1	1	3	1	3	3
PREPARE AND SUBMIT NBC 4 REPORTS	3	3	3	3	2	2	3	3	3	3	1	1	1	1	1
ESTIMATE TOTAL DOSE EXPOSURE	3	3	3	1	1	1	3	3	3	2	1	1	3	1	1
PLAN A RADIOLOGICAL SURVEY	3	3	3	1	1	1	3	3	3	1	1	1	3	1	1
COMMENT TOTAL DOSE	3	3	3	1	1	1	3	3	3	1	1	1	3	1	1
CURRENT REPORT TOTAL RADIATION DOSE	3	3	1	3	1	1	3	3	1	1	1	3	1	3	3
CAL TIME OF STAY IN FALLOUT AREA	3	3	3	1	1	1	3	3	3	1	1	1	3	1	1
CAL NET TIME OF EXIT FROM AREA	3	3	3	1	1	1	3	3	3	1	1	1	3	1	1
REPORT MEDICAL PERSONNEL DOSE RATES	3	3	1	3	1	1	3	3	1	1	1	3	1	3	3
PREPARE FALLOUT ZONE CHECK LIST/INE	3	3	3	3	1	3	3	3	3	3	1	1	1	1	1
REPORT ALL INFO	3	3	1	3	1	1	3	3	1	3	1	1	1	1	1
MAINTAIN STATUS BOARD ON CHEM EQUIP	1	1	1	1	1	1	3	3	1	1	1	1	1	1	1
ADVISE ON DECONTAMINATION COST OF EQUIP	1	1	1	1	1	1	3	3	1	1	1	1	1	1	1
MAINTAIN PREPARED AMT OF SUPPLIES	1	1	1	1	1	1	3	3	1	1	1	1	1	1	1
SELECT A MOVEMENT ROUTE USING A MAP	3	3	3	1	1	1	3	3	3	3	1	3	1	3	3

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IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS:
SOLUTION: PLT DECON

OPERATOR: PLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR DCU (V1/V2)

HTU

	OPER MON	ACT DIS- MOVE	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	FOR NAV DATA	ANTI TBT ACQ	SELF- SENSOR INPUT	FOR GEN FREE GEN GRAPHICS	PRO- DATA BYS
SELECT SMOKE POT POSITIONS	3	3	3	1	1	1	3	3	1	1	1	3	3	3
ESTABLISH WORK AND REST INTERVALS	3	3	1	1	1	1	3	3	1	1	1	1	1	3
SUSTAIN OPNS (FERS, EQUIP, AMMO, ETC)	3	3	3	2	2	1	3	3	3	3	1	3	3	3
PREPARE FOR OPERATIONS	3	3	3	1	1	1	3	3	3	1	1	2	3	1
PREPARE A FRAG ORDER	3	3	3	1	2	1	3	3	3	3	1	3	1	3
PREPARE UNIT MOVEMENT PLANS	3	3	3	2	1	1	3	3	3	3	1	3	2	3
PREPARE A PLATOON SECTOR SKETCH	1	3	3	1	1	1	3	3	3	3	1	1	3	3
PLAN FOR USE OF CONTROL MEASURES	3	3	3	1	1	1	3	3	3	2	1	1	3	1
PREPARE AN OPERATION OVERLAY	3	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE A SITUATION REPORT (SITREP)	3	3	1	3	1	1	3	3	1	3	1	3	1	3
PREPARE PLT DEFENSIVE FIRE PLAN	3	3	3	3	2	1	3	3	3	3	1	3	3	3
COLLECT REPORT INFO - SALVAGE	3	3	1	3	2	1	3	3	3	3	1	3	1	3
REPORT INFORMATION OF INTELL VALUE	3	3	3	3	1	1	3	3	3	3	1	3	3	3
ENEMY SHELL, MORTAR, BOMB REPORTS	3	3	1	3	1	1	3	3	3	3	1	1	3	3
REPORT INTERFERENCE & INCIDENTS	3	1	1	3	2	1	3	3	1	1	1	1	1	1
MAINTAIN PERSONNEL ACCOUNTABILITY	2	3	1	3	2	1	3	3	1	1	1	1	1	1
ESTABLISH PRIORITIES FOR GEN MAINT.	2	3	1	1	1	1	3	3	1	1	1	1	1	1
REQUEST SUPPLIES/LOGISTIC SERVICES	2	3	1	3	2	1	3	3	1	1	1	1	1	1
INITIATE CASUALTY REPORTING	3	3	1	3	2	1	3	3	1	1	1	1	1	1
PROCESS EPW, CAPTURED DOC & EQUIP	1	3	1	3	1	1	3	3	1	1	1	1	1	1
PROCESS MEDICAL MESSAGES	3	3	1	3	3	1	3	3	1	1	1	1	1	1
PREPARE FOR FUTURE OPERATIONS	3	3	3	2	1	1	3	3	3	1	1	1	3	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

J-II-14

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS
SCHEDULE: PLT RECON

OPERATOR: PLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	COPY GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKEND	PDS NAV DATA	AUTO TGT ADQ	STUFFED SENSOR INPUT	TCH SEN FREE GRAPHICS	SEN DATA	PROD DATA BUS
PLAN/PREPARE DIRECT A NBC RECON	3	3	3	1	1	1	1	1	3	1	1	2	2	2	2
PLAN/PREPARE FOR NBC SURVEY	3	3	3	1	1	1	1	1	3	1	1	2	2	2	2
PLAN/PREPARE BIOLOGICAL SAMPLING	3	3	3	1	1	1	1	1	3	1	1	2	2	2	2
DEPLOY FIXED EMPLACEMENT ALARM UNIT	1	3	6	1	1	3	2	2	3	3	1	3	1	3	3
IMPLEMENT MOPP	3	3	1	1	2	3	2	2	1	1	1	3	1	3	3
REPORT CHEMICAL/BIOLOGICAL ATTACK	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
PREPARE AND SUBMIT NBC 1 REPORT	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
READ UNIT DOSIMETERS	3	3	2	3	1	3	3	3	1	3	1	3	1	3	3
REPORT UNIT RADIATION EXPOSURE DOSE	3	3	2	3	1	3	3	3	1	3	1	3	1	3	3
RPT & RECORD PERSONNEL DOSE RATE	1	2	1	2	1	1	2	2	1	1	1	2	1	2	2
PREPARE AND SUBMIT NBC 4 REPORT	3	3	3	3	1	3	3	3	3	3	1	3	1	3	3
ESTABLISH AIR-BND CORRELATION FACT.	3	3	1	1	1	1	3	3	1	1	1	3	1	3	3
READ & REPORT RADIATION DOSAGES	3	3	3	1	1	3	1	3	3	3	1	3	1	3	3
RECORD DATA ON DA 1971-2 & 1971-1-R	3	3	1	1	1	1	3	3	3	3	1	3	1	3	3
COMPUTE TRANS CORRELATION FACTORS	3	3	1	1	1	1	3	3	1	1	1	3	1	3	3
PREPARE RADIO CHEM SURVEY OVERLAYS	3	3	3	3	1	1	3	3	3	3	1	3	1	3	3
SUBMIT NBC CONTAMINATION REPORTS	3	1	1	3	1	1	3	3	1	1	1	1	1	1	1
SELECT REPORT EQUIP/PER DECON SITE	3	3	3	1	1	1	3	3	3	3	1	3	1	3	3
PLAN/PREPARE AREA ROUTE/DONE RECON	3	3	3	1	1	1	3	3	3	3	1	1	2	1	1
ANALYZE TERRAIN USING METT-7	3	3	3	1	1	1	3	3	3	3	1	1	2	1	1
SELECT A MOVEMENT ROUTE USING A MAP	3	3	3	1	1	1	3	3	3	3	1	1	2	1	1
COLLECT REPORT INFORMATION - SALUTE	3	3	2	3	2	2	3	3	3	3	1	1	1	1	1
PREPARE AN OPERATION OVERLAY	3	3	3	1	1	1	1	3	3	3	1	1	2	1	1
CALL FOR ADJUST INCIDENT FIRE	1	3	2	3	1	3	3	3	1	3	2	3	1	3	3
MAINTAIN PERSONNEL ACCOUNTABILITY	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1
REQUEST SUPPLIES LOGISTICAL SERVICE	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1
EXCHANGE MESSAGE	1	1	1	3	3	1	1	1	1	1	1	1	1	1	1
REPORT INTERFERENCE & INCIDENTS	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1

HARDWARE SOLUTION: HTU

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permit fully legible reproduction

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

J-II-15

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: FLT SMOKE/DECON

OPERATOR: FLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

POU (V1/V2) OR TOU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	RFMT TEXT MSG	RFREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	SPR NAV DATA	ATTO TGT ACQ	PLTFLD SENSOR INPUT	FOR SEN FREE DEV GRAPHICS	PROD DATA BUS
PLAN/PREPARE/CONTROL NBC OPERATIONS	3	3	3	1	1	1	3	3	3	2	1	2	3	2
ANALYZE TERRAIN USING METT-T	2	3	2	1	1	1	2	2	1	2	1	1	3	2
EFFECT WEATHER/TERRAIN ON NBC/SMOKE	3	3	3	3	2	2	3	3	3	3	1	3	2	3
PERFORM NBC VULNERABILITY ANALYSIS	2	3	3	1	1	1	3	3	3	1	1	1	3	2
EST. QUANTITIES FUEL/FOG OIL NEEDED	3	3	1	1	1	1	3	3	3	1	1	2	2	1
DETERMINE SMOKE POT REQUIREMENTS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
DEV STORAGE REQUIREMENT FOR FOG OIL	3	3	2	1	1	1	3	3	3	3	1	2	2	2
DET PERSONNEL REQUIRED FOR DECON OP	3	2	1	1	2	1	3	3	1	1	1	1	1	1
FORECAST DECON MATERIAL REQUIREMENT	3	3	1	1	2	1	3	3	1	1	1	1	1	1
DEV. STORAGE REQUIREMENTS FOR DECON	3	3	2	1	2	1	3	3	1	2	1	2	2	2
PREPARE FOR OPN IN NBC ENVIRONMENT	3	3	3	2	2	2	3	3	3	3	1	2	3	2
PREPARE FOR A NBC ATTACK	3	3	1	3	2	3	3	3	1	3	1	3	1	3
IMPLEMENT MOPPS LEVELS	3	3	1	1	2	1	3	3	1	2	1	1	3	3
POSITION OF FIXED ALARM SYSTEMS	2	2	3	1	2	1	3	3	3	3	1	3	1	3
REPORT CHEMICAL BIOLOGICAL ATTACK	3	3	1	3	2	3	3	3	1	3	1	3	1	3
PREPARE DISSEMINATE NBC 1/2 REPORT	3	3	3	3	2	3	3	3	3	3	1	3	1	3
MAKE SIMPLIFIED FALLOUT PREDICTION	3	3	3	3	2	1	3	3	2	3	1	2	2	3
REAL TIME DOSIMETERS	3	3	1	1	1	3	3	3	1	1	1	3	1	3
RPT INITIAL RADIATION EXPOSURE DOSE	3	3	1	3	2	3	3	3	1	3	1	3	1	3
READ & REPORT RADIATION DOSAGES	3	3	1	3	2	1	3	3	1	1	1	3	1	3
PREPARE DISSEMINATE NBC 4 REPORT	3	3	3	3	2	2	3	3	3	3	1	3	1	3
EST TOTAL DOSE EXP. IN FALLOUT AREA	3	3	3	1	1	1	3	3	1	2	1	1	3	3
PLAN AERADIOLOGICAL SURVEY	3	3	3	1	1	1	3	3	1	1	1	1	3	3
COMPUTE TOTAL DOSE	3	3	3	1	1	1	3	3	1	1	1	1	3	3
COLLECT REPORT TOTAL RADIATION DOSE	3	3	1	3	2	1	3	3	1	1	1	1	3	3
CALCULATE TIME OF STAY IN FALLOUT	3	3	3	1	1	1	3	3	1	1	1	1	3	3
CALC TIME OF EXIT FROM AREA	3	3	3	1	1	1	3	3	1	1	1	1	3	3
RPT RECORD PERSONNEL DOSE RATES	3	3	1	3	2	1	3	3	1	1	1	1	3	3
PREPARE FOR FRIENDLY NBC STRIKE	3	3	3	3	2	3	3	3	3	3	1	1	1	3
REPORT AIR ATTACK	3	3	1	3	2	1	3	3	1	1	1	1	1	3
MAINTAIN CHEM BATTLE STATUS CHART	1	3	1	1	1	1	3	3	1	1	1	1	1	3

IDENTIFICATION OF HARDWARE REQUIREMENT

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

BORELLON: PLT SMOKE SECTION

OPERATOR: PLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OFFER	ACT	OPN	EXT	FREE	AUDIO/	PRO-	STORE	DIGITAL	FOR	AUTO	HELPFL	FOR SEN	PROD
	CON	DIS-	GRAP	TEXT	TEXT	VISUAL	CESS	DATA	MAP	NAV	PGT	SENSOR	FREE DEW	DATA
	MOVE	PLAY	PHICS	MSG	MSG	ALERT	DATA		BACKGRD	DATA	ACC	INPUT	GRAPHICS	BUS
ADVISE ON REQ/DIST OF NBC EQUIP	1	3	1	1	1	1	3	3	1	1	1	1	1	1
MAINTAIN PRESCRIBED AMT OF SUPPLIES	1	3	1	1	1	1	3	3	1	1	1	1	1	1
SELECT A MOVEMENT ROUTE USING A MAP	3	3	3	1	1	1	3	3	3	3	1	3	3	3
ADVISE ON USE OF SMOKE FOR UNIT OPS	2	3	3	3	2	1	3	3	3	3	1	3	3	3
SELECT SMOKE POSITIONS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
SELECT & REPORT DECONT SITE	3	3	3	3	2	1	3	3	3	3	1	3	1	3
ESTABLISH WORK AND REST INTERVALS	3	3	1	1	1	1	3	3	1	1	1	3	1	3
POSITION EQUIPMENT & MATERIAL	3	3	3	1	1	1	3	3	3	3	1	3	1	3
DETERMINE FIELD SERVICE SUPPORT	3	3	1	2	1	1	3	3	1	1	1	1	1	1
PREPARE A FRAGMENTARY ORDER	3	3	3	3	2	1	3	3	3	1	1	3	3	3
PREPARE/PLAN UNIT MOVEMENT PLANS	3	3	3	2	1	1	3	3	3	3	1	3	2	3
PREPARE A PLT/ELEMENT SECTOR SKETCH	1	3	3	1	1	1	3	3	3	3	1	1	3	3
PLAN FOR USE OF CONTROL MEASURES	3	3	3	1	1	1	3	3	3	1	1	2	3	1
PREPARE AN OPERATIONS OVERLAY	3	3	3	1	1	1	3	3	3	3	1	3	3	1
PREPARE A SITUATION REPORT (SITREP)	3	3	1	3	2	1	3	3	1	3	1	3	1	3
PREPARE PLT DEFENSIVE FIRE PLAN	3	3	3	3	2	1	3	3	3	3	1	3	3	3
COLLECT/REPORT INFORMATION - SALUTE	3	3	1	3	2	2	3	3	3	3	1	3	1	3
REPORT INFORMATION OF INTEL VALUE	3	3	3	3	2	1	3	3	3	3	1	3	3	3
SWEEP SHELL, MORTAR, BOMB REPORT	3	3	1	3	2	1	3	3	3	3	1	1	3	3
REPORT INTERFERENCE AND INCIDENTS	3	3	1	3	2	1	3	3	1	1	1	1	1	1
MAINTAIN PERSONNEL ACCOUNTABILITY	2	3	1	3	2	1	3	3	1	1	1	1	1	1
ESTABLISH PRIORITIES FOR GEN MAINT.	1	3	1	1	1	1	3	3	1	1	1	1	1	1
REQUEST SUPPLIES & LOGISTIC SERVICE	2	3	1	3	2	1	3	3	1	1	1	1	1	1
INITIATE CASUALTY REPORTING	3	3	1	3	1	1	3	3	1	1	1	1	1	1
PROCESS ENEMY PRISONERS OF WAR	2	3	1	1	2	1	3	3	1	1	1	1	1	1
ENCODE/DECODE MESSAGES	3	3	1	3	3	1	3	3	1	1	1	1	1	1
PREPARE FOR FUTURE OPERATIONS	3	3	3	2	1	1	3	3	3	2	1	1	3	1

HARDWARE SOLUTION: HTU

RATING SCALE:

1 - NO CONTRIBUTION

2 - MODERATE CONTRIBUTION

3 - ESSENTIAL CONTRIBUTION

J-II-17

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS
SOLUTION: FLT SMOKE

OPERATOR: FLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	FOR/ NAV DATA	AUTO TGT ACQ	HTLFLL SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROG DATA BUS
PLAN/PREPARE/STSTAIN SMOKE OPN	3	3	3	1	1	1	3	3	3	2	1	2	3	2
ANALYZE TERRAIN USING METT-T	2	3	2	1	1	1	2	2	3	2	1	2	3	2
ENVIRONMENT EFFECTS ON SMOKE/DECON	3	3	3	3	2	2	3	3	3	3	1	3	2	3
PERFORM NUC VULNERABILITY ANALYSIS	2	3	3	1	1	1	3	3	3	2	1	1	3	2
EST QTY OF FUEL/POG OIL REQUIRED	3	3	1	1	1	1	3	3	3	2	1	1	1	2
DETERMINE SMOKE POT REQUIREMENTS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
DEV STORAGE REQUIREMENT FOR POG OIL	3	3	2	1	1	1	3	3	3	3	1	1	2	2
PREPARE FOR OPNS IN NBC ENVIRONMENT	3	3	3	2	2	2	3	3	3	3	1	1	3	2
PREPARE FOR NBC ATTACK	3	3	1	3	2	3	3	3	2	3	1	3	2	3
IMPLEMENT MOFP	3	3	1	1	1	1	3	3	1	2	1	1	3	2
POSITION OF FIXED ALARM UNITS	2	2	2	1	1	1	3	3	3	3	1	3	1	3
REPORT CHEMICAL/BIOLOGICAL ATTACK	3	3	1	3	2	3	3	3	1	3	1	3	1	3
PREPARE/DISSEMINATE NBC 1/2 REPORTS	3	1	3	3	2	3	3	3	3	1	1	3	2	3
MAKE SIMPLIFIED FALLOUT PREDICTION	3	3	3	3	2	1	3	3	3	1	1	1	1	3
READ UNIT DOSIMETERS	3	3	1	1	1	3	3	3	1	1	1	3	1	3
RPT INITIAL RADIATION EXPOSURE DOSE	3	3	1	3	2	3	3	3	1	3	1	3	1	3
READ & REPORT RADIATION DOSAGES	3	3	1	3	2	1	3	3	1	1	1	3	1	3
PREPARE/DISSEMINATE NBC 4 REPORT	3	3	3	3	2	2	3	3	3	3	1	3	1	3
EST TOTAL DOSE EXPOSURE	3	3	3	1	1	1	3	3	2	1	1	1	3	1
PLAN A RADIOLOGICAL SURVEY	3	3	3	1	1	1	3	3	3	1	1	1	3	1
COMPLETE TOTAL DOSE	3	3	3	1	1	1	3	3	3	1	1	1	3	1
COLLECT REPORT TOTAL RADIATION DOSE	3	3	1	3	2	1	3	3	1	1	1	3	1	3
CAL TIME OF STAY CONTAMINATED AREA	3	3	3	1	1	1	3	3	3	1	1	1	3	1
CAL TIME OF EXIT FROM FALLOUT AREA	3	3	3	1	1	1	3	3	3	1	1	1	3	1
RPT RECORD PERSONNEL DOSE RATES	3	3	1	3	2	1	3	3	1	1	1	3	1	3
PREPARE FOR FRIENDLY NBC STRIKE	3	3	3	3	2	3	3	3	3	3	1	1	1	3
REPORT AIR ATTACK	3	3	1	3	1	1	3	3	1	3	1	1	1	3
MAINTAIN CHEM EQUIP STATUS CHART	1	3	1	1	1	1	3	3	1	1	1	1	1	1
ADVISE ON REQ/INST OF NBC EQUIP	1	3	1	1	1	1	3	3	1	1	1	1	1	1
MAINTAIN PRESCRIBED AMT OF SUPPLIES	1	3	1	1	1	1	3	3	1	1	1	1	1	1
SELECT A MOVEMENT ROUTE USING A MAP	3	3	3	1	1	1	3	3	3	3	1	1	3	1

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS
 TYPE UNIT: CHEMICAL UNIT
 ECHELON: FLT SMOKE
 OPERATOR: FLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (VI/VG) OR TCU (VI/VG)

HTV

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	PMC TEXT MSG	FREE TEXT MSG	AUDIO VISUAL ALERT	PRG- DESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	PIS NAV DATA	AUTO TGT ACQ	STORFI SEN INPUT	ENV SEN FREE DATA	PRG NEW DATA BUS
ADVISE ON USE OF SMOKE	2	3	3	3	2	1	3	3	3	3	1	3	3	3
SELECT SMOKE POSITIONS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
RECOMMENDED WORK/REST INTERVALS	3	3	1	1	1	1	3	3	1	1	1	3	1	3
POSITION EQUIPMENT & MATERIAL	3	3	3	1	1	1	3	3	3	3	1	3	1	3
SUSTAIN OPS (REPEREQUIP, AMMO, ETC)	3	3	3	1	1	1	3	3	3	3	1	3	1	3
PREPARE FOR OPERATIONS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
REQUEST SUPPLIES & LOGISTIC SERVICE	3	3	1	3	2	1	3	3	1	1	1	3	3	3
PREPARE A FRAGMENTARY ORDER	3	3	3	3	2	1	3	3	3	3	1	3	3	3
PREPARE/PLAN UNIT MOVEMENT PLANS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE A FLT ELEMENT SECTOR SECTOR	1	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN FOR USE OF CONTROL MEASURE	3	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE AN OPERATIONS OVERLAY	3	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE SITUATION REPORT SITREP	3	3	1	3	1	1	3	3	1	3	1	3	3	3
PREPARE A DEFENSIVE FIRE PLAN	3	3	3	3	2	1	3	3	3	3	1	3	3	3
COLLECT REPORT INFORMATION - SALUTE	3	3	1	3	1	1	3	3	3	3	1	3	3	3
REPORT INFORMATION OF INTEL VALUE	3	3	3	3	2	1	3	3	3	3	1	3	3	3
SUBMIT SHELL, MORTAR, & BOMB REPORT	3	3	1	3	2	1	3	3	3	3	1	3	3	3
REPORT INTERFERENCE AND INCIDENTS	3	3	1	3	2	1	3	3	1	1	1	3	3	3
MAINTAIN PERSONNEL ACCOUNTABILITY	1	3	1	3	1	1	3	3	1	1	1	3	3	3
ESTABLISH PRIORITIES FOR GEN MAINT.	1	3	1	1	1	1	3	3	1	1	1	3	3	3
INITIATE CASUALTY REPORTING	3	3	1	3	1	1	3	3	1	1	1	3	3	3
PROCESS EPW, CAPTURED POP EQUIP	1	3	1	3	1	1	3	3	1	1	1	3	3	3
ENCODE MESSAGE	3	3	1	3	3	1	3	3	1	1	1	3	3	3
PREPARE FOR FUTURE OPERATIONS	3	3	3	1	1	1	3	3	3	3	1	3	3	3

HARDWARE SOLUTION: HTV

RATING SCALE

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL DET SA 82

CANDIDATE SOLUTIONS

ECHOLON: 1ST DETACHMENT

OPERATION: DETACHMENT 102

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

FOR (V1/V2) OR FOR (V1/V2)

RTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAPH HIDS	FMT TEXT MSG	FREE TEXT MSG	AUDIO VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	PDS- NAV DATA	ATTN DET ACQ	HELPFUL SENSOR INPUT	TOE SEN FREE CHW GRAPHICS	PROO- DATA BUS
PLAN SUSTAIN DECONTAMINATION OPNS	3	3	3	1	1	1	3	3	3	2	1	1	3	2
ANALYZE TERRAIN USING VETT-T	2	3	1	1	1	1	1	1	3	2	1	1	3	2
EST ENVIRONMENT EFF ON NEO/SMOKE OP	3	3	3	3	2	1	3	3	2	3	1	3	2	3
DETERMINE SMOKE PRT REQUIREMENTS	3	3	3	1	1	1	3	3	3	3	1	3	3	3
DET PERSONNEL TO PERFORM DECON MSN	3	1	1	1	1	1	3	3	1	1	1	1	1	1
FORECAST DECON MATERIAL REQUIREMENT	3	3	1	1	2	1	3	3	1	1	1	1	1	1
DEV STORAGE REQUIREMENT FOR DECON	3	3	2	1	2	1	3	3	2	2	1	2	2	2
PREPARE FOR OPNS IN NEO ENVIRONMENT	3	3	3	2	2	2	3	3	3	3	1	1	3	1
PREPARE FOR A NEO ATTACK	3	3	1	3	2	3	3	3	2	3	1	3	1	3
IMPLEMENT WOPP LEVELS	3	3	1	1	1	2	3	3	1	2	1	1	3	1
POSITION FIXED ALARM UNITS	2	2	3	1	1	1	3	3	3	3	1	3	2	3
REPORT CHEMICAL/BIOLOGICAL ATTACK	3	3	1	3	2	3	3	3	1	3	1	3	1	3
PREPARE AND SUBMIT NEO 1/2 REPORTS	3	3	3	3	2	3	3	3	3	3	1	3	2	3
MAKE SIMPLIFIED FALLOUT PREDICTION	3	3	3	3	2	1	3	3	3	3	1	1	1	3
READ UNIT DOSIMETERS	3	3	1	1	1	1	3	3	1	1	1	1	1	3
EST INITIAL RADIATION EXPOSURE DOSE	3	3	1	3	2	3	3	3	1	3	1	1	1	3
READ REPORT RADIATION DOSES	3	3	1	3	2	1	3	3	1	1	1	1	1	3
PREPARE AND SUBMIT NEO 4 REPORTS	3	3	3	3	2	2	3	3	3	3	1	3	1	3
EST TOTAL DOSE EXP. IN FALLOUT AREA	3	3	3	1	1	1	3	3	3	1	1	1	3	1
PLAN A RADIOLOGICAL SURVEY	3	3	3	1	1	1	3	3	3	1	1	1	3	1
COMPUTE TOTAL DOSE	3	3	3	1	1	1	3	3	3	1	1	1	3	1
COLLECT REPORT TOTAL RADIATION DOSE	3	3	1	3	2	1	3	3	1	1	1	1	1	3
CALCULATE TIME OF STAY IN FALLOUT	3	3	3	1	1	1	3	3	3	1	1	1	2	1
CALC EST TIME OF EXIT FROM AREA	3	3	3	1	1	1	3	3	3	1	1	1	3	1
REC-RECORD PERSONNEL DOSE RATES	3	3	1	3	2	1	3	3	1	1	1	1	1	3
PREPARE FOR FRIENDLY NEO STRIKE	3	3	3	3	2	2	3	3	3	3	1	1	1	3
REPORT AIR ATTACK	3	3	1	3	1	1	3	3	1	3	1	1	1	3
MAINTAIN UNIT CHEMICAL EQUIP STATUS	1	3	1	1	1	1	3	3	1	1	1	1	1	3
ADVISE ON DIST. OF NEO EQUIP SUPPLY	1	3	1	1	1	1	3	3	1	1	1	1	1	3
MAINTAIN PRESCRIBED AMT OF SUPPLIES	1	3	1	1	1	1	3	3	1	1	1	1	1	3
SELECT A MOVEMENT ROUTE USING A MAP	3	3	3	1	1	1	3	3	3	3	1	1	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: 1ND DETACHMENT

OPERATOR: DETACHMENT 1ND

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

POU (V1/V2) OR TOU (V1/V2)

HTU

	OPER IN MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	PREP TEXT MSG	AUDION VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	FOR NAV DATA	AUTO TGT ACQ	STORFID SENSOR INPUT	TOW SEN FREE DRW GRAPHICS	PRIO DATA BUS
SELECT SMOKE POT POSITIONS	3	3	3	1	1	1	3	3	3	3	1	1	3	3
REPORT DECONTAMINATION SITE	3	3	3	3	2	1	3	3	3	3	1	1	1	3
ESTABLISH WORK & REST INTERVALS	3	3	1	1	1	1	3	3	1	1	1	3	1	1
POSITION EQUIPMENT & MATERIAL	3	3	3	1	1	1	3	3	3	3	1	3	1	3
SUSTAIN OPERATIONS PERS.EQUIP.ETC:	3	3	3	2	2	1	3	3	3	3	1	3	3	3
PREPARE FOR OPERATIONS	3	3	3	1	1	1	3	3	3	3	1	1	3	3
REQUEST SUPPLY & LOGISTICAL SERVICE	3	3	1	3	2	1	3	3	1	1	1	1	1	1
PREPARE A FRAGO	3	3	3	3	3	1	3	3	3	3	1	3	3	3
PREPARE PLAN UNIT MOVEMENT PLAN	3	3	3	2	2	1	3	3	3	3	1	3	2	3
PREPARE A PLD/ELEMENT SECTOR SKETCH	1	3	3	1	1	1	3	3	3	3	1	1	3	3
PLAN FOR USE OF CONTROL MEASURE	3	3	3	1	1	1	3	3	3	3	1	1	3	1
PREPARE AN OPERATION OVERLAY	3	3	3	1	1	1	3	3	3	3	1	1	3	3
PREPARE A SITUATION REPORT SITEREP:	3	3	1	3	2	1	3	3	1	3	1	3	1	3
PREPARE A DEFENSIVE FIRE PLAN	3	3	3	1	2	1	3	3	3	3	1	3	3	3
COLLECT REPORT INFORMATION - SALUTE	3	3	1	3	2	1	3	3	3	3	1	3	1	1
REPORT INFORMATION OF INTEL VALUE	3	3	3	3	2	1	3	3	3	3	1	3	3	3
SUBMIT SHELL, MORTAR, & BOMB REPORT	3	3	1	3	2	1	3	3	3	3	1	1	1	3
REPORT INTERFERENCE AND INCIDENTS	3	3	1	3	2	1	3	3	1	1	1	1	1	1
MAINTAIN PERSONNEL ACCOUNTABILITY	1	3	1	3	2	1	3	3	1	1	1	1	1	1
ESTABLISH PRIORITY FOR MAINTENANCE	2	3	1	1	1	1	3	3	1	1	1	1	1	1
INITIATE CASUALTY REPORTING	3	3	1	3	2	1	3	3	1	1	1	1	1	1
PROCESS ENEMY PRISONERS OF WAR	1	3	1	3	2	1	3	3	1	1	1	1	1	1
ENVOIE TENDRE MSG BY CAS 1PS 20155	3	3	1	3	3	1	3	3	1	1	1	1	1	1
PREPARE FOR FUTURE OPERATIONS	3	3	3	1	1	1	3	3	3	3	1	1	3	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

J-II-21

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: CHEMICAL UNITS

SCHEMEL: INC. CHEM. TM. CA

OPERATOR: TEAM 112

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKSC	FIG NAV DATA	AUTO TGT ACQ	STPLN SENSOR INPUT	TON SEN FREE GRAPHICS	PROD DATA BUS
PREPARE ENEMY/FRIEND SITUATION MAP	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE NEC SITUATION MAP & OVERLAY	2	3	3	1	1	1	3	3	3	3	1	3	3	3
ADVISE THE CDR ON NEC SITUATION	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN PREPARE CONTROL SMOKE OPNS	2	3	3	2	1	1	3	3	3	3	1	3	3	3
PLAN/DIRECT NEC RECONNAISSANCE OPNS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN BIOLOGICAL SAMPLING OPERATIONS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN PREPARE NEC SURVEY	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN/SUSTAIN DECONTAMINATION OPNS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN FOR USE OF NEC WEAPONS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PLAN FOR USE OF CONTROL MEASURE	2	3	3	1	1	1	3	3	3	3	1	3	3	3
EST QTY OF FUEL/FOG OIL REQUIRED	2	3	1	1	1	1	3	3	3	3	1	3	3	3
DETERMINE SMOKE POT REQUIREMENTS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
DEV STORAGE REQUIREMENT FOR FOG OIL	2	3	2	1	1	1	3	3	3	3	1	3	3	3
DET PERSONNEL REQUIRED FOR DECON OF	2	2	1	1	2	1	3	3	1	1	1	1	1	1
FORECAST DECON MATERIAL REQUIREMENT	2	3	1	1	2	1	3	3	1	1	1	1	1	1
DEV STORAGE REQUIREMENT FOR DECON	2	3	2	1	2	1	3	3	1	1	1	1	1	1
TEAM ORGANIZE NEC UNITS	2	3	2	1	1	1	3	3	1	1	1	1	1	1
PREPARE FOR OPERATIONS	2	3	3	2	1	1	3	3	3	3	1	3	3	3
PREPARE FOR OPNS IN NEC ENVIRONMENT	2	3	3	1	2	2	3	3	3	3	1	3	3	3
ANALYZE TERRAIN USING METT-7	2	3	2	1	1	1	1	1	3	3	1	1	1	1
EST ENVIRONMENT EFF ON NEC SMOKE OF	2	3	3	3	2	2	3	3	3	3	1	3	3	3
ANALYZE VULNERABILITY TRP POSITION	2	3	3	1	1	1	3	3	3	3	1	3	3	3
ANALYZE POSITION OF NEC ALARM UNITS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
ADVISE ON USE OF SMOKE FOR UNIT OPS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
SELECT SMOKE POSITIONS	2	3	3	1	1	1	3	3	3	3	1	3	3	3
PREPARE FOR A NEC ATTACK	2	3	1	3	1	3	3	3	1	3	1	3	3	3
IMPLEMENT MOPP LEVELS	2	3	1	1	2	1	3	3	1	1	1	1	1	1
PREPARE WIND VECTOR PLOTS	1	3	1	2	1	1	3	3	1	1	1	3	1	3
PREPARE AN EFFECTIVE DOWNWIND MEG	1	3	1	3	1	1	3	3	1	1	1	1	1	1
PREPARE CHEMICAL DOWNWIND MEG	1	3	1	3	1	1	3	3	1	1	1	1	1	1
PREPARE NEC T-1 REPORTS	1	3	3	3	1	3	3	3	3	3	1	3	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: 1ND CHEM TX CA/

OPERATOR: TEAM CIB

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ION	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO VISUAL PRESENT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS NAV DATA	AUTO TGT ACQ	HTU SENSOR INPUT	TCH SEN FREE GRAPHICS	PROD DATA BUS
CALCULATE NUCLEAR WEAPONS YIELD	2	3	3	1	1	1	3	3	3	1	1	1	3	1
CALCULATE GROUND ZERO LOCATIONS	2	3	3	1	1	1	3	3	3	1	1	1	3	1
MAKE FALLOUT PREDICTIONS	2	3	3	3	2	1	3	3	3	3	1	2	2	3
PROVIDE IMMED WARNING CONTAMINATION	2	3	3	3	2	1	3	3	3	3	1	3	3	3
ASSESS TMTX EFFECTS CHEM/BIO AGENTS	2	3	3	1	1	1	3	3	3	1	1	3	2	3
ASSESS WIND EFF CHEM/BIO CLOUD DVL	2	3	3	1	1	1	3	3	3	1	1	3	2	3
CALCULATE DOWNWIND VAPOR HAZARD	2	3	3	1	1	1	3	3	3	3	1	3	3	3
MAKE/ISSUE NEO 3 (CHEM/BIO) REPORTS	2	3	3	3	2	1	3	3	3	3	1	3	2	3
READ UNIT DOSIMETERS	2	3	1	1	1	3	3	3	3	1	1	3	1	3
RPT INITIAL RADIATION EXPOSURE DOSE	2	3	1	3	2	3	3	3	3	1	3	3	1	3
RPT REGIONAL PERSONNEL DOSE RATES	2	3	1	3	2	1	3	3	3	1	1	3	1	3
RPT TOTAL DOSE EXP. IN FALLOUT AREA	2	3	3	1	1	1	3	3	3	3	2	1	3	1
SELECT RADIOLOGICAL/CHEM SURVEY RCE	2	3	3	1	1	1	3	3	3	3	1	2	1	3
INTERWISE MONITORING/SURVEY OFNS	2	3	3	2	1	3	3	3	3	3	1	3	3	3
PREPARE RAD/CHEM SURVEY OVERLAYS	2	3	3	3	1	1	3	3	3	3	1	3	2	3
COLLECT/REPORT TOTAL DOSE RADIATION	2	3	1	3	1	1	3	3	3	1	1	3	1	3
RPT MAINTAIN RADIATION DOSE STATUS	1	3	1	1	1	1	3	3	3	1	1	3	1	3
PREPARE/SUBMIT NEO 4 REPORT	2	3	3	3	2	2	3	3	3	3	1	3	1	3
COMPUTE AIR/GND CORRELATION FACTORS	2	3	1	1	1	1	3	3	3	1	1	3	1	3
READ & REPORT RADIATION DOSAGES	2	3	1	3	2	1	3	3	3	1	1	3	1	3
REDUCE DATA ON DA 1971-B & 1971-1-R	2	3	1	1	1	1	3	3	3	3	1	3	1	3
COMPUTE TRANS/CORRELATION FACTORS	2	3	1	1	1	1	3	3	3	1	1	3	1	3
DETERMINE RADIATION DECAY FACTORS	1	3	1	1	1	1	3	3	3	1	1	3	1	3
CHG RADIATION DATA TO DOSE RATES	2	3	1	1	1	1	3	3	3	1	1	3	1	3
INTERPOLATE DOSE RATES FALLOUT AREA	1	3	1	1	1	1	3	3	3	1	1	3	1	3
DET DOSE RATE CONTINUES	1	3	1	1	1	1	3	3	3	1	1	3	1	3
PROCESS CHEM/BIO REGION REPORTS	1	3	1	3	1	1	3	3	3	1	1	3	1	3
PREPARE NEO 5 REPORT	1	3	3	3	1	1	3	3	3	1	1	3	1	3
CAL TIME OF ENTRY FOR FALLOUT AREA	1	3	3	1	1	1	3	3	3	3	1	3	1	3
CAL TIME OF STAY FROM FALLOUT AREA	1	3	3	1	1	1	3	3	3	1	1	3	1	3
CAL TIME OF EXIT FOR FALLOUT AREA	1	3	3	1	1	1	3	3	3	1	1	3	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: CHEMICAL UNITS

CANDIDATE SOLUTIONS

ECHELON: 1ND CHEM TW 0A

OPERATOR: TEAM CLR

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER	ACT	OPN	FM	FREE	AUDIO	PRO	STORE	DIGITAL	POS	ANT	STFLD	TOH	SEN	PREC
	ON	DIS-	GRAP	TEXT	TEXT	VISUAL	CESS	DATA	MAP	NAV	TGT	SENSOR	FREE	SEN	DATA
	MOVE	PLAY	HICS	MSG	MSG	ALERT	DATA		BACKGRD	DATA	ACQ	INPUT	GRAPHICS		BUS
COMPUTE TOTAL DOSE	2	3	3	1	1	1	3	3	3	3	1	3	1	3	3
MAINT RADIATION DOSE STATUS CHART	2	3	1	1	1	1	3	3	1	1	1	1	1	1	1
DET ENEMY TARGET LOCATIONS	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
ANALYZE NBC TARGETS FOR ENGAGEMENT	2	3	3	1	1	1	3	3	3	3	1	3	1	3	3
PREPARE AN OPERATION OVERLAY	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
PREPARE FOR FRIENDLY NBC STRIKE	2	3	3	3	2	3	3	3	3	3	1	1	2	3	3
ANALYZE PEES & EQUIP DECON SITE	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
ESTABLISH WORK AND REST INTERVALS	2	3	1	1	1	1	3	3	1	1	1	3	1	3	3
ANALYZE POSITIONS OF EQUIP/MATERIAL	2	3	3	1	1	1	3	3	3	3	1	3	2	3	3
MAINTAIN NBC DEF TW PERSONNEL CHART	2	3	1	1	1	1	3	3	1	1	1	1	1	1	1
MAINTAIN CHEM EQUIP STATUS CHART	2	3	1	1	1	1	3	3	1	1	1	1	1	1	1
PROVIDE ADVISE ON CHEM AGENTS	2	3	1	1	1	1	3	3	1	1	1	1	1	1	1
PROVIDE TECH ADVISE ON BIO DEFENSE	2	3	3	1	1	1	3	3	3	1	1	2	3	3	3
ADVISE ON REQ/DIST OF NBC EQUIP	2	3	3	1	1	1	3	3	3	1	1	1	3	3	3
SELECT A MOVEMENT ROUTE USING A MAP	2	3	3	1	1	1	3	3	3	3	1	3	3	3	3
PREPARE/PLAN UNIT MOVEMENT PLANS	2	3	3	2	1	1	3	3	3	3	1	3	1	3	3
REPORT INFORMATION OF INTEL VALUE	2	3	3	3	2	1	3	3	3	3	1	3	3	3	3
REPORT AIR ATTACK	2	3	1	3	2	1	3	3	1	3	1	1	1	3	3
REPORT INTERFERENCE AND INCIDENTS	2	3	1	3	2	1	3	3	1	2	1	1	1	1	1
MAINTAIN PRESCRIBED AMT OF SUPPLIES	2	3	1	1	1	1	3	3	1	1	1	1	1	1	1
IMPLEMENT MOPP LEVELS	2	3	3	2	1	1	3	3	3	3	1	3	3	3	3
PREPARE A FRAGMENTARY ORDER	2	3	3	3	2	1	3	3	3	3	1	3	3	3	3
MAINTAIN PERSONNEL ACCOUNTABILITY	2	3	1	3	2	1	3	3	1	1	1	1	1	1	1
ESTABLISH PRIORITIES FOR GEN MAINT.	2	3	1	1	1	1	3	3	1	1	1	1	1	1	1
REQUEST SUPPLIES & LOGISTIC SERVICE	2	3	1	3	1	1	3	3	1	1	1	1	1	1	1
INITIATE CASUALTY REPORTING	2	3	1	3	1	1	3	3	1	1	1	1	1	1	1
PREPARE POST DAILY STAFF JOURNAL	1	3	1	2	1	1	3	3	1	1	1	1	1	1	1
ENCODE DECODE MESSAGES	2	3	1	3	3	1	3	3	1	1	1	1	1	1	1
PREPARE FOR FUTURE OPERATIONS	1	3	3	2	1	1	1	3	3	1	1	1	3	3	3

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

J-II-24

SECTION III. OPERATIONAL BENEFITS

J-III-1

OPERATIONAL BENEFITS
(CHEMICAL UNITS)

Operational benefits gained from providing automation:

1. Enhances the command and control (C2) of Chemical units on the AirLand battlefield. Historically C2 of Chemical units has been a difficult proposition because of great physical separation between a Chemical unit and its parent Chemical unit (or the unit exercising control operationally). For example, the Chemical company organic to a division (when that division is not reinforced with corps-level Chemical units) typically is sited in the Division Support Area. Yet its decontamination platoons are habitually located in a Brigade Support Area in direct support of a maneuver brigade, its smoke platoon is attached to the maneuver brigade with the highest priority for smoke or it is split into squads and those squads are attached to one or more maneuver brigades or assigned a general support mission of protecting high-value targets in the division area of operations, and its NBC reconnaissance platoon is attached to the covering force or assigned general support missions performing reconnaissance to find "clean" or "least dirty" routes through contaminated areas for the maneuver forces. When a division receives its typical "slice" of corps-level assets (usually a Chemical Battalion Headquarters and Headquarters Detachment and three more Chemical companies — one decontamination and two smoke), this span of control and logistics support problem does not decrease. This problem of widely-dispersed elements is compounded for the company and battalion commander who must spend 60-80% of his time away from his CP/TOC (generally out of line-of-sight communications) checking on his subordinate units. In such a typical scenario, automated decision graphics and message handling become essential to the effective command and control of Chemical units.

2. Logistics support of Chemical units has typically been a tremendous burden on corps and divisions because of the specialized materiel required and the quantities of such materiel needed to accomplish a typical smoke or decontamination mission. Successful resolution of this problem is very much dependent on accurate planning, strategic pre-positioning of stockpiles of decontaminants and fog oil, and timely processing of requests for resupply. Automation is essential for these tasks to support the pace of battle pre-supposed by the concept of AirLand Battle.

3. Standardization of automation hardware, firmware, software, and procedures will go a long way toward reducing the training, maintenance, and logistics burdens of mission-essential automation on Chemical units. More importantly it will improve their operational effectiveness by connecting them to the Maneuver Control System and the larger Army Tactical Command and Control System through the use of standard U.S. Message Text Formats (USMTFs) and links to force-level databases. These links to databases (particularly those for strength accounting, position/location, mission status, readiness status, targets, terrain, NBC reports/warnings, and meteorological forecasts/information) are crucial for the effective functioning of Chemical units and for the optimal employment of these low-density assets on the AirLand battlefield.

4. Record communications will be dramatically improved by automation. Heretofore, voice message traffic has been the rule for the NBC Warning and Reporting System (NBCWRS); such messages are not databasable nor are they machine processable. The use of USMTFs, digital communications, "electronic mail", and force-level data bases will permit the virtual total automation of the NBCWRS dramatically improving the timeliness and accuracy of NBC reports and warnings. These improvements will reduce the number of NBC casualties by warning personnel and units before they encounter contamination, by helping the commander make informed decisions and take calculated risks when crossing/operating in contaminated areas, and by helping Chemical staff personnel keep track of the movement/decay/weathering of NBC hazards (whether vapor, liquid, or solid) on the AirLand battlefield.

5. The majority of the tasks performed by Chemical units require the use of algorithms, formulas, monograms, charts, and special slide rules. For example, vulnerability assessment, smoke and decontamination planning and execution, NBC reconnaissance data analysis and plotting, NBCWRS, identification of agents (both biological, chemical, and toxin), and nuclear and chemical target analysis are all very calculation intensive. Without automation, these tasks are difficult and time-consuming and generally (all too often) unresponsive to the needs of the commander's decision-making process. Automation will improve the information flow (which will improve the planning process) by utilizing the speed and processing power of a computer to analyze data, recommend courses of action, and prepare decision graphics so the commander can make more accurate and more timely decisions about the optimal employment of his forces to counter a threat.

Information fusion by a machine utilizing artificial intelligence techniques will be critical to support the effective functioning of weary and hungry soldiers who frequently can neither hear nor see the enemy they must engage. Such information fusion is critical for vulnerability assessments, hazard production, smoke planning, and target analysis by Chemical personnel.

6. One of the significant shortfalls in the current NBCWRS is that the Army has fielded an array of nuclear and chemical sensors which make noises and/or flash lights which must be continuously monitored) by a human being who then must submit a voice NBC 1/4 report. That message must be relayed through many echelons of command over many different communications circuits up to (at a minimum) the Chemical section in a separate brigade or division where it is processed, analyzed, and converted (using meteorological data which is frequently out of date and which does not consider the effects of terrain on the movement of air masses) where/when necessary, into a NBC 3/5 report. That NBC 3/5 report must then be disseminated (once again by multiple voice messages across multiple communications circuits) as warnings of predicted or actual areas of contamination to the units potentially/actually affected by the hazard. The whole process can be easily stymied by the lack of a human being to generate the first report or to relay any of the reports/warnings along the path, to the lack of a human being to process the report and convert it into a warning, the lack of near-real-time meteorological data, the lack of correct position/location information, and the failure of any one of the communications circuits along the path. Automation can connect sensors (NBC, meteorological, and position/location) to a computer which can then monitor all of these sensors, fuse information when the NBC sensor alerts, prepare the appropriate NBCWRS message, and serve as a communications gateway to automatically submit the report/warning--all without any or with minimal human intervention. This alone will accomplish something that the Army has lacked throughout its modern history; i.e., the ability to generate timely and accurate NBC reports from locations where there are no human beings, to generate reports from locations where human beings are too busy to generate an NBC report because they are actively engaged in close combat with the enemy, and to generate reports from locations where all of the human beings present have been either killed or incapacitated by an NBC attack. Further, because the NBC report is generated by a computer in the appropriate USMTF format and transmitted digitally, there is no further need for human voice relay of that report to the ultimate addressee. This will dramatically reduce the time involved to get the

report to the intended recipient and the errors introduced by multiple voice retransmissions. Finally, by introducing the requisite processing power and software to the battalion/company level automation can dramatically reduce the time to warn affected units because the turnaround time from initiation of report to receipt and processing of the report to the generation of the warning to the receipt of the warning will be reduced--just by virtue of the turnaround point being dropped below the separate brigade/division level. So by automating the sensor-to-computer-to-communications-device connection; by automating message preparation, routing, and handling in the communications system; and by lowering the message processing echelon to at least the battalion level automation can save the lives of soldiers and better maintain the fighting effectiveness of the force.

7. Automation of Chemical platoons and NBC reconnaissance vehicles with computers which are capable of operating on the move add a critical improvement in force capability. This is most evident in the mechanized smoke platoon and the NBC reconnaissance units who must actually perform their mission while on the move. The ability of smoke units to continuously process threat information, meteorological data, fog oil status, and the parameters of generated and projected smoke is critical to the optimal employment of a scarce asset on the AirLand battlefield. This is even more true of the NBC reconnaissance units who must be able to continuously monitor, detect, identify and report NBC hazards and meteorological data (while completely "buttoned up") as rapidly as hazards are encountered so that maneuver force commanders can rapidly exploit uncontaminated routes of march or at least take a known and calculated risk to use a contaminated route. To a slightly lesser extend, automation is important to decontamination platoons to permit them a mission planning and materiel requisitioning capability while enroute to a decontamination site. Such a capability is especially important in light of the fact that there are insufficient decontamination assets available to support the force and that these forces must be optimally employed--which generally means that they must be rapidly shifted around the battlefield to the point of greater need. Automated reporting of positioning/location information by Chemical units and those whom they must support is another essential feature for effective command and control of low-density assets. This insufficient assets/optimal employment requirement drives the justification for automation support to all Chemical units on the AirLand battlefield.

SECTION IV. OPERATIONAL BURDENS

J-IV-1

OPERATIONAL BURDENS
(CHEMICAL UNITS)

The operational burdens associated with fulfilling the requirement, all or in part, are:

1. Transportability. The PCU(V1) and PCU(V2) are relatively bulky sets of equipment (though certainly much better than the TCT and TCP) -- particularly when numerous peripherals are attached to the computer unit. This reduces the ability of Chemical battalion and company headquarters to displace their TOC/CP quickly and to reestablish their computer systems in the net in a new location. Since Chemical battalions do not displace very often, this is an acceptable burden; however, it is less so for a company. Added problems for the Chemical company are the bulk (particularly cube) of the PCU(V1) when it is set up and operating and the need for a vehicle to haul it during displacements. Company CPs are necessarily austere so finding space for the computer in the CP will be somewhat difficult but not impossible. The company does, in general, have sufficient transport to haul the PCU; however, load plans will have to be reworked to accommodate both its weight and cube. The computing power is considered essential (particularly since Chemical companies and battalions are separate, numbered units -- hence are generally mini-battalions and mini-brigades, respectively) and can be accommodated. This problem can probably be resolved by incorporating the PCU(V1) into the Standardized Integrated Command Post System (SICPS).

2. Training. While the current generation of soldiers is certainly more computer literate than those of the past, there is still a significant training burden associated with the fielding of these computers at echelons below battalion. The training base must begin now to incorporate computer literacy into the POIs of the training centers and service schools. As the PCU and HTU are fielded, high priority MUST be given to providing sufficient devices to the schools so that soldiers can be trained on the equipment they will use in the field. We must avoid the situation that has occurred with the fielding of the Tactical Computer Terminal (TCT) and the Tactical Computer Processor (TCP) where almost none of these devices were allocated to the training base and then only after significant quantities had been fielded to the operational units. Such a fielding plan foists the computer literacy training burden upon the field commander who already has enough operational training and readiness problems. It also results in the training base sending such commanders soldiers who are unprepared to operate on fielded computers. While the field commander can and should be held accountable for the maintenance of an acceptable level

of automation readiness -- he should not have to also shoulder the burden of initial training. SQTs must also be rewritten to ensure that both the training base and the field units are sustaining the requisite level of computer proficiency. The training burden on the field units can be eased by ensuring that the PCU and the HTU are used in garrison for routine administration, logistics, operations, and training so that the level of computer competency is sustained/improved -- reducing the trauma (individually, collectively, and operationally) of soldiers (and their commanders) suddenly having to remember how to use the computer in the field.

3. Maintenance. Chemical battalions, companies, and platoons do not have any computer equipment repairmen in their TOEs. Either such skills will have to be added to the TOE of the Chemical units -- because of the increased density of devices in the unit -- OR the maintenance units in the IDSCOMs and COSCOMs will have to be plussed up with such repairment to accommodate the enormous increase in the density of computers on the AirLand battlefield. Because these computers will be used for CRITICAL command and control and logistics tasks there MUST be sufficient repairment in the force structure to keep them operational. A Chemical company may continue to be operationally viable despite the loss of many of its ERC(A) and ERC(P) items -- but the loss of its ONE PCU(V1) could seriously impact its operational readiness.

4. Power Generation. Adequate generators will have to be added to the TOE of Chemical companies to support the power requirements of the PCU(V1). That power generation equipment must be much more reliable (consistent, filtered, and conditioned power) than that which is generally allocated to the company level. Either that or the PCU(V1) must include a power conditioner and an uninterruptible power source (UPS) as part of its standard configuration. Batteries for the HTU will have to be durable, reliable, and long-lived. Where possible, these batteries should also be rechargeable to reduce the logistics burden on the force as a whole. A battery charger for these batteries must be allocated (at a minimum) down to company level.

5. Inappropriate Equipment for a Chemical Platoon. Chemical units have a requirement for relatively powerful computers with a graphics capability and sufficient mass storage and memory capacity to store and use complex planning and operational programs. The HTU is too LITTLE capability and the PCU(V1) is far too MUCH capability for smoke and decontamination platoons; however, the PCU(V2) is just about what is required for NBC reconnaissance vehicles. Some computer system

intermediate in capability between the PCU and the HTU must be developed for those units with similar requirements for connection to NBC, meteorological, and position/location sensors and a communications device as well as the aforementioned graphics, memory, and mass storage requirements. The HTU is truly appropriate only for the Chemical Team LA which provides NBC Chemical units (except the vast majority of NBC reconnaissance teams) need something MORE than a HTU and LESS than a PCU(V2); i.e., the HTU is better than nothing but it is less than what is required.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

MFA MAA CORRECTIVE
ACTION SUMMARY

BDP DEF
(1986)

3
4
7
9
12
16
36
37
38
49
50
84
98
107
118
140
142
154
159
180
195
237
272
280
293
303
318
324

SECTION VI. USER INTERFACE REQUIREMENTS

J-VI-1

NO REQUIREMENT IDENTIFIED

J-VI-2

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:		PCU				TCU				REV ITEM DESIGNATION	USER
			COMPO	HHT										
			1-AA											
			2-NG		(V1)	(V2)	(V1)	(V2)	(V1)	(V2)				
3-AR														
030070	DIV	CML CO (SMX GEN)	5	00 00	10 50	00 00	00 00	00 00	00 00	00 00	00 00	PCU - CO CDR CPNS		
030070	EVY	(MECH)	0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
030070			10	00 00	10 10	00 00	00 00	00 00	00 00	00 00	00 00			
030070		SMX PLT (SMX GEN)	15	20 30	00 00	00 00	00 00	00 00	00 00	00 00	00 00	HTU - PLT LDR & SGT		
030070			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
030070			30	20 80	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
030570	DIV	CML CO (SMX/DECON)	2	00 00	10 20	00 00	00 00	00 00	00 00	00 00	00 00	PCU - CO CDR/CO CPNS		
030570	ARMY		0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
030570	ARSLT		0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
030570		SMX/DECON PLT	6	10 50	00 00	00 00	00 00	00 00	00 00	00 00	00 00	HTU - PLT LDR		
030570			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
030570			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
031170		CHEM CO	1	00 00	10 10	00 00	00 00	00 00	00 00	00 00	00 00	PCU - CO CDR/HQS		
031170			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
031170			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
031170		SMOX/DECON PLT	3	10 20	00 00	00 00	00 00	00 00	00 00	00 00	00 00	HTU - PLT LDR		
031170			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
031170			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
032570	DIV	CML CO (SMX/DECON)	3	00 00	10 30	00 00	00 00	00 00	00 00	00 00	00 00	PCU - CO CDR CO CPNS		
032570	LIGHT		0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
032570			2	00 00	10 20	00 00	00 00	00 00	00 00	00 00	00 00			
032570		SMX/DECON PLT	10	10 10	00 00	00 00	00 00	00 00	00 00	00 00	00 00	HTU - PLT LDR		
032570			0	00 00	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
032570			8	10 80	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
033870	DIV	CML CO	11	00 00	10 10	00 00	00 00	00 00	00 00	00 00	00 00	PCU - CO CDR CO CPNS		
033870	HEAVY		5	00 00	10 50	00 00	00 00	00 00	00 00	00 00	00 00			
033870			4	00 00	10 40	00 00	00 00	00 00	00 00	00 00	00 00			
033870		SMOX PLT CML CO	11	10 20	00 00	00 00	00 00	00 00	00 00	00 00	00 00	HTU - PLT LDR		
033870			10	10 10	00 00	00 00	00 00	00 00	00 00	00 00	00 00			
033870			8	10 80	00 00	00 00	00 00	00 00	00 00	00 00	00 00			

QUANTITY DISTRIBUTION OF DEVICES

FOE	LEVEL	TYPE OF UNIT	TAA 90	PCU				TCU				DEV ITEM DESIGNATION	
			COMPO	HET									
			1-AA										
			2-XG										
			3-AR		V1	V2	V1	V2				USER	
033570		DECON FLT	44	14 44	0	0	0	0	0	0	0	0	HTV - FLT LIA
033570			20	14 20	0	0	0	0	0	0	0	0	
033570			16	14 16	0	0	0	0	0	0	0	0	
SUBTOTALS:													
			1	126	22	0	0	0	0	0	0	0	
			2	30	5	0	0	0	0	0	0	0	
			3	92	16	0	0	0	0	0	0	0	
GRAND TOTALS:				238	43	0	0	0	0	0	0	0	

J-VII-3

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J-VII-4

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APPENDIX K

MILITARY POLICE SCHOOL STUDY DELIVERABLES

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

K-I-1

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: MILITARY POLICE

ECHELON: BN S3

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	BATTLEFIELD CIRCULATION CONTROL	X	
1	PREPARE EST., PLANS, & MOVEMENT ORD	X	
1	MSR REGULATION ENFORCEMENT		X
1	CONDUCT CIRCULATION & MOVEMENT OPNS		X
1	PREPARE ROUTE RECONNAISSANCE REPORT	X	
1	DISSEMINATE INFORMATION		X
1	CONTROL REFUGEES AND STRAGGLERS		X
2	PLAN & COORD REAR OPERATIONS	X	
3	EPW OPERATIONS.	X	X
3	PLAN CIVILIAN & EPW INTERNEE OPNS	X	X
3	ESTABLISHMENT OF EPW HOLDING AREA	X	X
3	COORDINATE EVACUATION	X	
4	SUPER. LOWER UNIT ENFORCEMENT OPNS	X	
4	ADVISE HIGHER HQ ON LEGAL MATTERS.	X	
4	LOW INTENSITY CONFLICT PEACE OPNS	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: MILITARY POLICE

ECHOLON: BN S2

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	PROCESS AND ANALYZE INFORMATION	X	
1	RECEIVE INTELLIGENCE	X	
2	COORD WEATHER & TERRAIN DATA	X	
2	CONDUCT VULNERABILITY ASSESSMENT	X	
3	DISSEMINATE INTELLIGENCE ESTIMATES	X	
4	EPW OPERATIONS	X	
4	PROCESS INITIAL DATA	X	
4	ADMINISTRATIVE DATA BASE	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: MILITARY POLICE

ECHELON: CO

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	BATTLEFIELD CIRCULATION CONTROL		X
1	MSR REGULATION ENFORCEMENT		X
1	CONDUCT CIRCULATION & MOVEMENT OPNS		X
1	PREPARE ROUTE RECONNAISSANCE REPORT	X	
1	DISSEMINATE INFORMATION		X
2	AREA SECURITY OPERATIONS		X
2	CONDUCT AREA RECONNAISSANCE		X
2	COLLECT & REPORT INFORMATION		X
2	AREA DAMAGE CONTROL INFO TO RAOC	X	
3	EPW OPERATIONS		
3	ESTABLISH EPW HOLDING AREA		X
3	DIRECT EVACUATING EPW HOLDING AREA		X
3	LOGISTICS REQUIREMENT	X	
4	ADMINISTRATIVE ACTIONS	X	
4	PREPARE PERSONNEL DAILY SUMMARY	X	
4	ASSOCIATED REPORTS	X	
4	FIELD FEEDING	X	
5	LOGISTICS	X	
5	COMMANDER'S ESTIMATE	X	
5	CLASS I, III, V	X	
5	READINESS REPORTS	X	
6	LAW ENFORCEMENTS		
6	STATISTICS		X
6	INCIDENTS REPORTS		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: MILITARY POLICE

ECHELON: PLT

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	EPW OPERATIONS		X
1	ESTABLISH HOLDING AREAS		X
1	EVAC OF EPWS AND TRAFFIC CONTROL		X
2	BATTLEFIELD CIRCULATION CONTROL	X	
2	MSR REGULATION/TRAFFIC CONTROL.		X
2	ROUTE RECONNAISSANCE	X	
2	CONTROL REFUGEES AND STRAGGLERS	X	
3	AREA SECURITY	X	
3	SURVEILLANCE	X	
3	COLLECT & REPORT INTELLIGENCE	X	
3	AREA DAMAGE CONTROL		X
4	ADMINISTRATIVE	X	
4	PERSONNEL DAILY SUMMARY REPORTS	X	

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

K-II-1

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MILITARY POLICE

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: S3

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCJ (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DRW DATA	PROC BUS
BATTLEFIELD CIRCULATION CONTROL	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
PREPARE EST., PLANS, & MOVEMENT ORD	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
MSR REGULATION ENFORCEMENT	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
CONDUCT CIRCULATION & MOVEMENT OPNS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
PREPARE ROUTE RECONNAISSANCE REPORT	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
DISSEMINATE INFORMATION	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
CONTROL REFUGEES AND STRAGGLERS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
PLAN & COORD REAR OPERATIONS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
EPW OPERATIONS.	3	2	2	3	3	2	3	3	3	3	3	2	2	2	
PLAN CIVILIAN & EPW INTERNEE OPNS	3	2	2	3	3	2	3	3	3	3	3	2	2	2	
ESTABLISHMENT OF EPW HOLDING AREA	3	2	2	3	3	2	3	3	3	3	3	2	2	2	
COORDINATE EVACUATION	3	2	2	3	3	2	3	3	3	3	3	2	2	2	
SUPER. LOWER UNIT ENFORCEMENT OPNS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
ADVISE HIGHER HQ ON LEGAL MATTERS.	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
LOW INTENSITY CONFLICT PEACE OPNS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MILITARY POLICE

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: S2

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
BATTLEFIELD CIRCULATION CONTROL	3	3	3	3	3	3	3	3	3	3	3	2	2	2
PROCESS AND ANALYZE INFORMATION	3	3	3	3	3	3	3	3	3	3	3	2	2	2
RECEIVE INTELLIGENCE	3	3	3	3	3	3	3	3	3	3	3	2	2	2
AREA SECURITY	3	3	3	3	3	3	3	3	3	3	3	2	2	2
COORD WEATHER & TERRAIN DATA	1	3	3	3	3	3	3	3	3	3	3	2	2	2
CONDUCT VULNERABILITY ASSESSMENT	1	3	3	3	3	3	3	3	3	3	3	2	2	2
DISSEMINATE INTELLIGENCE ESTIMATES	1	3	3	3	3	3	3	3	3	3	3	2	2	2
EPW OPERATIONS	3	2	2	3	3	2	3	3	1	3	3	2	2	2
PROCESS INITIAL DATA	1	2	2	3	3	2	3	2	2	3	3	2	2	2
ADMINISTRATIVE DATA BASE	1	2	2	3	3	2	3	2	2	3	3	2	2	2

HARDWARE SOLUTION: PCU(V1)

BATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

K-II-3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MILITARY POLICE
 CANDIDATE SOLUTIONS
 ECHELON: CO
 OPERATOR: CO OPERATIONS

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS	
BATTLEFIELD CIRCULATION CONTROL	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
MSR REGULATION ENFORCEMENT	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
CONDUCT CIRCULATION & MOVEMENT OPNS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
PREPARE ROUTE RECONNAISSANCE REPORT	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
DISSEMINATE INFORMATION	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
AREA SECURITY OPERATIONS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
CONDUCT AREA RECONNAISSANCE	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
COLLECT & REPORT INFORMATION	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
AREA DAMAGE CONTROL INFO TO RAOC	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
EPW OPERATIONS	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
ESTABLISH EPW HOLDING AREA	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
DIRECT EVACUATING EPW HOLDING AREA	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
LOGISTICS REQUIREMENT	3	3	3	3	3	2	3	3	2	3	3	2	2	2	
ADMINISTRATIVE ACTIONS	3	3	3	3	3	2	3	3	2	3	3	2	2	2	
PREPARE PERSONNEL DAILY SUMMARY	3	3	3	3	3	2	3	3	2	3	3	2	2	2	
ASSOCIATED REPORTS	3	3	3	3	3	2	3	3	2	3	3	2	2	2	
FIELD FEEDING	3	3	3	3	3	2	3	3	3	3	3	2	2	2	
LOGISTICS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
COMMANDER'S ESTIMATE	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
CLASS I, III, V	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
READINESS REPORTS	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
LAW ENFORCEMENTS	3	3	3	3	3	1	3	3	2	3	3	2	2	2	
STATISTICS	2	3	3	3	3	1	3	3	2	3	3	2	2	2	
INCIDENTS REPORTS	2	3	3	3	3	1	3	3	3	3	3	2	2	2	

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

K-II-4

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: MILITARY POLICE

CANDIDATE SOLUTIONS
ECHELON: PLT

OPERATOR: PLT LEADER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	AFMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGROUND	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DRW DATA	PROC BUS
EPW OPERATIONS	3	3	2	3	3	2	3	3	1	3	3	2	2	2	2
ESTABLISH HOLDING AREAS	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
EVAC OF EPWS AND TRAFFIC CONTROL	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
BATTLEFIELD CIRCULATION CONTROL	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
MSR REGULATION/TRAFFIC CONTROL	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
ROUTE RECONNAISSANCE	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
CONTROL REFUGEES AND STRAGGLERS	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
AREA SECURITY	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
SURVEILLANCE	3	3	3	3	3	3	3	3	1	3	3	2	2	2	2
COLLECT & REPORT INTELLIGENCE	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
AREA DAMAGE CONTROL	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2
PERSONNEL DAILY SUMMARY REPORTS	3	3	3	3	3	2	3	3	1	3	3	2	2	2	2

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

SECTION III. OPERATIONAL BENEFITS

K-III-1

OPERATIONAL BENEFITS
MP BATTALION LEVEL

1. Automation at the Military Police Battalion level will significantly enhance its capability to process and disseminate critical battlefield information in terms of real time increments.
2. The battalion, which is the operational linchpin for the Military Police command and control structure in both Corps and TAACOM, is currently relegated to a manual system for processing voluminous amounts of data from subordinate and higher elements.
3. The Military Police, by virtue of its scheme of deployment and mission, serve as the eyes and ears of the maneuver commander and as such, the enhanced capability of the battalion to process and disseminate information through the use of computer-driven map graphics, displays, and storage of both long and short term data will facilitate its assimilation and correlation.
4. The availability of automation to the battalion will afford the primary staff elements the opportunity to maintain a direct data link to its subordinate units, which under current doctrine, are dispersed throughout the theater. The nominal Military Police Combat Support company, for example, operates in an area that encompasses 360 square kilometers and as such, the ability of the Battalion Commander has real time access to his company commanders which will significantly improve the decision-making process.
5. The high payoff tasks that will be directly affected by automation are found at each of the staff levels. The Portable Computer Unit and its graphic map capabilities, as an example, will radically reduce the manual tasks associated with the planning and execution of the Military Police area security mission, base and base cluster defense, and other rear area operation missions.
6. Automation will increase the overall effectiveness of the Military Police command and staff elements by providing them at the battalion level with the capability to rapidly access or input critical combat information to its subordinate units and the Rear Area Operation Center, conversely, that real time link with the Military Police Brigade provides it with a continuum of information that is crucial to the ability of the Military Police to conduct its missions throughout the entire theater. Those key tasks at battalion that would be included are command and control, development of MP orders/annexes, circulation control plans, planning/coordination of rear operations and the development of contingency plans.

OPERATIONAL BENEFITS
MP COMPANY LEVEL

1. Dispersion is the key element in the deployment of the Military Police Company at each echelon and as such, the capability to maintain real time and a data link to its higher headquarters is vital to the company commander as he attempts to analyze battlefield information during the decision-making process and communicate it to subordinate units.
2. The Portable Computer Unit at the company level will provide the commander the capability to collect, store, and analyze tactical information in real time terms; a function that is now primarily conducted through a series of manual tasks and functions.
3. The Military Police company commander is performing four missions simultaneously and as such, because of limited assets, the capabilities provided by automation to the commander at this echelon eliminate a recognized deficiency in the management of battlefield information.
4. The Portable Computer Unit will be used at the company headquarters. Those tasks that will yield high payoff results fall into the following categories: Battlefield Circulation Control, Area Security Operations, Enemy Prisoner of War Operations, Administrative Actions, Logistics, and Law Enforcement.

OPERATIONAL BENEFITS
MP PLATOON LEVEL

1. The Military Police platoon leader, by virtue of his operation scheme of maneuver at all echelons, requires a genuine real time capability to interface with the company headquarters.
2. The ability to transmit and process critical information as the platoon leader moves throughout the area of operation significantly enhances the decision-making process.
3. Providing the Handheld Terminal Unit will increase the platoon leader's capability to disseminate and process information which will relieve them of the identified manual tasks associated with status reports, reconnaissance, EPW operations, and associated tasks in the conduct of rear area operations.

SECTION IV. OPERATIONAL BURDENS

K-IV-1

OPERATIONAL BURDENS
MP UNITS

Identify the operational burdens associated with fulfilling the requirements, all or in part.

a. Transportability: Currently, the Portable Computer Unit (PCU) can be transported in existing Military Police vehicles. The Handheld Terminal Units (HTU) pose no transportable or operational problem.

b. Training: All training will be conducted at a central site in each corps, division area, and at the necessary school/center training institution. NDI equipment, per MANPRINT guidance, will be furnished with embedded training.

c. Maintenance: PMCS, a standard function, will not present the operating unit with any constraints on its maintenance capability.

d. No new Military Occupational Specialty (MOS) or Additional Skill Identifier (ASI) will be required to operate or monitor the system.

e. Automation, as currently configured, will be utilized by the TO&E personnel currently operating the manual command and control system. Therefore, no additional personnel will be required.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

MFA MAA CORRECTIVE
ACTION SUMMARY

BDP DEF
(1986)

224

K-V-0

SECTION VI. USER INTERFACE REQUIREMENTS

K-VI-1

NO REQUIREMENT IDENTIFIED

K-VI-2

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

K-VII-1

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
19017H	DIV	MP CO. AIM	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO HQ'S
19017H			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19017H			5	0(0)	1(5)	0(0)	0(0)	0(0)	0(0)	
19017H	DIV	MP PLT, MP CO. AIM	5	1(5)	0(0)	0(0)	0(0)	0(0)	0(0)	HU - PLT LDR
19017H			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19017H			30	1(30)	0(0)	0(0)	0(0)	0(0)	0(0)	
19223L	DIV	MP CO. MTZ	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO HQ'S
19223L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19223L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19223L	DIV	MP PLT, MP CO. MTZ	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HU - PLT LDR
19223L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19223L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19313L	DIV	MP CO. ARN	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO HQ'S
19313L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19313L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19313L	DIV	MP PLT, MP CO. ARN	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HU - PLT LDR
19313L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19313L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19323L	DIV	MP CO. LT	4	0(0)	1(4)	0(0)	0(0)	0(0)	0(0)	PCU - CO HQ'S
19323L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19323L			1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	
19323L	DIV	MP PLT, MP CO. LT	16	1(16)	0(0)	0(0)	0(0)	0(0)	0(0)	HU - PLT LDR
19323L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19323L			4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	
19333L	DIV	MP CO. HVY	10	0(0)	1(10)	0(0)	0(0)	0(0)	0(0)	PCU - CO HQ'S
19333L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19333L			4	0(0)	1(4)	0(0)	0(0)	0(0)	0(0)	
19333L	DIV	MP PLT, MP CO. HVY	60	1(60)	0(0)	0(0)	0(0)	0(0)	0(0)	HU - PLT LDR
19333L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19333L			24	1(24)	0(0)	0(0)	0(0)	0(0)	0(0)	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HBT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
19343L	DIV	MP CO, AA	1	0(0)	1(1)	0(0)	0(0)	0(0)	0(0)	PCU - CO HQ'S
19343L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19343L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19343L	DIV	MP PLT, MP CO, AA	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HBT - PLT LDR
19343L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
19343L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	93	18	0	0	0	0	
			2	0	0	0	0	0	0	
			3	58	10	0	0	0	0	
GRAND TOTALS:				151	28	0	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:		PCU		TCC		DEV ITEM DESIGNATED	
			COMPO	HHT						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)	USER	
			3-AR							
19176L	CORPS	MP BN	12	01 01	21 24	01 01	01 01	01 01	01 01	PCU - 88 81
19176L			9	01 01	21 18	01 01	01 01	01 01	01 01	
19176L			7	01 01	21 14	01 01	01 01	01 01	01 01	
19177L	CORPS	MP CO. CS	51	01 01	11 51	01 01	01 01	01 01	01 01	PCU - 88 81
19177L			50	01 01	11 50	01 01	01 01	01 01	01 01	
19177L			31	01 01	11 31	01 01	01 01	01 01	01 01	
19177L	CORPS	MP PLT. MP CO. CS	204	11 204	01 01	01 01	01 01	01 01	01 01	HTU - 817 119
19177L			240	11 240	01 01	01 01	01 01	01 01	01 01	
19177L			124	11 124	01 01	01 01	01 01	01 01	01 01	
SUBTOTALS:										
			1	204	75	0	0	0	0	
			2	240	78	0	0	0	0	
			3	124	45	0	0	0	0	
GRAND TOTALS:				568	198	0	0	0	0	

APPENDIX L

AVIATION SCHOOL STUDY DELIVERABLES

AD-A191 646

ANALYSIS OF TACTICAL AUTOMATION REQUIREMENTS FOR THE
MANEUVER FUNCTIONAL AREA(U) ARMY COMBINED ARMS COMBAT
DEVELOPMENT ACTIVITY FORT LEAVENWORTH. L J DACUNTO

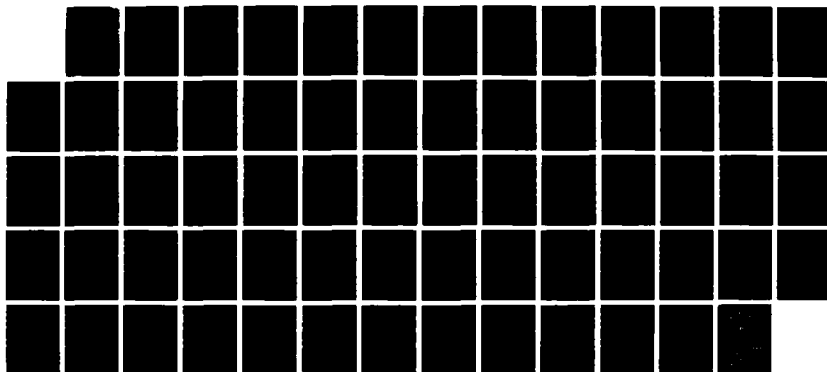
4/4

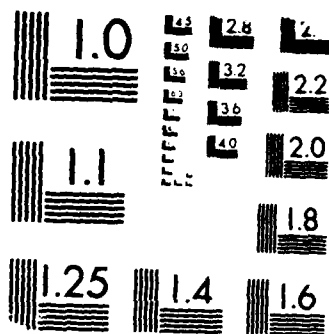
UNCLASSIFIED

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F/G 12/7

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MICROCOPY RESOLUTION TEST CHART
 (NBS 1963-A) STANDARD OF 1.0

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: AVN UTILITY/CARGO

ECHELON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	ORDER MESSAGE (OPORD, WARNING, FRAGO)	X	
2	WEATHER FORECAST/WARNING	X	
3	ENEMY CONTACT (SPOT) REPORT	X	
4	INTELLIGENCE SUMMARY (ENEMY SIT)	X	
5	STRIKE WARNING	X	
6	FRIENDLY LOCATIONS	X	
7	CRITICAL SITUATION REPORT	X	
8	AIR ROUTES/CORRIDOR	X	X
9	AIRSPACE RESTRICTIONS	X	X
10	SAM STATUS REPORT	X	
11	FREQUENCY CHANGE	X	
12	ADA STATUS (ENGAGEMENT CRITERIA)	X	
13	NBC REPORTS	X	
14	BATTLE LOSSES EQUIPMENT (FRIENDLY)	X	
15	COMMANDERS SITUATION REPORT	X	
16	AIR MISSION REQUEST ARMY AVN/TACAIR	X	
17	MIJI REPORT	X	
18	LOGISTICS STATUS/REQUEST	X	
19	PERSONNEL REPORT	X	
20	UNIT READINESS REPORT	X	
21	AIRCRAFT PERFORMANCE PLANNING		X
22	FLIGHT MISSION PLANNING		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: AVN UTILITY/CARGO

ECHELON: CO

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	ORDER MESSAGE (OPORD, WARNING, FRAGO)	X	
2	WEATHER FORECAST/WARNING	X	
3	ENEMY CONTACT (SPOT) REPORT	X	
4	INTELLIGENCE SUMMARY (ENEMY SIT)	X	
5	STRIKE WARNING	X	
6	FIRE MISSION (CALL FOR FIRE)	X	
7	FRIENDLY LOCATIONS	X	
8	CRITICAL SITUATION REPORT	X	
9	AIR ROUTES/CORRIDOR	X	X
10	AIRSPACE RESTRICTIONS	X	X
11	SAM STATUS REPORT	X	
12	FREQUENCY CHANGE	X	
13	ADA STATUS (ENGAGEMENT CRITERIA)	X	
14	NBC REPORTS	X	
15	BATTLE LOSSES EQUIPMENT	X	
16	COMMANDERS SITUATION REPORT	X	
17	AIR MISSION REQUEST ARMY AVN/TACAIR	X	
18	MIJI REPORT	X	
19	LOGISTICS STATUS/REQUEST	X	
20	PERSONNEL REPORT	X	
21	UNIT READINESS REPORT	X	
22	AIRCRAFT PERFORMANCE PLANNING		X
23	FLIGHT MISSION PLANNING		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: AVN ASSAULT

ECHELON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	ORDER MESSAGE (OPORD, WARNING, FRAGO)	X	
2	WEATHER FORECAST/WARNING	X	
3	ENEMY CONTACT (SPOT) REPORT	X	
4	SAM STATUS REPORT	X	
5	STRIKE WARNING	X	
6	FRIENDLY LOCATIONS	X	
7	CRITICAL SITUATION REPORT	X	
8	AIR ROUTES/CORRIDOR	X	X
9	AIRSPACE RESTRICTIONS	X	X
10	INTELLIGENCE SUMMARY (ENEMY SIT)	X	
11	FREQUENCY CHANGE	X	
12	ADA STATUS (ENGAGEMENT CRITERIA)	X	
13	NBC REPORTS	X	
14	BATTLE LOSSES EQUIPMENT (FRIENDLY)	X	
15	COMMANDERS SITUATION REPORT	X	
16	AIR MISSION REQUEST ARMY AVN/TACAIR	X	
17	MIJI REPORT	X	
18	LOGISTICS STATUS/REQUEST	X	
19	PERSONNEL REPORT	X	
20	FIRE SUPPORT REQUEST (ADD ASSETS)	X	
21	UNIT READINESS REPORT	X	
22	AIRCRAFT PERFORMANCE PLANNING		X
23	FLIGHT MISSION PLANNING		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: AVN ASSAULT

ECHELON: CO

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	ORDER MESSAGE (OPORD, WARNING, FRAGO)	X	
2	WEATHER FORECAST/WARNING	X	
3	ENEMY CONTACT (SPOT) REPORT	X	
4	SAM STATUS REPORT	X	
5	STRIKE WARNING	X	
6	FIRE MISSION (CALL FOR FIRE)	X	
7	FRIENDLY LOCATIONS	X	
8	CRITICAL SITUATION REPORT	X	
9	AIR ROUTES/CORRIDOR	X	X
10	AIRSPACE RESTRICTIONS	X	X
11	INTELLIGENCE SUMMARY	X	
12	FIRE SUPPORT REQUEST	X	
13	FREQUENCY CHANGE	X	
14	ADA STATUS (ENGAGEMENT CRITERIA)	X	
15	NBC REPORTS	X	
16	BATTLE LOSSED EQUIPMENT (FRIENDLY)	X	
17	COMMANDERS SITUATION REPORT	X	
18	AIR MISSION REQUEST ARMY AVN/TACAIR	X	
19	MIJI REPORT	X	
20	LOGISTICS STATUS/REQUEST	X	
21	PERSONNEL REPORT	X	
22	UNIT READINESS REPORT	X	
23	AIRCRAFT PERFORMANCE PLANNING		X
24	FLIGHT MISSION PLANNING		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: AVN ATK

ECHOLON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	ORDER MESSAGE (OPORD, WARNING, FRAGO)	X	
2	WEATHER FORECAST/WARNING	X	
3	ENEMY CONTACT (SPOT) REPORT	X	
4	INTELLIGENCE SUMMARY	X	
5	STRIKE WARNING	X	
6	FRIENDLY LOCATIONS	X	
7	CRITICAL SITUATION REPORT	X	
8	AIR ROUTES/CORRIDOR	X	X
9	AIRSPACE RESTRICTIONS	X	X
10	ADA STATUS (ENGAGEMENT CRITERIA)	X	
11	FREQUENCY CHANGE	X	
12	SAM STATUS REPORT	X	
13	NBC REPORTS	X	
14	TARGET HAND OVER		X
15	BATTLE LOSSES EQUIPMENT (FRIENDLY)	X	
16	COMMANDERS SITUATION REPORT	X	
17	AIR MISSION REQUEST ARMY AVN/TACAIR	X	
18	MIJI REPORT	X	
19	LOGISTICS STATUS/REQUESTS	X	
20	PERSONNEL REPORT	X	
21	FIRE SUPPORT REQUEST	X	
22	UNIT READINESS REPORT	X	
23	AIRCRAFT PERFORMANCE PLANNING		X
24	FLIGHT MISSION PLANNING		X

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: AVN ATK

ECHELON: CO

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	ORDER MESSAGE (OPORD, WARNING, FRAGO)	X	
2	WEATHER FORECAST/WARNING	X	
3	ENEMY CONTACT (SPOT) REPORT	X	
4	TARGET HAND OVER		X
5	FIRE MISSION (CALL FOR FIRE)	X	
6	INTELLIGENCE SUMMARY	X	
7	FRIENDLY LOCATIONS	X	
8	STRIKE WARNING	x	
9	CRITICAL SITUATION REPORT	X	
10	AIR ROUTES/CORRIDOR	X	X
11	AIRSPACE RESTRICTIONS	X	X
12	FREQUENCY CHANGE	X	
13	FIRE SUPPORT REQUEST	X	
14	SAM STATUS REPORT	X	
15	NBC REPORTS	X	
16	ADA STATUS (ENGAGEMENT CRITERIA)	X	
17	BATTLE LOSSES EQUIPMENT (FRIENDLY)	X	
18	COMMANDERS SITUATION REPORT	X	
19	AIR MISSION REQUEST ARMY AVN/TACAIR	X	
20	MIJI REPORT	X	
21	LOGISTICS STATUS/REQUEST	X	
22	PERSONNEL REPORT	X	
23	UNIT READINESS REPORT	X	
24	AIRCRAFT PERFORMANCE PLANNING		X
25	FLIGHT MISSION PLANNING		X

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: AVN ATK
 CANDIDATE SOLUTIONS
 ECHELON: BN OPERATOR: BN S3, S2

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCJ (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
ORDER MESSAGE (OPORD, WARNING, FRAGO)	3	2	2	2	1	3	2	2	1	3	1	1	1	1
WEATHER FORECAST/WARNING	3	1	1	1	2	2	1	2	3	3	2	1	2	1
ENEMY CONTACT (SPOT) REPORT	3	2	2	3	2	2	1	3	3	3	2	2	1	1
INTELLIGENCE SUMMARY	3	1	2	1	1	1	1	3	3	3	1	1	1	1
STRIKE WARNING	3	1	1	2	1	3	1	3	3	3	1	2	1	2
FRIENDLY LOCATIONS	3	2	2	2	1	1	1	3	3	3	2	2	1	2
CRITICAL SITUATION REPORT	3	2	2	3	2	3	1	2	3	3	2	1	1	1
AIR ROUTES/CORRIDOR	3	1	2	2	2	1	1	3	3	3	1	2	1	2
AIRSPACE RESTRICTIONS	3	2	2	2	2	3	2	3	3	3	1	2	1	2
TARGET HAND OVER	3	2	2	3	2	2	3	3	3	3	2	2	1	2
FREQUENCY CHANGE	3	2	1	2	1	1	2	3	1	2	1	2	1	1
SAM STATUS REPORT	3	2	2	2	2	3	1	3	3	3	3	2	1	1
ADA STATUS (ENGAGEMENT CRITERIA)	3	2	2	2	2	2	1	3	3	3	1	2	1	1
AIR MISSION REQUEST ARMY AVN/TACAIR	3	2	2	3	2	1	1	2	3	3	1	2	1	1
MISC REPORT	3	2	2	3	1	3	3	2	2	3	1	2	1	1
BATTLE LOSSES EQUIPMENT (FRIENDLY)	3	1	1	2	2	1	1	1	2	3	1	1	1	1
COMMANDERS SITUATION REPORT	3	1	1	3	2	1	2	2	2	3	2	1	1	1
LOGISTICS STATUS/REQUESTS	3	1	1	3	2	1	1	2	2	3	1	1	1	1
PERSONNEL REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1
UNIT READINESS REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1
FIRE SUPPORT REQUEST	3	2	2	2	2	1	2	2	3	3	3	2	1	2
NBC REPORTS	3	2	2	3	1	1	1	2	2	3	1	1	1	1
AIRCRAFT PERFORMANCE PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	2
FLIGHT MISSION PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	2

HARDWARE SOLUTION: PCU(V2)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

I-II-2

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: AVN ATK

CANDIDATE SOLUTIONS
ECHELON: CO

OPERATOR: CO COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DRW GRAPHICS	PROC DATA BUS
ORDER MESSAGE (OPORD, WARNING, FRAGO)	3	2	1	2	1	3	2	2	1	3	1	1	1	1
WEATHER FORECAST/WARNING	3	1	1	2	2	1	1	2	2	3	2	1	2	1
ENEMY CONTACT (SPOT) REPORT	3	2	2	2	2	2	1	2	2	3	2	2	1	1
INTELLIGENCE SUMMARY	3	2	2	2	1	2	1	3	2	3	1	1	1	1
STRIKE WARNING	3	3	2	2	1	2	1	3	2	3	1	2	1	2
FRIENDLY LOCATIONS	3	2	2	2	1	1	1	3	2	3	2	2	1	2
CRITICAL SITUATION REPORT	3	2	2	2	2	2	1	2	2	3	2	1	1	1
AIR ROUTES/CORRIDOR	3	2	2	2	2	1	1	2	2	3	1	2	1	2
AIRSPACE RESTRICTIONS	3	1	2	2	2	1	1	3	3	3	1	2	1	2
TARGET HAND OVER	3	2	2	3	2	2	3	2	3	3	2	2	1	2
SAM STATUS REPORT	3	2	2	3	2	3	1	3	3	3	3	2	1	1
FREQUENCY CHANGE	3	2	1	2	1	1	2	3	1	2	1	2	1	1
ADA STATUS (ENGAGEMENT CRITERIA)	3	2	2	2	2	2	1	3	3	3	1	2	1	1
AIR MISSION REQUEST ARMY AVN/TACAIR	3	2	2	3	2	1	1	2	3	3	1	2	1	1
MIC REPORT	3	2	2	3	1	3	3	2	2	3	1	2	1	1
BATTLE LOSSES EQUIPMENT (FRIENDLY)	3	1	1	2	2	1	1	1	2	3	1	1	1	1
COMMANDERS SITUATION REPORT	3	1	1	3	2	1	2	2	2	3	2	1	1	1
LOGISTICS STATUS/REQUEST	3	1	1	3	2	1	1	2	2	3	1	1	1	1
PERSONNEL REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1
UNIT READINESS REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1
FIRE MISSION (CALL FOR FIRE)	3	2	2	2	2	1	2	2	3	3	3	2	1	2
FIRE SUPPORT REQUEST	3	2	2	2	2	1	2	2	3	3	3	2	1	2
NBC REPORTS	3	2	2	3	1	1	1	2	2	3	1	1	1	1
AIRCRAFT PERFORMANCE PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	2
FLIGHT MISSION PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	2

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

L-II-3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: AVN ASSLT

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN S3, S2

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER MON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL YAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	ATCH FREE GRAPHICS	SEN DEW DATA BUS
ORDER MESSAGE (OPORD, WARNING, FRAGO)	3	2	2	2	1	3	2	2	1	3	1	1	1	1
WEATHER FORECAST/WARNING	3	1	1	1	2	2	1	2	3	3	2	1	2	1
ENEMY CONTACT (SPOT) REPORT	3	2	2	3	2	2	1	3	3	3	2	2	1	1
INTELLIGENCE SUMMARY (ENEMY SIT)	3	1	2	1	1	1	1	3	3	3	1	1	1	1
STRIKE WARNING	3	1	1	2	1	3	1	3	3	3	1	2	1	2
FRIENDLY LOCATIONS	3	2	2	2	1	1	1	3	3	3	2	2	1	2
CRITICAL SITUATION REPORT	3	2	2	3	2	3	1	2	3	3	2	1	1	1
AIR ROUTES/CORRIDOR	3	1	2	2	2	1	1	3	3	3	1	2	1	2
AIRSPACE RESTRICTIONS	3	2	2	2	2	3	2	3	3	3	1	2	1	2
FREQUENCY CHANGE	3	2	1	2	1	1	2	3	1	2	1	2	1	1
SAM STATUS REPORT	3	2	2	2	2	3	1	3	3	3	3	2	1	1
ADA STATUS (ENGAGEMENT CRITERIA)	3	2	2	2	2	2	1	3	3	3	1	2	1	1
AIR MISSION REQUEST ARMY AVN/TACAIR	3	2	2	3	1	1	1	2	3	3	2	1	1	1
MISS REPORT	3	2	2	3	1	3	3	2	2	3	1	2	1	1
BATTLE LOSSES EQUIPMENT (FRIENDLY)	3	1	1	2	2	1	1	1	2	3	1	1	1	1
COMMANDERS SITUATION REPORT	3	1	1	3	2	1	1	2	2	3	2	1	1	1
LOGISTICS STATUS/REQUEST	3	1	1	3	2	1	1	2	2	3	1	1	1	1
PERSONNEL REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1
UNIT READINESS REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1
FIRE SUPPORT REQUEST (ADD ASSETS)	3	2	2	2	2	1	2	2	3	3	3	2	1	2
NBC REPORTS	3	2	2	3	1	1	1	2	2	3	1	1	1	1
AIRCRAFT PERFORMANCE PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	2
FLIGHT MISSION PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	2

HARDWARE SOLUTION: PCU/V2

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

I-II-4

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: AVN ASSLT

CANDIDATE SOLUTIONS

ECHOLON: CO

OPERATOR: CO COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	ITCH FREE GRAPHICS	SEN DRW DATA	PROC DATA
ORDER MESSAGE (OPORD, WARNING, FRAGO)	3	2	1	2	1	3	2	2	1	3	1	1	1	1	1
WEATHER FORECAST/WARNING	3	1	1	2	2	1	1	2	2	3	2	1	2	1	1
ENEMY CONTACT (SPOT) REPORT	3	2	2	2	2	2	1	2	2	3	2	2	1	1	1
INTELLIGENCE SUMMARY	3	2	2	2	1	2	1	3	2	3	1	1	1	1	1
STRIKE WARNING	3	3	2	2	1	2	1	3	2	3	1	2	1	1	2
FRIENDLY LOCATIONS	3	2	2	2	1	1	1	3	2	3	2	2	1	1	2
CRITICAL SITUATION REPORT	3	2	2	2	2	2	1	2	2	3	2	1	1	1	1
AIR ROUTES/CORRIDOR	3	2	2	2	2	1	1	2	2	3	1	2	1	1	2
AIRSPACE RESTRICTIONS	3	1	2	2	2	1	1	3	3	3	1	2	1	1	2
SAY STATUS REPORT	3	2	2	3	2	3	1	3	3	3	3	2	1	1	1
FREQUENCY CHANGE	3	2	1	2	1	1	2	3	1	2	1	2	1	1	1
ADA STATUS (ENGAGEMENT CRITERIA)	3	2	2	2	2	2	1	3	3	3	1	2	1	1	1
AIR MISSION REQUEST ARMY AVN/TACAIR	3	2	2	3	1	1	1	2	3	3	2	1	1	1	1
MIJI REPORT	3	2	2	3	1	3	3	2	2	3	1	2	1	1	1
BATTLE LOSSED EQUIPMENT (FRIENDLY)	3	1	1	2	2	1	1	1	2	3	1	1	1	1	1
COMMANDERS SITUATION REPORT	3	1	1	3	2	1	1	2	2	3	2	1	1	1	1
LOGISTICS STATUS/REQUEST	3	1	1	3	2	1	1	2	2	3	1	1	1	1	1
PERSONNEL REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1	1
UNIT READINESS REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1	1
FIRE MISSION (CALL FOR FIRE)	3	2	2	2	2	1	2	2	3	3	3	2	1	1	2
FIRE SUPPORT REQUEST	3	2	2	2	2	1	2	2	3	3	3	2	1	1	2
NBC REPORTS	3	2	2	3	1	1	1	2	2	3	1	1	1	1	1
AIRCRAFT PERFORMANCE PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	1	2
FLIGHT MISSION PLANNING	3	1	1	2	1	1	2	2	1	2	1	1	1	1	2

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

L-II-5

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: AVN UTILITY/CARGO

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN S3, S2

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	ETU														
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DEM DATA	PROC DATA BUS
ORDER MESSAGE (OPORD, WARNING, FRAGO)	3	2	2	2	1	3	2	2	1	3	1	1	1	1	1
WEATHER FORECAST/WARNING	3	1	1	1	2	2	1	2	3	3	1	2	1	1	2
ENEMY CONTACT (SPOT) REPORT	3	2	2	3	2	2	1	3	3	3	2	2	1	1	1
INTELLIGENCE SUMMARY (ENEMY SIT)	3	1	2	1	2	1	1	3	3	3	2	1	1	1	1
STRIKE WARNING	3	1	1	2	1	3	1	3	3	3	1	2	1	1	2
FRIENDLY LOCATIONS	3	2	2	2	1	1	1	3	3	3	2	2	1	1	2
CRITICAL SITUATION REPORT	3	2	2	3	1	3	1	2	3	3	2	1	1	1	1
AIR ROUTES/CORRIDOR	3	1	2	2	2	1	1	3	3	3	1	2	1	1	2
AIRSPACE RESTRICTIONS	3	2	2	2	2	3	2	3	3	3	1	2	1	1	2
FREQUENCY CHANGE	3	2	1	2	2	1	2	3	1	2	1	2	1	1	1
SAM STATUS REPORT	3	2	2	2	1	3	1	3	3	3	3	2	1	1	1
ADA STATUS (ENGAGEMENT CRITERIA)	3	2	2	2	2	2	1	3	3	3	1	2	1	1	1
AIR MISSION REQUEST ARMY AVN/TACAIR	3	2	2	3	1	1	1	2	3	3	2	1	1	1	1
WCI REPORT	3	2	2	3	1	3	3	2	2	3	1	2	1	1	1
BATTLE LOSSES EQUIPMENT (FRIENDLY)	3	1	1	2	2	1	1	1	2	3	1	1	1	1	1
COMMANDERS SITUATION REPORT	3	1	1	3	2	1	2	2	2	3	2	1	1	1	1
LOGISTICS STATUS/REQUEST	3	1	1	3	2	1	1	2	2	3	1	1	1	1	1
PERSONNEL REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1	1
UNIT READINESS REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1	1
NBC REPORTS	3	2	2	3	1	1	1	2	2	3	1	1	1	1	1
AIRCRAFT PERFORMANCE PLANNING	2	1	1	2	1	1	2	2	1	2	1	1	1	1	2
FLIGHT MISSION PLANNING	2	1	1	2	1	1	2	2	1	3	1	1	1	1	2

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: AVN UTILITY/CARGO

CANDIDATE SOLUTIONS

ECHOLON: CO

OPERATOR: CO COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FMT TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH FREE GRAPHICS	SEM DRW DATA	PROC DATA BUS
ORDER MESSAGE (OPORD, WARNING, FRAGO)	3	2	1	2	1	3	2	2	1	3	1	1	1	1	1
WEATHER FORECAST/WARNING	3	1	1	2	2	1	1	2	2	3	2	1	2	1	1
ENEMY CONTACT (SPOT) REPORT	3	2	2	2	2	2	1	2	2	3	2	2	1	1	1
INTELLIGENCE SUMMARY (ENEMY SIT)	3	2	2	2	2	2	1	3	2	3	2	1	1	1	1
STRIKE WARNING	3	3	2	2	1	2	1	3	2	3	1	2	1	2	2
FRIENDLY LOCATIONS	3	2	2	2	1	1	1	3	2	3	2	2	1	2	2
CRITICAL SITUATION REPORT	3	2	2	2	1	2	1	2	2	3	2	1	1	1	1
AIR ROUTES/CORRIDOR	3	2	2	2	2	1	1	2	2	3	1	2	1	2	2
AIRSPACE RESTRICTIONS	3	1	2	2	2	1	1	3	3	3	1	2	1	2	2
SAM STATUS REPORT	3	2	2	3	2	3	1	3	3	3	3	2	1	1	1
FREQUENCY CHANGE	3	2	1	2	1	1	2	3	1	2	1	2	1	1	1
ADA STATUS (ENGAGEMENT CRITERIA)	3	2	2	2	2	2	1	3	3	3	1	2	1	1	1
AIR MISSION REQUEST ARMY AVN/TACAIR	3	2	2	3	1	1	1	2	3	3	2	1	1	1	1
MIJ REPORT	3	2	2	3	1	3	3	2	2	3	1	2	1	1	1
BATTLE LOSSES EQUIPMENT	3	1	1	2	2	1	1	1	2	3	1	1	1	1	1
COMMANDERS SITUATION REPORT	3	1	1	3	2	1	2	2	2	3	2	1	1	1	1
LOGISTICS STATUS/REQUEST	3	1	1	3	2	1	1	2	2	3	1	1	1	1	1
PERSONNEL REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1	1
UNIT READINESS REPORT	3	1	1	2	1	1	1	2	2	3	1	1	1	1	1
FIRE MISSION (CALL FOR FIRE)	3	2	2	2	2	1	2	2	3	3	3	2	1	2	2
NBC REPORTS	3	2	2	3	1	1	1	2	2	3	1	1	1	1	1
AIRCRAFT PERFORMANCE PLANNING	2	1	1	2	1	1	2	2	1	2	1	1	1	1	2
FLIGHT MISSION PLANNING	2	1	1	2	1	1	2	2	1	3	1	1	1	1	2

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

L-II-7

SECTION III. OPERATIONAL BENEFITS

OPERATIONAL BENEFITS
AVIATION UNITS

1. Automation can provide real time information transfer of essential battlefield data.
2. Elimination of manual retransmission of information will reduce error rates.
3. User to user communications flow allows interaction and resulting operational synergism. This would provide a greater capacity for coordination in combined arms operations.
4. Automation would reduce manpower requirements to meet the requirements for message traffic handling.
5. Automation could reduce redundancy conflicts and ambiguity in orders.
6. Mission data would be immediately available at any user level by the speed of automation in message traffic and data processing.
7. Automation will increase response time of aviation assets by reducing mission planning tasks with a data processing capability.
8. The accuracy and perishability of information would be extended by the real-time flow of data.

SECTION IV. OPERATIONAL BURDENS

OPERATIONAL BURDENS AVIATION UNITS

The following is a list of Operational Burdens associated with fulfilling the requirement, all or in part:

1. Transportability. Required equipment for automation is bulky, heavy, and requires excess power. This increases an already over tasked transportation system. Non-Developmental Items (NDI) require special care and handling which the rear of a 5 ton truck or M577 command track may not be able to provide.
2. Training. The operators must be proficient and knowledgeable in tasks that draw from the "foxhole" strength of the unit. The sustainment of proficiency in automation tasks will require very specialized schooling and support for user units. This is not an "on the job" training type of qualification. To maintain proficiency with data devices requires daily use of the system and "refresher" training updates.
3. Maintenance. The services required will be contract because its sophistication and non-standard components within the current supply system. Contract help may not be available in mid- to high-intensity conflicts. Items cannot be fixed forward, thus a large quantity of floats will be needed. This increases the transportation requirement for logistical support and the stockage levels.
4. The work load for operator at battalion and lower is at the saturation point. Manpower levels will have to be increased for operation, support, and maintenance. Continuous operations (CONOPS) would cause a serious degradation in the timely/accurate input and receipt of data. This is a highly skilled trade and adverse conditions will severely impact on operator performance.
5. Information and data can easily be received at a rate faster than the unit can analyze and react to. The speed of automation can easily exceed the speed of the units capability to respond to orders.
6. Information will need to be filtered to prevent overload.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

MFA BDP CORRECTIVE
ACTION SUMMARY

BDP DEF
(1986)

026
032
033
036
039
058
064
075
085
093
094
116
137
207

SECTION VI. USER INTERFACE REQUIREMENTS

NO REQUIREMENT IDENTIFIED

L-VI-2

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

L-VII-1

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU		TCU		DEV ITEM	DESIGNATED
			COMPO	HBT						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		USER
01115L	DIV	ASSLT HEL BN (UH-60)	4	0(0)	0(0)	2(8)	0(0)	0(0)	0(0)	PCU - S3, S2
01115L	LIGHT		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01115L			1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	
01117L		ASSLT HEL CO (UH-60)	8	1(8)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01117L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01117L			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	
01118L		CMD AVN CO	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01118L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01118L			1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	
01167L		AIR RECON TRP	8	1(8)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01167L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01167L			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	
01175L		ATK HEL BN (AH-1)	4	0(0)	0(0)	2(8)	0(0)	0(0)	0(0)	
01175L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01175L			1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01177L		ATK HEL CO (AH-1)	12	1(12)	0(0)	0(0)	0(0)	0(0)	0(0)	
01177L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01177L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
SUBTOTALS:										
			1	32	0	16	0	0	0	
			2	0	0	0	0	0	0	
			3	8	0	4	0	0	0	
GRAND TOTALS:				40	0	20	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HBT		PCU		TCU		DEV ITEM	DESIGNATED
			COMPO								
			1-AA								
			2-NG								
			3-AR			(V1)	(V2)	(V1)	(V2)		USER
01267L	DIV	AIR CAV TRP	20	1(20)		0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01267L	HVY		0	0(0)		0(0)	0(0)	0(0)	0(0)	0(0)	
01267L			8	1(8)		0(0)	0(0)	0(0)	0(0)	0(0)	
01303L		ASSLT HEL CO (UH-60)	10	1(10)		0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01303L			0	0(0)		0(0)	0(0)	0(0)	0(0)	0(0)	
01303L			4	1(4)		0(0)	0(0)	0(0)	0(0)	0(0)	
01304L		CMD AVY CO (GS)	10	1(10)		0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01304L			0	0(0)		0(0)	0(0)	0(0)	0(0)	0(0)	
01304L			4	1(4)		0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN (AH-64)	10	0(0)		0(0)	2(20)	0(0)	0(0)	0(0)	PCU - S3, S2
01385L			0	0(0)		0(0)	0(0)	0(0)	0(0)	0(0)	
01385L			4	0(0)		0(0)	2(8)	0(0)	0(0)	0(0)	
01387L		ATK HEL CO (AH-64)	30	1(30)		0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			0	0(0)		0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			12	1(12)		0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:											
			1	70		0	20	0	0	0	
			2	0		0	0	0	0	0	
			3	28		0	8	0	0	0	
GRAND TOTALS:				98		0	28	0	0	0	

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 90		PCJ		TCU		DEV ITEM	DESIGNATED USER
			COMPO							
			1-AA	HET						
			2-NG		(V1)	(V2)	(V1)	(V2)		
			3-AR							
01205L	DIV	ASSLT HEL BN (UH-60)	2	0(0)	0(0)	2(4)	0(0)	0(0)	0(0)	PCU - S3, S2
01205L	AIR		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01205L	ASSLT		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01207L		ASSLT HEL CO	6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01207L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01207L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01215L		CMD AVN BN (UH-1)	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01215L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01215L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L		CMD AVN CO (UH-1)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN	3	0(0)	0(0)	2(6)	0(0)	0(0)	0(0)	PCU - S3, S2
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK HEL CO	9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	18	0	12	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				18	0	12	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU		TCU		DEV ITEM	DESIGNATED
			COMPO	MHT						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		
			3-AR							USER
01125L	DIV	ASSLT HEL BN (UH-1)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01125L	NG		5	0(0)	0(0)	2(10)	0(0)	0(0)	0(0)	PCU - S3, S2
01125L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01128L		CMD AVN CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01128L			5	1(5)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01128L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01267L		AIR CAV TRP	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01267L			10	1(10)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01267L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01317L		ASSLT HEL CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01317L			10	1(10)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01317L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L			5	0(0)	0(0)	2(10)	0(0)	0(0)	0(0)	PCU - S3, S2
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK HEL CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			15	1(15)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	0	0	0	0	0	0	
			2	40	0	20	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				40	0	20	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
01705L	DIV	ASSLT HEL BN	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01705L	9 MD		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01705L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01707L		CMD AVN CO	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01707L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01707L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01709L		ASSLT AVN CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01708L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01708L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01709L		AIR CAV TRP	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01709L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01709L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01715L		ATK HEL BN (AH-64)	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01715L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01715L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01717L		ATK HEL CO (AH-64)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01717L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01717L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	8	0	4	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				8	0	4	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			COMPO							
			1-AA							
			2-NG							
			3-AR		(V1)	(V2)	(V1)	(V2)		USER
01125L	DIV	ASLT HEL BN (UH-60)	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01125L	2 INF		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01125L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01128L		CMD AV CO	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01128L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01128L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01207L		ASLT HEL CO (UH-60)	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01207L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01207L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01267L		AIR CAV TRP	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01267L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01267L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01325L		ATK HEL BN (AH-1)	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01325L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01325L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01327L		ATK HEL CO (AH-1)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01327L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01327L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	9	0	4	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				9	0	4	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HET	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
01303L	207	ASSLT AVN CO (UH-1)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01303L	AV BN		1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01303L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01615L		CMD AVN BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01615L			1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01615L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01617L		CMD AVN CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01617L			1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01617L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	0	0	0	0	0	0	
			2	2	0	2	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				2	0	2	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92			PCU		TCU		DEV ITEM	DESIGNATED	USER
			COMPO	EHT		(V1)	(V2)	(V1)	(V2)			
			1-AA									
			2-NG									
			3-AR									
01303L	210	ASSLT AVN CO (UH-60)	1	1	1	0	0	0	0	0	0	HTU - CO CDR
01303L	AV BN		0	0	0	0	0	0	0	0	0	
01303L			0	0	0	0	0	0	0	0	0	
01625L		CMD AVN BN	1	0	0	0	0	2	2	0	0	PCU - S3, S2
01625L			0	0	0	0	0	0	0	0	0	
01625L			0	0	0	0	0	0	0	0	0	
01627L		CMD AVN CO	1	1	1	0	0	0	0	0	0	HTU - CO CDR
01627L			0	0	0	0	0	0	0	0	0	
01627L			0	0	0	0	0	0	0	0	0	
SUBTOTALS:												
			1	2		0	2	0	0	0		
			2	0		0	0	0	0	0		
			3	0		0	0	0	0	0		
GRAND TOTALS:				2		0	2	0	0	0		

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM DESIGNATED	
			1-AA 2-NG 3-A3		(V1)	(V2)	(V1)	(V2)	USER	
01045L	DIV	ASLT HEL BN (UH-60)	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01045L	ABN		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01045L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01047L		ASLT AVN CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01047L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01047L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01048L		CMD AVN CO	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01048L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01048L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01055L		ATK HEL BN (AH-60)	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01055L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01057L		ATK HEL CO (AH-64)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01057L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01057L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01065L		AIR RECON SQD	1	0(0)	0(0)	2(2)	0(0)	0(0)	0(0)	PCU - S3, S2
01065L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01065L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01067L		AIR CAV TRP	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01067L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01067L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	9	0	6	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				9	0	6	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCU		TCU		REV ITEM DESIGNATED	
			COMPO	HHT						
			1-AA							
			2-YG		(V1)	(V2)	(V1)	(V2)		USER
3-AR										
01217L	COPRS	CMD AVN CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L	I		3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01317L		ASSLT HEL CO (UH-1)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01317L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01317L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L			5	0(0)	2(10)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK HEL CO (AH-1)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			15	1(15)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01405L		ASSLT HEL BN (UH-1)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01405L			1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01405L			1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	
01415L		CMD AVN BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01415L			1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01415L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01419L		TGT/RECON CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01419L			1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01419L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L		ATC BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L			1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01425L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L		ATC CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01427L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	0	1	1	1	1	1	
			2	14	16	1	1	1	1	
			3	3	1	0	1	1	1	
GRAND TOTALS:			17	18	18	2	3	3	3	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 98		HHT	PCU		TCU		DEV ITEM	DESIGNATED		
			COMPO	1-AA		(V1)	(V2)	(V1)	(V2)				
												2-NG	3-AR
01217L	CORPS	CMD AVN CO	0	0	0	0	0	0	0	0			
01217L	III		0	0	0	0	0	0	0	0			
01217L			3	1	3	0	0	0	0	0	HTU - CO CDR		
01317L		ASSLT HEL CO	0	0	0	0	0	0	0	0			
01317L			0	0	0	0	0	0	0	0			
01317L			6	1	6	0	0	0	0	0	HTU - CO CDR		
01395L		ATK HEL BN (AH-64)	3	0	0	2	6	0	0	0	PCU - S3, S4		
01395L			3	0	0	2	6	0	0	0			
01395L			0	0	0	0	0	0	0	0			
01387L		ATK HEL CO (AH-64)	9	1	9	0	0	0	0	0	HTU - CO CDR		
01387L			9	1	9	0	0	0	0	0			
01387L			0	0	0	0	0	0	0	0			
01405L		ASSLT HEL BN	0	0	0	0	0	0	0	0			
01405L			0	0	0	0	0	0	0	0			
01405L			2	0	0	2	4	0	0	0	PCU - S3, S4		
01415L		CMD AVN BN	0	0	0	0	0	0	0	0			
01415L			0	0	0	0	0	0	0	0			
01415L			1	0	0	2	2	0	0	0	PCU - S3, S4		
01419L		TGT/RECON CO	0	0	0	0	0	0	0	0			
01419L			0	0	0	0	0	0	0	0			
01419L			1	1	1	0	0	0	0	0	HTU - CO CDR		
01425L		ATC BN	1	0	0	2	0	0	0	0	PCU - S3, S4		
01425L			0	0	0	0	0	0	0	0			
01425L			0	0	0	0	0	0	0	0			
01427L		ATC CO	1	1	2	0	0	0	0	0	HTU - CO CDR		
01427L			0	0	0	0	0	0	0	0			
01427L			0	0	0	0	0	0	0	0			
SUBTOTALS:			1	1	2	0	0	0	0	0			
			1	1	2	0	0	0	0	0			
			1	1	2	0	0	0	0	0			
GRAND TOTALS:			3	3	6	0	0	0	0	0			

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:	HHT	PCU		TCU		DEV ITEM	DESIGNATED USER
			COMPO							
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		
			3-AR							
01205L	CORPS	ASSLT HEL BN (UH-60)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01205L	VAVII		1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01205L			1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	
01207L		ASSLT HEL CO (UH-60)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01207L			6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01207L			6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L		CMD AVN CO	6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN (AH-64)	6	0(0)	2(12)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK HEL CO	18	1(18)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01415L		CMD AVN BN	2	0(0)	2(4)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01415L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01415L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01419L		TGDRACON CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01419L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01419L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L		ATC BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01425L			1	1(1)	2(2)	1(1)	0(0)	1(1)	1(1)	
01425L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L		ATC CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01427L			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	18	19	0	0	0	0	
			2	9	4	1	0	1	1	
			3	6	2	1	0	1	1	
GRAND TOTALS:				42	24	0	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92		PCT		TCU		DEV ITEM DESIGNATED	
			COMPO	HET						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		USER
3-AR										
01205L	CORPS	ASSLT HEL BN (UH-60)	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCT - S3, S2
01205L	XVIII		1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	
01205L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01205L		ASSLT HEL CO	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01205L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	
01205L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L		CMD AVN CO	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01217L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN	3	0(0)	2(6)	0(0)	0(0)	0(0)	0(0)	PCT - S3, S2
01385L			2	0(0)	2(4)	0(0)	0(0)	0(0)	0(0)	
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK HEL CO	9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01415L		CMD AVN BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCT - S3, S2
01415L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01415L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01419L		TGT/RECON CO	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01419L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01419L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L		ATC BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCT - S3, S2
01425L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L		ATC CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01427L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	18	12	0	0	0	0	
			2	9	6	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:			27	18	0	0	0	0	0	

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:		PCU		TCU		DEV ITEM DESIGNATED	
			COMPO	HET						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)	USER	
3-AR										
01267L	REGT	AIR CAV TRP	9	1(9)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01267L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01267L			6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	
01315L		AVN SQDN (ACR)	3	0(0)	0(0)	2(6)	0(0)	0(0)	0(0)	PCU - S3, S2
01315L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01315L			2	0(0)	0(0)	2(4)	0(0)	0(0)	0(0)	
01317L		ASSLT HEL TRP (UH-1)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01317L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01317L			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK HEL TRP	6	1(6)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - TRP CDR
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	18	0	5	0	0	0	
			2	0	0	0	0	0	0	
			3	12	0	4	0	0	0	
GRAND TOTALS:				30	0	10	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92 COMPO	HBT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA		(V1)	(V2)	(V1)	(V2)		USER
01245L	EAC	HVY HEL BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01245L	NEA		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01245L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01247L		HVY HEL CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01247L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01247L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01303L		ASLT CO (UH-60)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01303L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01303L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L		ATK HEL BN (AH-1)	2	0(0)	2(4)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01385L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L		ATK AVN CO (AH-1)	3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01387L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L		ATC BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01425L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01425L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L		ATC CO	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01427L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01427L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01605L		THEATER AVN BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01605L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01605L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01607L		THEATER AVN CO	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01607L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01607L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:			1	11	10	0	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:			1	11	10	0	0	0	0	

QUANTITY DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92:		PCU		TCU		DEV ITEM. DESIGNATED	USER
			COMPO	HHT						
			1-AA							
			2-NG		(V1)	(V2)	(V1)	(V2)		
			3-AR							
01605L	EAC	THEATER AVN BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01605L	SWA		1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01605L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01607L		THEATER AVN CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01607L			2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01607L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01645L		HVY HEL BN (CH-54)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01645L			1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
01645L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01647L		HVY HEL CO	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
01647L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR
01647L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	0	0	0	0	0	0	
			2	5	4	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				5	4	0	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92			PCU		TCU				DEV ITEM	DESIGNATED
			COMPO	HHT	(V1)	(V2)	(V1)	(V2)	(V1)	(V2)			
			1-AA										
			2-NG										
			3-AR								USER		
01247L	EAC	HVY HEL CO (CH-47)	2	1(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
01247L	NATO		0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01247L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01437L		ATC CO	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
01437L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01437L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01605L		THEATER AVN BN	1	0(0)	2(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2	
01605L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01605L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01607L		THEATER AVN CO	4	1(4)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
01607L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01607L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01613L		CMD AV CO (DS)	1	1(1)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
01613L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01613L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01645L		HVY HEL BN (CH-54)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01645L			2	0(0)	2(4)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2	
01645L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01647L		HVY HEL CO (CH-54)	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
01647L			3	1(3)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - CO CDR	
01647L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)		
SUBTOTALS:													
			1	9	2	0	0	0	0	0	0		
			2	3	4	0	0	0	0	0	0		
			3	0	0	0	0	0	0	0	0		
GRAND TOTALS:				11	6	0	0	0	0	0	0		

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO		PCU		TCU		DEV ITEM DESIGNATED	
			1-AA	HET						
			2-NG		(V1)	(V2)	(V1)	(V2)		USER
			3-AR							
	EAC	TDAB	3	0(0)	2(6)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
		ASSLT HEL CO	15	1(15)	0(0)	0(0)	0(0)	0(0)	0(0)	HET - 30 CDR
			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
		SUBTOTALS:								
			1	15	6	0	0	0	0	
			2	0	0	0	0	0	0	
			3	0	0	0	0	0	0	
		GRAND TOTALS:		15	6	0	0	0	0	

APPENDIX M

SIGNAL SCHOOL STUDY DELIVERABLES

SECTION I. TASK/FUNCTIONS TO BE AUTOMATED

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: SIGNAL UNIT

ECHOLON: BN

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	DISPLAY RADIO RELAY & SYS DIAGRAM		X
1	MAINTAIN NEAR REAL TIME NET STATUS		X
1	RECEIVE HAZCON REPORT		X
2	MAINT NEAR REAL TIME PJH NET STATUS		X
2	REQUEST FOR COMSEC KEY		X
2	SOI DISTRIBUTION		X
2	EVALUATES STATUS REPORTS		X
2	RECEIVE WEATHER FORECAST	X	
2	EQUIPMENT BACKUP STATUS REPORT		X
3	AIR SUPPORT REQUIREMENT	X	
3	AIRHEAD LOCATIONS/ACTIVITY	X	
3	DIST. AFU AMMUNITION SUPPLY RATE	X	
3	DISTRIBUTE AIR STRIKE WARNING	X	
3	DISTRIBUTE CHEMICAL DOWNWIND REPORT	X	
3	DIST COMMANDER'S LOGISTIC STATUS	X	
3	DIST DAILY INTELLIGENCE SUMMARY	X	
3	DISTRIBUTE DAMAGE AVOIDANCE REPORT	X	
3	DIST ELEC WARFARE MISSION SUMMARY	X	
3	DISTRIBUTE ENEMY SITUATION REPORT	X	
3	DIST FREQ INTERFERENCE INFORMATION	X	
3	DIST FRIENDLY NUCLEAR STRIKE WARN	X	
3	DIST LAND FORCES SITUATION REPORT	X	
3	DISTRIBUTE NBC 1/2/3/4/5/6 REPORTS	X	
3	DISTRIBUTE SPECIAL OPERATION REPORT	X	
3	DIST SUPPORT-BATTLEFIELD GEOMETRY	X	
3	ISSUE COMMAND DIRECTIVES	X	
3	ISSUE COOR. DIRECTIVES TO NODES	X	
3	ISSUE OPERATIONS ORDER	X	
3	OPERATIONS PLAN CHANGE	X	
3	PERPARE SIG ANNEX OPERATIONS ORDER	X	
3	RECEIVES COMMAND STATUS	X	
3	REPORT BATTLEFIELD GEOMETRY	X	
3	REPORT C2 INFORMATION SYS STATUS	X	
3	REPORT COMMUNICATIONS STATUS	X	
3	REQUEST ADA PRIORITY	X	
3	TRANSFER OF AUTHORITY	X	
3	RECEIVE OPERATIONS ORDER	X	
3	REPORT CLASS VII & IX STATUS	X	
3	REP DAYS OF SUPPLY FOR CONSUMABLES	X	
3	REPORT ENEMY ACTIVITY/WEAPONS	X	
3	REPORT ENEMY CONTACT	X	
3	REPORT FRIENDLY UNIT STATUS	X	
3	REP SUPPLY SHORTAGE/OPN CONSTRAINTS	X	
3	REQUEST IMMED ENGAGE. TARGET NONNUC	X	

HIGH PAYOFF TASK/FUNCTIONS
TO BE AUTOMATED

TYPE UNIT: SIGNAL UNIT

ECHELON: IND NOLE

PRIORITY	TASK/FUNCTION	FORCE LEVEL	MFA UNIQUE
1	REPORT SITE EQUIPMENT STATUS		X
1	REPORT EQUIPMENT ASSETS		X
1	COMSEC EQUIPMENT ACCOUNTABILITY		X
1	COMSEC EQUIPMENT REPORT		X
1	MAINT JOURNAL & MASTER STATION LOG		X
2	RECEIVE WEATHER FORECAST	X	
2	EQUIPMENT BACKUP STATUS REPORT		X
2	REPORT FREQUENCY INTERFERENCE		X
3	ANALYZE WEATHER DATA FOR SIG IMPACT		X
3	SITE SPECTRUM ASSESSMENT		X
3	GENERATE ENGINEER SUPPORT REQUEST	X	
3	GENERATE LOGISTIC ESTIMATE	X	
3	GENERATE NBC 1/2/3/4/5/6	X	
3	GENERATE PERSONNEL STATUS	X	
3	GENERATE UNIT MEDICAL STATUS	X	
3	GENERATE UNIT STRENGTH REPORT	X	
3	MAINTAIN TROOP LISTS/UNIT REQ	X	
3	RECEIVE OPERATIONS ORDER	X	
3	REPORT CLASS VII & IX STATUS	X	
3	REP DAYS OF SUPPLY FOR COMSUMABLES	X	
3	REPORT ENEMY ACTIVITY/WEAPONS	X	
3	REPORT ENEMY CONTACT	X	
3	REPORT FRIENDLY UNIT STATUS	X	
3	REP SUPPLY SHORTAGE/OPN CONSTRAINTS	X	
3	REQUEST IMMED ENGAGE. TARGET NONNUC	X	
4	MIJI REPORT GENERATION		X

SECTION II. IDENTIFICATION OF HARDWARE REQUIREMENTS

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: SIGNAL UNITS
 CANDIDATE SOLUTIONS
 ECHELON: BN
 OPERATOR: BN COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY														
	DEV ITEM														
	PCU (V1/V2) OR TCU (V1/V2)														
	HTU														
	OPER MON	ACT DIS- MOVE	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH FREE GRAPHICS	SEN DRW DATA	PROC DATA BUS
RECEIVE WEATHER FORECAST	1	2	1	3	1	2	3	3	2	1	1	1	1	1	3
MAINT NEAR REAL TIME PJH NET STATUS	1	3	2	3	3	3	3	3	3	1	1	2	1	1	3
DISPLAY RADIO RELAY & SYS DIAGRAM	1	3	3	2	2	3	3	3	3	1	1	1	1	1	3
REQUEST FOR COMSEC KEY	1	3	1	2	2	3	3	3	1	1	1	2	1	1	3
EQUIPMENT BACKUP STATUS REPORT	1	3	1	3	2	2	3	3	3	1	1	2	1	1	3
MAINTAIN NEAR REAL TIME NET STATUS	1	3	1	3	2	3	3	3	3	1	1	3	1	1	3
RECEIVE HAZCON REPORT	1	3	2	3	2	3	2	3	2	1	1	3	1	1	3
SOI DISTRIBUTION	1	3	2	3	2	1	3	3	2	1	1	1	1	1	3
EVALUATES STATUS REPORTS	1	2	2	2	2	3	3	3	3	1	1	1	1	1	3
MSG REPORT GENERATION	1	3	3	3	2	3	3	3	3	1	1	3	1	1	3
AIR SUPPORT REQUIREMENT	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
AIRHEAD LOCATIONS/ACTIVITY	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DIST. AFU AMMUNITION SUPPLY RATE	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DISTRIBUTE AIR STRIKE WARNING	1	3	3	3	2	2	3	3	3	1	1	1	1	3	3
DISTRIBUTE CHEMICAL DOWNWIND REPORT	1	3	1	3	2	2	3	3	1	1	1	1	1	1	3
DIST COMMANDER'S LOGISTIC STATUS	1	3	2	3	2	2	3	3	3	1	1	1	1	1	3
DIST DAILY INTELLIGENCE SUMMARY	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DISTRIBUTE DAMAGE AVOIDANCE REPORT	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DIST ELEC WARFARE MISSION SUMMARY	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DISTRIBUTE ENEMY SITUATION REPORT	1	3	2	3	2	2	3	3	2	1	1	1	1	1	3
DIST FREQ INTERFERENCE INFORMATION	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DIST FRIENDLY NUCLEAR STRIKE WARN	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DIST LAND FORCES SITUATION REPORT	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
DISTRIBUTE NEC 1/2/3/4/5/6 REPORTS	1	3	3	3	2	2	3	3	1	1	1	1	1	1	3
DISTRIBUTE SPECIAL OPERATION REPORT	1	3	3	3	2	2	3	3	2	1	1	1	1	1	3
DIST SUPPORT-BATTLEFIELD GEOMETRY	1	3	3	3	2	2	3	3	3	1	1	1	1	1	3
ISSUE COMMAND DIRECTIVES	1	3	3	3	2	2	3	3	1	1	1	1	3	1	3
ISSUE COOR. DIRECTIVES TO NODES	1	3	3	3	2	3	3	3	1	1	1	1	3	1	3
ISSUE OPERATIONS ORDER	1	3	3	3	2	3	3	3	1	1	1	1	3	1	3
OPERATIONS PLAN CHANGE	1	3	1	3	2	3	3	3	1	1	1	1	3	1	3
PREPARE SIG ANNEX OPERATIONS ORDER	1	3	3	3	2	2	3	3	3	1	1	1	3	1	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: SIGNAL UNITS

CANDIDATE SOLUTIONS
ECHELON: BN

OPERATOR: BN COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	ATCH SEN FREE DEW GRAPHICS	PROC DATA BUS
RECEIVE OPERATIONS ORDER	1	3	3	3	2	2	3	3	2	1	1	1	1	1
RECEIVES COMMAND STATUS	1	3	3	3	2	2	3	3	1	1	1	1	1	3
REPORT BATTLEFIELD GEOMETRY	1	3	3	3	2	1	3	3	1	1	1	1	3	3
REPORT C2 INFORMATION SYS STATUS	1	3	2	3	2	1	3	3	1	1	1	1	1	3
REPORT CLASS VII & IX STATUS	1	3	1	3	2	1	3	3	1	1	1	1	1	2
REPORT COMMUNICATIONS STATUS	1	3	1	3	2	1	3	3	1	1	1	1	2	2
REP DAYS OF SUPPLY FOR CONSUMABLES	1	3	1	3	2	1	3	3	2	1	1	1	1	3
REPORT ENEMY ACTIVITY/WEAPONS	1	3	3	3	2	1	3	3	3	1	1	1	3	1
REPORT ENEMY CONTACT	1	3	3	3	2	1	3	3	3	1	1	1	3	1
REPORT FRIENDLY UNIT STATUS	1	3	3	3	2	1	3	3	2	1	1	1	2	2
REP SUPPLY SHORTAGE/OPN CONSTRAINTS	1	3	1	3	2	1	3	3	1	1	1	1	1	2
REQUEST ADA PRIORITY	1	3	2	3	2	2	3	3	2	1	1	1	2	1
REQUEST IMMED ENGAGE. TARGET NONYUC	1	3	3	3	2	3	3	3	3	1	1	1	2	1
TRANSFER OF AUTHORITY	1	3	1	3	2	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: HTU

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS

TYPE UNIT: SIGNAL UNITS

ECHOLON: BN

OPERATOR: BN S2/S3

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER MON	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
RECEIVE WEATHER FORECAST	1	2	1	3	1	2	3	3	2	1	1	1	1	3
MAINT NEAR REAL TIME PUH NET STATUS	1	3	2	3	3	3	3	3	3	1	1	2	1	3
DISPLAY RADIO RELAY & SYS DIAGRAM	1	3	3	2	2	3	3	3	3	1	1	1	1	3
REQUEST FOR COMSEC KEY	1	3	1	2	2	3	3	3	1	1	1	2	1	3
EQUIPMENT BACKUP STATUS REPORT	1	3	1	3	2	2	3	3	3	1	1	2	1	3
MAINTAIN NEAR REAL TIME NET STATUS	1	3	1	3	2	3	3	3	3	1	1	3	1	3
RECEIVE HAZCON REPORT	1	3	2	3	2	3	2	3	2	1	1	3	1	3
SOI DISTRIBUTION	1	3	2	3	2	1	3	3	2	1	1	1	1	3
EVALUATES STATUS REPORTS	1	2	2	2	2	3	3	3	3	1	1	1	1	3
MICI REPORT GENERATION	1	3	3	3	2	3	3	3	3	1	1	3	1	3
AIR SUPPORT REQUIREMENT	1	3	3	3	2	2	3	3	3	1	1	1	1	1
AIRHEAD LOCATIONS/ACTIVITY	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DIST. AFU AMMUNITION SUPPLY RATE	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DISTRIBUTE AIR STRIKE WARNING	1	3	3	3	2	2	3	3	3	1	1	1	3	1
DISTRIBUTE CHEMICAL DOWNWIND REPORT	1	3	1	3	2	2	3	3	1	1	1	1	1	2
DIST COMMANDER'S LOGISTIC STATUS	1	3	2	3	2	2	3	3	3	1	1	1	1	1
DIST DAILY INTELLIGENCE SUMMARY	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DISTRIBUTE DAMAGE AVOIDANCE REPORT	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DIST ELEC WARFARE MISSION SUMMARY	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DISTRIBUTE ENEMY SITUATION REPORT	1	3	2	3	2	2	3	3	2	1	1	1	1	3
DIST FREQ INTERFERENCE INFORMATION	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DIST FRIENDLY NUCLEAR STRIKE WARN	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DIST LAND FORCES SITUATION REPORT	1	3	3	3	2	2	3	3	3	1	1	1	1	1
DISTRIBUTE NBC 1/2/3/4/5/6 REPORTS	1	3	3	3	2	2	3	3	1	1	1	1	1	1
DISTRIBUTE SPECIAL OPERATION REPORT	1	3	3	3	2	2	3	3	2	1	1	1	1	1
DIST SUPPORT-BATTLEFIELD GEOMETRY	1	3	3	3	2	2	3	3	3	1	1	1	1	1
ISSUE COMMAND DIRECTIVES	1	3	3	3	2	2	3	3	1	1	1	1	3	3
ISSUE COOR. DIRECTIVES TO NODES	1	3	3	3	2	3	3	3	1	1	1	1	3	3
ISSUE OPERATIONS ORDER	1	3	3	3	2	3	3	3	1	1	1	1	3	3
OPERATIONS PLAN CHANGE	1	3	1	3	2	3	3	3	1	1	1	1	3	1
PERPARE SIG ANNEX OPERATIONS ORDER	1	3	3	3	2	2	3	3	3	1	1	1	3	3

IDENTIFICATION OF HARDWARE REQUIREMENTS

TYPE UNIT: SIGNAL UNITS

CANDIDATE SOLUTIONS

ECHOLON: BN

OPERATOR: BN S2-S3

HIGH PAYOFF TASKS TO BE AUTOMATED

HARDWARE OPERATIONAL CAPABILITY

DEV ITEM

PCU (V1/V2) OR TCU (V1/V2)

HTU

	OPER CON	ACT DIS- MOVE	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTLFLD SENSOR INPUT	TCH SEN FREE DRW GRAPHICS	PROC DATA BUS
RECEIVE OPERATIONS ORDER	1	3	3	3	2	2	3	3	2	1	1	1	1	1
RECEIVES COMMAND STATUS	1	3	3	3	2	2	3	3	1	1	1	1	1	3
REPORT BATTLEFIELD GEOMETRY	1	3	3	3	2	1	3	3	1	1	1	1	3	3
REPORT C2 INFORMATION SYS STATUS	1	3	2	3	2	1	3	3	1	1	1	1	1	3
REPORT CLASS VII & IX STATUS	1	3	1	3	2	1	3	3	1	1	1	1	1	2
REPORT COMMUNICATIONS STATUS	1	3	1	3	2	1	3	3	1	1	1	1	2	2
REP DAYS OF SUPPLY FOR CONSUMABLES	1	3	1	3	2	1	3	3	2	1	1	1	1	3
REPORT ENEMY ACTIVITY/WEAPONS	1	3	3	3	2	1	3	3	3	1	1	1	3	1
REPORT ENEMY CONTACT	1	3	3	3	2	1	3	3	3	1	1	1	3	1
REPORT FRIENDLY UNIT STATUS	1	3	3	3	2	1	3	3	2	1	1	1	2	2
REP SUPPLY SHORTAGE/OPN CONSTRAINTS	1	3	1	3	2	1	3	3	1	1	1	1	1	2
REQUEST ADA PRIORITY	1	3	2	3	2	2	3	3	2	1	1	1	2	1
REQUEST IMMED ENGAGE. TARGET NONNUC	1	3	3	3	2	3	3	3	3	1	1	1	2	1
TRANSFER OF AUTHORITY	1	3	1	3	2	1	3	3	1	1	1	1	1	1

HARDWARE SOLUTION: PCU(V1)

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

IDENTIFICATION OF HARDWARE REQUIREMENTS

CANDIDATE SOLUTIONS
 TYPE UNIT: SIGNAL UNITS
 ECHELON: IND NODE
 OPERATOR: SITE COMMANDER

HIGH PAYOFF TASKS TO BE AUTOMATED	HARDWARE OPERATIONAL CAPABILITY													
	DEV ITEM													
	PCU (V1/V2) OR TCU (V1/V2)													
	HTU													
	OPER ON MOVE	ACT DIS- PLAY	OPN GRAP HICS	FM TEXT MSG	FREE TEXT MSG	AUDIO/ VISUAL ALERT	PRO- CESS DATA	STORE DATA	DIGITAL MAP BACKGRD	POS/ NAV DATA	AUTO TGT ACQ	BTFLD SENSOR INPUT	ITCH FREE DRW GRAPHICS	SEN DATA BUS
REPORT SITE EQUIPMENT STATUS	1	3	1	2	2	2	2	2	2	1	1	1	1	3
REPORT EQUIPMENT ASSETS	1	3	1	2	2	1	2	2	2	1	1	1	1	3
RECEIVE WEATHER FORECAST	1	2	1	3	1	1	2	3	3	1	1	1	1	3
ANALYZE WEATHER DATA FOR SIG IMPACT	1	3	3	1	1	1	3	3	3	2	1	1	3	3
COMSEC EQUIPMENT ACCOUNTABILITY	1	3	1	2	2	3	3	3	1	1	1	1	1	3
COMSEC EQUIPMENT REPORT	1	3	1	2	2	3	3	3	1	1	1	1	1	3
EQUIPMENT BACKUP STATUS REPORT	1	3	1	3	2	2	3	3	3	1	1	2	1	3
MAINT JOURNAL & MASTER STATION LOG	1	3	1	3	2	1	3	3	1	1	1	1	1	3
SITE SPECTRUM ASSESSMENT	1	3	2	3	2	1	3	3	2	1	1	1	1	3
MISC REPORT GENERATION	1	3	3	3	2	3	3	3	3	1	1	3	1	3
REPORT FREQUENCY INTERFERENCE	1	3	3	3	2	3	3	3	3	1	1	1	1	3
GENERATE ENGINEER SUPPORT REQUEST	1	3	3	3	2	3	3	3	2	1	1	1	3	1
GENERATE LOGISTIC ESTIMATE	1	3	1	3	2	3	3	3	1	1	1	1	1	1
GENERATE NBC 1/2/3/4/5/6	1	3	3	3	2	3	3	3	1	1	1	1	2	1
GENERATE PERSONNEL STATUS	1	3	1	3	2	3	3	3	1	1	1	1	1	3
GENERATE UNIT MEDICAL STATUS	1	3	1	3	2	3	3	3	1	1	1	1	1	1
GENERATE UNIT STRENGTH REPORT	1	3	1	3	2	3	3	3	1	1	1	1	1	2
MAINTAIN TROOP LISTS/UNIT REQ	1	3	3	3	2	3	3	3	2	1	1	1	1	3
RECEIVE OPERATIONS ORDER	1	3	3	3	2	3	3	3	2	1	1	1	1	1
REPORT CLASS VII & IX STATUS	1	3	1	3	2	1	3	3	1	1	1	1	1	2
REP DAYS OF SUPPLY FOR COMSUMABLES	1	3	1	3	2	1	3	3	2	1	1	1	1	3
REPORT ENEMY ACTIVITY/WEAPONS	1	3	3	3	2	1	3	3	3	1	1	1	3	1
REPORT ENEMY CONTACT	1	3	3	3	2	1	3	3	3	1	1	1	3	1
REPORT FRIENDLY UNIT STATUS	1	3	3	3	2	1	3	3	2	1	1	1	1	2
REP SUPPLY SHORTAGE/CPN CONSTRAINTS	1	3	1	3	2	1	3	3	1	1	1	1	1	2
REQUEST IMMED ENGAGE, TARGET NONNUC	1	3	3	3	2	3	3	3	3	1	1	1	1	1

HARDWARE SOLUTION: PCU/V10

RATING SCALE:

- 1 - NO CONTRIBUTION
- 2 - MODERATE CONTRIBUTION
- 3 - ESSENTIAL CONTRIBUTION

SECTION III. OPERATIONAL BENEFITS

M-III-1

OPERATIONAL BENEFITS

Operational benefits of an HTU for Signal commanders are as listed below.

A. CORPS

1. Commander, Corps Signal Brigade, Area Signal Battalion, Signal Support Battalion. The commander will derive increased mobility on the battlefield without losing access to critical and time-sensitive information. Timely access to this information will permit the commander to make more accurate decisions more quickly. The commander will be able to input information, as he observes it, into the Brigade's data base. This information will be more easily accessible by the commander's staff. HTU will provide the brigade commander and all subordinate battalion commanders with access to a common data base and will allow for data communication between them.

B. DIVISION

1. The commander of the Division Signal Battalion will derive increased mobility on the battlefield without losing access to critical and time-sensitive data. The HTU will permit the commander to share and communicate data with the Assistant Division Signal Officer. Because the commander will be able to share data with his staff from remote areas or when mobile, he will be able to be more responsive to the staff for both tactical and technical decision-making.

CANDIDATES FOR BATTALION COMMANDER'S HANDHELD COMPUTER

S0008 RECEIVE WEATHER FORECAST
S0126 MAINTAIN NEAR REAL TIME PJH NETWORK STATUS
S0141 DISPLAY RADIO RELAY AND SYSTEM DIAGRAM
S0153 REQUEST FOR COMSEC KEY
S0163 EQUIPMENT BACKUP STATUS REPORT
S0171 MAINTAIN NEAR REAL TIME NETWORK STATUS
S0175 RECEIVE HAXCON REPORT
S0197 SOI DISTRIBUTION
S0213 EVALUATES STATUS REPORTS
S0215 MIJI REPORT GENERATION
S0251 COMMAND AND CONTROL
S0252 AIR ALLOCATION REQUEST
S0253 AIR SUPPORT REQUIREMENT
S0256 AIRCRAFT LOCTIONS/ACTIVITY
S0258 DISTRIBUTE AFU AMMO SUPPLY RATE
S0259 DISTRIBUTE AIR STRIKE WARNING
S0260 DISTRIBUTE CHEMICAL DOWNWIND REPORT
S0261 DISTRIBUTE COMMANDER'S LOGISTICS STATUS
S0262 DISTRIBUTE DAILY INTEL SUMMARY
S0263 DISTRIBUTE DAMAGE AVOIDANCE REPORT
S0265 DISTRIBUTE ELECTRONIC WARFARE MISSION REPORT
S0266 DISTRIBUTE ENEMY SITUATION REPORT
S0267 DISTRIBUTE FREQUENCY INTERFERENCE INFORMATION
S0268 DISTRIBUTE FRIENDLY STRIKE WARNING
S0269 DISTRIBUTE LAND FORCES SITUATION REPORT
S0271 DISTRIBUTE NBC 1/2/3/4/5/6 REPORTS
S0272 DISTRIBUTE SPECIAL OPERATION REPORT
S0273 DISTRIBUTE SUPPORT - BATTLEFIELD GEOMETRY
S0285 ISSUE COMMAND DIRECTIVES
S0286 ISSUE COORDINATING DIRECTIVES TO NODES
S0287 ISSUE OPERATIONS ORDER
S0289 OPERATIONS ORDER CHANGE
S0291 PREPARE SIGNAL ANNEX OPERATIONS ORDER
S0292 RECEIVE OPERATIONS ORDER
S0293 RECEIVE COMMAND STATUS
S0294 REPORT BATTLEFIELD GEOMETRY
S0295 REPORT C2 INFORMATION SYSTEMS STATUS
S0296 REPORT CLASS VII AND IX STATUS
S0297 REPORT COMMUNICATIONS STATUS
S0298 REPORT DAYS OF SUPPLY FOR CONSUMABLES
S0299 REPORT ENEMY ACTIVITY/WEAPONS
S0300 REPORT ENEMY CONTACT
S0301 REPORT FRIENDLY UNIT STATUS
S0302 REPORT SUPPLY SHORTAGE/OPERATIONAL CONSTRAINTS
S0303 REQUEST ADA PRIORITY
S0304 REQUEST IMMEDIATE ENGAGEMENT TARGET NONNUCLEAR
S0306 TRANSFER OF AUTHORITY

OPERATIONAL BENEFITS

Operational benefits to be derived from fielding the PCU Mobile Subscriber Equipment (MSE) nodes are listed below.

A. CORPS/DIVISION

1. The Node Commander (Platoon Leader) of an MSE area node will have access to a number of automated planning and management tools in the Node Managment Facility (NMF).

2. Ready access to the brigade/battalion data base will permit the Node Manager to make more accurate and more timely decisions.

3. Placing a PCU in the NMF will provide the Node Manager access to a distributed data base. This will be used for sharing and communicating data between higher headquarters and other Node Managers.

4. Because routine admin/log actions will be accomplished more efficiently with automation in the NMF, the Node Commander will have more time to manage technical signal problems as well as tactical problems.

5. Frequency management tools residing in this hardware will have the effect of improving the quality of communications by decreasing co-site interference or interference with other off-site emitters.

6. Automation of some node management tasks will improve the combat readiness of the site by allowing more timely reporting and requisitioning of combat essential stores and personnel.

MSE NODE MANAGEMENT FACILITY (NMF) AUTOMATION REQUIREMENTS

S0006 REPORT SITE EQUIPMENT STATUS
S0007 REPORT EQUIPMENT ASSETS
S0008 RECEIVE WEATHER FORECAST
S0009 ANALYZE WEATHER DATA FOR SIGNAL IMPACT
S0149 COMSEC EQUIPMENT ACCOUNTABILITY
S0150 COMSEC EQUIPMENT REPORT
S0163 EQUIPMENT BACKUP STATUS REPORT
S0170 MAINTAIN JOURNAL AND MASTER STATION LOG
S0196 SITE SPECTRUM ASSESSMENT
S0215 MIJI REPORT GENERATION
S0247 REPORT FREQUENCY INTERFERENCE
S0276 GENERATE ENGINEER SUPPORT REQUEST
S0277 GENERATE LOGISTIC ESTIMATE
S0278 GENERATE NBC 1/2/3/4/5/6
S0279 GENERATE PERSONNEL STATUS
S0283 GENERATE UNIT MEDICAL STATUS
S0284 GENERATE UNIT STRENGTH REPORT
S0288 MAINTAIN TROOP LISTS/UNIT REQUIREMENTS
S0292 RECEIVE OPERATIONS ORDER
S0296 REPORT CLASS VII AND IX
S0298 REPORT DAYS OF SUPPLY FOR CONSUMABLES
S0299 REPORT ENEMY ACTIVITY/WEAPONS
S0300 REPORT ENEMY CONTACT
S0301 REPORT FRIENDLY UNIT STATUS
S0302 REPORT SUPPLY SHORTAGE/OPERATIONAL CONSTRAINT
S0304 REQUEST IMMEDIATE ENGAGEMENT TARGET NONNUCLEAR

SECTION IV. OPERATIONAL BURDENS

M-IV-1

OPERATIONAL BURDENS

Operational burdens associated with fielding of the Handheld Terminal (HHT) in signal units are as follows:

A. TRANSPORTABILITY

1. The HHT is transportable as a handheld device.
No transportation degradation of the user is expected.

B. TRAINING

1. Commanders and potential commanders will require NET for HTU operations.
2. HTU operation must be incorporated into SIGCEN professional development courses.
3. Technical manuals for the operation and maintenance of the HTU must be provided to Signal users.

C. MAINTENANCE

1. The scheme for organizational, intermediate, and higher-level maintenance will be defined in ACCS program documentation.

OPERATIONAL BURDENS

Operational burdens associated with fielding of the Portable Computer Unit (PCU) in the Mobile Subscriber Equipment (MSE) Node Management Facility (NMF) are listed below.

A. TRANSPORTABILITY

1. The PCU will be transportable in the node management shelter. No transportation degradation of the user is expected.

B. TRAINING

1. Signal leaders and potential leaders will require NET for PCU operations.
2. PCU operation and utility must be incorporated into SIGCEN professional development courses.
3. Technical manuals for the operation and maintenance of the PCU must be provided to Signal users.

C. MAINTENANCE

1. The scheme for organizational, intermediate, and higher level maintenance will be defined in ACCS program documentation.
2. MSE organizational and doctrinal documents will require adjustment to reflect PCU maintenance as a part of the larger MSE maintenance and support plan.

SECTION V. MFA MAA CORRECTIVE ACTION SUMMARY

M-V-I

MFA MAA CORRECTIVE

ACTION SUMMARY

BDP DEF
(1986)

3
4
12
44
88
180
182
238

SECTION VI. USER INTERFACE REQUIREMENTS

NO REQUIREMENT IDENTIFIED

M-VI-2

SECTION VII. QUANTITY/DISTRIBUTION OF DEVICES

M-VII-1

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HET	PCU	TCU	DEV ITEM	DESIGNATED		
			1-AA		(V1)	(V2)	(V1)	(V2)	USER	
11066L	DIV	AREA SIG BN	18	1(18)	2(36)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
11066L			10	1(10)	2(20)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
11066L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
11067L		AREA SIG CO	36	0(0)	2(72)	0(0)	0(0)	0(0)	0(0)	PCU-SIG NODE PLT LDR
11067L			20	0(0)	2(40)	0(0)	0(0)	0(0)	0(0)	
11067L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
11068L		SIG SUPPORT CO	18	0(0)	1(18)	0(0)	0(0)	0(0)	0(0)	PCU-SIG NODE PLT LDR
11068L			10	0(0)	1(10)	0(0)	0(0)	0(0)	0(0)	
11068L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	
SUBTOTALS:										
			1	18	126	0	0	0	0	
			2	10	70	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				28	196	0	0	0	0	

QUANTITY/DISTRIBUTION OF DEVICES

TOE	LEVEL	TYPE OF UNIT	TAA 92: COMPO	HHT	PCU		TCU		DEV ITEM	DESIGNATED
			1-AA							
			2-NG							
			3-AR		(V1)	(V2)	(V1)	(V2)		USER
11435L	CORPS	AREA SIGNAL BN	13	1(13)	9(117)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
11435L			2	1(2)	9(18)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
11435L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	& SIG NODE FLT LDR
11445L		AREA SIG SUPPORT BN	0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	HTU - BN CDR
11445L			5	1(5)	7(35)	0(0)	0(0)	0(0)	0(0)	PCU - S3, S2
11445L			0	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	& SIG NODE FLT LDR
SUBTOTALS:										
			1	13	117	0	0	0	0	
			2	7	53	0	0	0	0	
			3	0	0	0	0	0	0	
GRAND TOTALS:				20	170	0	0	0	0	

END

DATE

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