



8 April 1993

Final Student Research Report

Bailing Wire, Bubble Gum, Tin Cans & String:
The Marine Corps Forward Command Post

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Thesis: The standard command post for a Marine infantry unit is foot mobile. There has never been a doctrinal Command and Control (C2) platform or vehicle in the infantry at the battalion, regiment, or division level, other than an attached AAVC7A1 from the AAV Battalion. History reveals all units struggling to create "jerry-rigged" command vehicle configurations using their organic jeeps, HMMWV's, MRC vehicles and trucks. The most logical choice for a "standardized" command and control vehicle in the Marine Corps' current inventory is the LAVC2.

USMC; Command and Control; C2; C3; C4I;
Joint Command and Control; LAV; LAVC2; Command Post;

**BAILING WIRE, BUBBLE GUM, TIN CANS & STRING:
THE MARINE CORP'S FORWARD COMMAND POST**

Submitted to:
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8 April 93

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EXECUTIVE SUMMARY

Title: BAILING WIRE, BUBBLE GUM, TIN CANS & STRING: THE MARINE CORP'S FORWARD COMMAND POST

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Thesis: The standard command post for a Marine infantry unit is foot mobile. There has never been a doctrinal C² (Command and Control) platform or vehicle in the infantry at the battalion, regiment, or division level, other than an attached AAVC7A1 from the AAV Battalion. History reveals all units struggling to create "jerry-rigged" command vehicle configurations using their organic jeeps, HMMWVs, MRC vehicles and trucks. The most logical choice for a "standardized" command and control vehicle in the Marine Corps' current inventory is the LAVC².

Recommendation: Standardize the Marine Corps' forward command posts and replace "jerry-rigged" command and control vehicles with the LAVC².

**BAILING WIRE, TIN CANS & STRING:
THE MARINE CORP'S FORWARD COMMAND POST**

OUTLINE

Thesis: The standard command post for a Marine infantry unit is foot mobile. There has never been a doctrinal C² (Command and Control) platform or vehicle in the infantry at the battalion, regiment, or division level, other than an attached AAVC7A1 from the AAV Battalion. Many units have struggled to create "jerry-rigged" command vehicle configurations using their organic jeeps, HMMWVs, MRC vehicles and trucks. The most logical choice for a "standardized" command and control vehicle in the Marine Corps' current inventory is the LAVC².

I. Problem.

- A. The solution to non-standardized forward command posts is the LAVC².
- B. German forward command concept should be basic tenant of Marine Corps' maneuver warfare.

II. Current forward command post employment.

- A. Employment of LAVC²s in LAI Battalion.
- B. Employment of LAVC²s in South West Asia.
- C. An alternatives to the LAVC²; the "MRC-C²".

III. Proposed solutions

- A. Proposal one: Organic LAVC²s to the GCE.
- B. Proposal two: Organized general support LAVC²s to the GCE.
- C. Proposal three: Organic LAVC²s and MRC-C²s to the GCE.

IV. The mechanics.

- A. Support required for the LAVC²s.
- B. Personnel required for the LAVC²s.
- C. Maintenance required for the LAVC²s.
- D. Costs of LAVC²s.
- E. Improvements needed in the LAVC².

V. The Authors choice for best solution is Proposal One.

**BAILING WIRE, BUBBLE GUM, TIN CANS & STRING:
THE MARINE CORP'S FORWARD COMMAND POST**

Armed conflicts require command and control at echelons from the lowest to highest levels of war. A command and control system is essential to the successful execution of armed conflicts. Forward command and control must be an integral part of the Marine Expeditionary Force (MEF) if we are to exploit the essence of maneuver warfare.

THE PROBLEM

The standard command post for a Marine infantry unit is foot mobile. There has never been a doctrinal command and control (C²) platform or vehicle in the infantry at the battalion, regiment, or division level, other than an attached AAVC7A1 from the Amphibious Assault Battalion. All units have struggled to create "jerry-rigged" command vehicle configurations using their organic jeeps, HMMWVs, MRC vehicles and trucks.

It is apparent to the Marine Corps that a standardized main and rear command post (CP) is necessary for future sustained operations. The Marine Corps has put forth great effort in the development of a standardized command post configuration that will meet the needs of the commander and staff. The three divisions within the Marine Corps met Dec. 2, 1992 at Camp Lejeune, North Carolina to draft a standardized command post

configuration for division headquarters staff that will be more organized and efficient. This is a tremendous step towards attaining efficiency within unit command posts and the Corps. Although the combat operations center (COC) configurations will be standard, no steps have been taken to standardize a mobile command and control platform. "Jerry-rigged" C² vehicles will continue to be standard operating procedure (SOP) until action is taken to standardize the mobile command post.

In today's wartime environment, Marine Air Ground Task Force (MAGTF) commanders should not be without the light armored vehicle command variant (LAVC²). This vehicle is the safest and most reliable platform Marine Corps commanders can use to traverse the battlefield while communicating with and visualizing their lead forces.

Even with an uncertain and new Marine Corps force structure, there is an absolute requirement to identify and field a standard command and control platform within the Fleet Marine Force (FMF) as a forward command post. The geometry of modern battlefields has changed. As more units and personnel are added to the theater of operations, lines of communications are stretched past their limits. Without forward communications, the commander will lose contact with his forces. Messengers, signal flags, and communications equipment have continually been developed to better provide the commander with the ability to control his forces. Ground forces are now spaced farther apart due to an

increased number of accurate weapons while offensive units are continuously in motion looking for and exploiting surfaces and gaps. Our concepts of war at the tactical and operational levels now center around maneuver. The dynamics of future battles will continue to increase weapons lethality, mobility, information as a combat multiplier, tempo of actions, joint operations and size of forces. Plans and their execution are increasingly more difficult. We must find and use every available tool to increase a commander's ability to act decisively.

THE SOLUTION

The LAVC² is the instrument that commanders need to fulfill their requirement for a highly mobile forward command post. Doctrinally, LAVC²s should be employed by units that possess LAVs such as light armored reconnaissance (LAR) and combined arms regiment (CAR). Additionally LAVC²s should be employed by units that do not currently have a "standard C² platform" to use as their forward command post.

The ability to lead from a forward position is essential in maneuver warfare. A commander requires a vehicle that can take him forward in battle and not restrict him to the main CP. If his forward CP does not support reliable communications, the commander will not move forward. Operating communications equipment demands routine training and familiarity to stay knowledgeable and proficient. Unfamiliarity of equipment breeds

confusion and task saturation. Exercises will often succeed even though communication is poor; however, poor communications in war kills troops. Smart commanders will not exceed their span of control or communications range. (6:29) Communications can either support or cripple the commander depending on how he chooses to employ his equipment.

THE HISTORY OF THE FORWARD CP

The German Army validated the concept of forward command during WWII. German Field Marshal Rommel exercised forward command, and it became an important combat multiplier. Forward command was the standard tactical command and control style in the Wehrmacht. The Germans believed that "forward command" was crucial for tactical victory in maneuver warfare. They called for "Senior commanders to issue orders based upon personal observation and to assume command of a subordinate unit, if necessary, during a critical point in the fighting." (1:26) The Germans tried to make decisions at the lowest possible level of command. Their decision-making process provided the flexibility necessary for commanders to think and act more quickly than the enemy. (1:27)

By leading from the front, sensing the situation, and taking decisive action without waiting for permission or further instructions, German commanders were able to routinely act faster than their opponents. The high speed tempo and dynamic

nature of "Blitzkrieg" called for command and control to be immediate and decisive. This style of command and control dictated battlefield commanders to traverse the front lines visualizing events as they unfolded, giving them a better feel of the battle. (4:29) Commander indecision was considered unexcusable by the Wehrmacht leaders. Blitzkrieg warfare put enormous pressure on the field commanders to perform with precise accuracy. Centralized control by higher headquarters was undesirable and unacceptable. Forward command allowed Wehrmacht leaders to think and make their own decisions while maintaining the intent and objectives of German higher headquarters. (1:27)

The forward command approach to C² was a major reason for German tactical successes. Field Marshal Von Manstein relates:

Divisional operations were conducted from the forward position on the battlefield. The division commander had his place within the Schwerpunkt group which was to make the main effort. He visited the regiments several times a day. The divisional headquarters was somewhat farther back and did not change its location during operations. (2:11)

"History proves that thinking, independent minded tactical leaders of the Wehrmacht consistently outfought their opponents. That Wehrmacht fought almost everywhere outnumbered, often in hopeless situations, and never disintegrated. The Wehrmachts' achievements are strong arguments for the prowess of their tactical abilities." (1:28)

Field Marshal Von Manstein related successful maneuver warfare operations to how well he could see the battlefield. The Germans forward command post approach to command and control should be a basic tenant of Marine Corps maneuver warfare. One of the most important elements of maneuver warfare is the ability of the commander to see and understand the battlefield.

Eighteenth-century military experts recognized this concept and named it "Coup d'oeil." This concept, if properly employed, can aid the commander in achieving decisive results by visualizing and exploiting the enemy's weakness, and striking before the enemy can react. Today more than ever, a commander must have the capability to conceptualize the battlefield. The management tool he needs is the forward command post.

CURRENT LAVC² EMPLOYMENT

The system that we employ must allow the commander to operate flexibly, delegate authority, and lead from any point on the battlefield. At the same time it must not deprive him of the ability to respond to the changing face of the battle. The ultimate and only meaningful measure of command and control is whether the force functions more effectively and quickly than the enemy. Equipment alone will not solve a command and control problem. Communications equipment can only facilitate control of a force. It takes a leader to command. Control measures, whether they are SOP's, battle drills, or communications, give the commander the tools to command. The quest for information should

and control. The LAVC² cannot solve every C² problem, but it will increase a commander's ability to take decisive action and better control the tempo of the battle.

A forward command post is established when the commander needs to move forward to direct the current battle or to directly influence some aspect of the battle. The forward command post must be mobile and small. The standard configuration will employ a commander, operations officer (G/S-3), intelligence officer (G/S-2), fire support coordinator, and communications technicians as required. Operational Handbook (OH6-1) states: "Commanders must have the ability to lead from these forward observation posts or from forward visits to line units."

The forward command post must be able to move quickly from the main command post. A commander cannot afford to wait for a forward command post to be taken from the command post's assets. The forward command post must allow the commander enough control to displace his main command post. At the main CP the forward command post must be in a "stand by" mode in order to give the commander the freedom to exercise forward command.

The LAVC² is a high-speed, reliable command and control platform. It provides the commander with a safe reliable platform to give guidance, allocate resources, position forces, and synchronize assets from a forward position. This eight-wheeled vehicle, capable of speeds of over 60 mph, provides

platform to give guidance, allocate resources, position forces, and synchronize assets from a forward position. This eight-wheeled vehicle, capable of speeds of over 60 mph, provides its occupants armored protection against small arms fire. Most importantly, it provides the commander with one UHF radio and four VHF radios.

The LAVC² is currently employed in the divisions by the light armored reconnaissance (LAR) battalion. This division level reconnaissance battalion has only eight LAVC²s. The battalion employs the vehicles at 100% during operations without any backup vehicles. The commander has two LAVC²s at the main command post, two at the rear (alternate) command post, and one with each of the line companies. Unlike a straight leg infantry company commander, the mobile LAR company commander does not have the ability to communicate with the artillery observer, mortar observer, forward air controller, and naval gunfire spotter. The LAVC²s are necessary at the company level to provide the company commander with the ability to call for and coordinate fire support assets. The two LAVC²s at the battalion main and rear (alternate) command posts do not provide all communications required. MRC-110s (VHF single channel radio) and MRC-138s (HF single channel radio) are also at the command posts to guard all of the additional radio circuits. The "LAVC² gives the commander agility on the battlefield, while maintaining the critical circuits for command and control. LAR Battalion

commanders have capabilities that should be exploited by all commanders at every level within the Ground Combat Element (GCE).

LAVC² EMPLOYMENT IN SMA

After action reports from Desert Storm hailed the LAVC² as a superb forward command post. (5) Both the 2nd Marine division Commanding General (CG), Lt. Gen. Keys, and I MEF CG, Gen. Boomer, have personally endorsed the LAVC²'s use as the Marine Corps' best choice for a forward command post. Detaching the LAVC²s from LAR Battalion would degrade the LAR Battalion's ability to fight as they train. We must recognize the need for additional command variant LAVC²s. Units that would be immediately and positively impacted by the addition of LAVC²s are the divisions, Marine Expeditionary Forces (MEFs), and Marine Expeditionary Units (MEUs).

Within the division, the additional LAVC²s need to be employed at the division forward command post, the CAR, regimental forward command posts, and in a division general support role. Traditionally, division commanders have been forced to create forward command posts with communications equipment and vehicles from the division communication company. If the CG had two LAVC²s to act as his forward command post, he could command better from the front and additionally free up time the communications officer spends "jerry-rigging" commander C² vehicles to make better use of his time performing more

pertinent duties. After Desert Storm, Second Marine Division recommended a two vehicle LAVC² command section be added by T/O and T/E to the division.(3)

Another benefit of adding a LAVC² section to the division is the vehicles internal communications equipment comes fully installed and the division communication company is not responsible for fitting the LAVC²'s communications gear out of hide. The company will be able to better employ its limited MRC-110s for purposes other than the CG's forward command post. After-action reports from South West Asia (SWA) have called for an additional 10 MRC-110s in the division communication company. (5) If the LAVC² is added, the number of requested MRC-110s could be reduced.

If the division were to fight a war today, the current forward C² assets would be difficult to manage. The commanding general would have to decide if he would take two LAVC²s from LAR Battalion for his forward command post. If two C²s were taken, LAR Battalion would be operating at less than full capacity. If the CG elects not to attach vehicles from LAR Battalion, the division main command post would be forced to create a forward command post "out of hide," balancing rear and forward LAR assets. Neither situation is desirable. Forward command posts were established in LAVC²s during Desert Storm because reserve 4th LAI Battalion vehicles were available.

Infantry battalions would go to great lengths to get their hands on a LAVC² section. LAVC² would increase the effectiveness of the battalion in any environment. If an infantry battalion is given LAVC²s, would commanders become focused on terrain that accommodates vehicle mobility vice their mission? This argument sounds just but is slightly flawed. With or without LAVC²s, battalions are going to use some kind "jerry-rigged" C² vehicle. If terrain does not allow the command group to proceed in the desired direction the group simply dismount from their vehicles and continue by foot. LAVC²s will not change this procedure.

LAVC² ALTERNATIVES

One alternative to purchasing additional LAVC²s is the procurement and introduction of a new vehicle. Second Marine Division has submitted a Fleet Operational Needs Statement (FONS), October 92, identifying the need for a mobile command and control vehicle. Part of the division's justification for the FONS submission is the historic construction of mobile C2 vehicles and the lack of LAVC²s or AAVC7A1s within the division. Second Marine Division also states the LAVC² would fulfill the requirement if it was fielded in sufficient numbers. The "AN/MRC-C²s" would be employed using a shelterized HMMWV containing one UHF, one HF, eight VHF, one PLRS (Position Location Reporting System) and one GPS (Global Positioning System). As discussed in the FONS, the MRC-C² would make a great hub for battalion level and higher communications, but the LAVC²

is still the best platform for a forward command post. The biggest drawback of developing a new vehicle is the lengthy lead time required to complete the research, development, final procurement and fielding.

THE PROPOSALS

Ultimately, we need to give our commanders a standardized C² platform from which to conduct operations whether it be a LAVC², MRC-C² or AAVC7A1. Three proposals, illustrated on the following three pages, have been identified by the authors to solve the non-standardized forward command post problem. The proposals are listed in tables 1, 2, & 3 and are broken down by unit and numbers of command and control vehicles. In figures 1, 2, & 3 total vehicle numbers are shown.

THE MECHANICS

One of the potential pitfalls of all three proposals is the long term cost of maintaining the vehicles. A possible option for saving on maintenance and support costs would be consolidating LAVC² maintenance into a single unit. LAVC²s could be held within one unit to consolidate repair parts, tools, publications, mechanics, technicians, and petroleum, oil and lubrication. Within this unit, the vehicles could be tied to the specific command they support. Many general support units have converted to the consolidated maintenance system producing substantial savings in 1st, 2nd and limited 3rd echelon

PROPOSAL ONE- LAVC² command sections of two vehicles would be established at the MEF, division and regimental CEs within the division. Six G/S LAVC²s would be maintained to support the division. Vehicles will be held and all maintenance conducted at one unit, either LAR or the CAR. Initial vehicle cost \$9.5 million.**

COMMAND AND CONTROL PLATFORMS

PROPOSAL ONE

UNIT	CURRENT LAVC ²	FORWARD C ² REQUIREMENT	PROPOSED LAVC ²	AAVC7A1 DISTRIB
MEF CE	0	YES	2	0
MEU CE	0	YES	0	0
DIV. CE (LAVC ²)	0	YES	2	0
DIV. G/S (AAVC7A1)	0	YES	0	9
DIVISION G/S (LAVC ²)	0	YES	6	0
LAR Battalion	8	YES	8	0
TANK BATTALION	0	YES	0	2
REGIMENTAL CE	0	YES	4	0
INFANTRY BNs (6)	0	YES	0	0
CAR REGT CE**	0	YES	4	0
LAI BNs (2) **	0	YES	16	0
ARTY REGT CE	0	YES	2	0
ARTY BATTALION CE (3)	0	YES	0	0
AAV BATTALION	0	YES	0	4
TOTAL	8		44 **	15

** Assumes Combined Arms Regiment has accepted for its organic LAVC²

Table-1

TOTAL: 16 NEW LAVC²s

**Advantage: Task
Organized G/S LAVC²s
to the GCE**

VEHICLE PROPOSAL 1

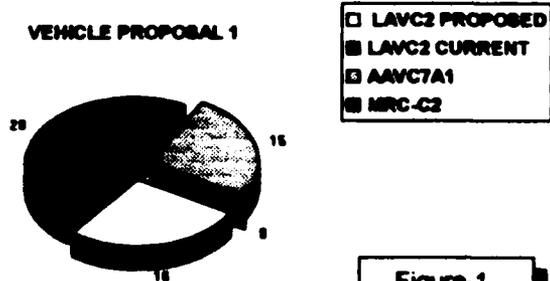


Figure-1

PROPOSAL TWO- LAVC² command sections of two vehicles would be established at the MEF CE, MEU CEs, Division CE, Regimental CEs. A one vehicle section would be established at the battalion levels. First and second echelons of maintenance would be a unit responsibility. Estimated initial cost is \$16.01 million.**

COMMAND AND CONTROL PLATFORMS

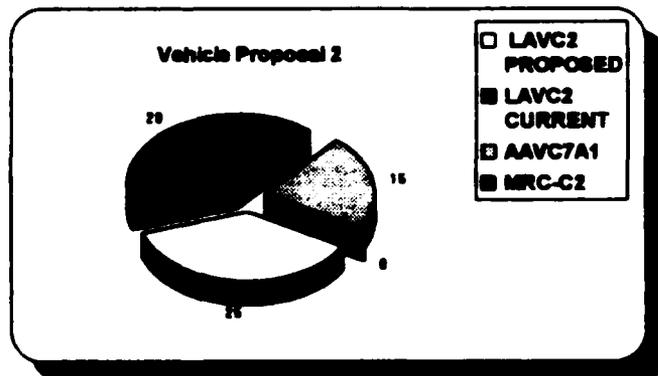
PROPOSAL TWO				
UNIT	CURRENT LAVC ²	FORWARD C ² REQUIREMENT	PROPOSED LAVC ²	AAVC7A1 DISTRIB
MEF CE	0	YES	2	0
MEU CE	0	YES	6	0
DIV. CE (LAVC ²)	0	YES	2	0
DIV. G/S (AAVC7A1)	0	YES	0	9
DIVISION G/S (LAVC ²)	0	YES	0	0
LAR Battalion	8	YES	8	0
TANK BATTALION	0	YES	0	2
REGIMENTAL CE	0	YES	4	0
INFANTRY BNs (6)	0	YES	6	0
CAR RBGT CE**	0	YES	4	0
LAI BNs (2) **	0	YES	16	0
ARTY RBGT CE	0	YES	2	0
ARTY BATTALION CE (3)	0	YES	3	0
AAV BATTALION	0	YES	0	4
TOTAL		8	53**	15

**Assesses Combined Arms Regiment has accepted for its organic.

Table-2

TOTAL: 25 NEW LAVC²s

Advantage: Organic LAVC²s to the GCE



PROPOSAL THREE: LAVC² command sections of two vehicles would be established at the MEF and division CEs. Eight G/S LAVC²s would be maintained by the LAR Battalion or CAR to support the division. Twelve new MRC-C² would be developed and employed by the regiments and battalions. LAVC²s will be held and all maintenance conducted at LAR Battalion or the CAR. Initial cost of the LAVC²s: \$7.1 million per MEF.* This figure does not include cost of research, development, and production of the MRC-C².**

COMMAND AND CONTROL PLATFORMS

UNIT	CURRENT	FORWARD C ²	PROPOSED	AAVC7A1	MRC-C ²
	LAVC ²	REQUIREMENT	LAVC ²	DISTRIB	**
MEF CE	0	YES	2	0	0
MEU CE	0	YES	0	0	0
DIV. CE (LAVC ²)	0	YES	2	0	0
DIV. CE (AAVC7A1)	0	YES	0	9	0
DIVISION G/S	0	YES	8	0	0
LAR	8	YES	8	0	0
TANK BATTALION	0	YES	0	2	0
REGIMENTAL CE	0	YES	0	0	2
INFANTRY BNs (6)	0	YES	0	0	6
CAR REBT CE ² *	0	YES	4	0	0
LAI BNs (2)*	0	YES	16	0	0
ARTY REBT CE	0	YES	0	0	1
ARTY BATTALION CE (3)	0	YES	0	0	3
AAV BATTALION	0	YES	0	4	0
TOTAL	8		40 *	15	12

* Assault Commanded Area Regiment has requested for its organic LAVC²s.
 ** MRC-C² has an undetermined cost and production time line.

Table-3

TOTAL: 12 NEW LAVC²s
 TOTAL: 12 NEW MRC-C²s

Advantage: Organic LAVC²s & MRC-C² to the GCE.

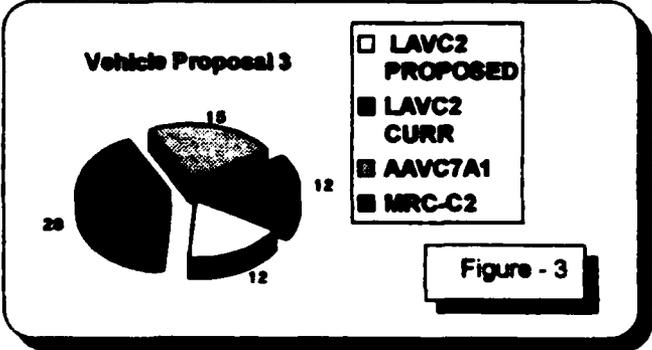


Figure - 3

maintenance costs. Teams are maintained and trained by the parent unit but are employed in support of the MEF. Proficiency and unit cohesion is increased by associating the same team with the same unit. Consolidation could be established at LAR Battalion then in the CAR when it becomes operational.

In addition to the cost of maintaining the vehicles a personnel cost is also associated with any additional system added to our inventory. Each vehicle requires a driver and vehicle commander, and for every three vehicles, an additional mechanic and radio technician is needed. We believe commanders would find the decision prudent to make requisite reductions from within their command to fill the LAVC² driver, technician, and vehicle commander positions. The LAVC² driver would come from the Motor Transport (MT) section or platoon of a unit, the technician from the communication platoon, and the vehicle commander from any section. When a unit deploys on a MEU with LAVC²s, the attached LAV unit could conduct the maintenance. First, second, and limited third echelon maintenance would continue within the division. With all of the proposals comes an additional personnel maintenance requirement at third echelon (Maintenance Battalion, Force Service Support Group).

LAVC2 EQUIPMENT UPGRADES

LAVC2 Long range communications equipment used during Desert Storm proved to be inadequate and requires upgrades. The HF

radio in the vehicle needs to be replaced or a better amplifier added to accommodate longer range requirements. In addition to a better HF radio, a more efficient antenna capable of vertical or horizontal polarization is required. A rack mount modification for a AN/PSC-3 should be available for installation. This modification would include an omni-directional UHF satellite antenna similar to an aircraft fuselage dish antenna for satellite communications on the move. This type of antenna mount would prevent the unreliable procedure of aim and transmit on the move. Global positioning systems should be a standard piece of equipment with all LAVs. PLARS should also be a standard device with all LAVs. The Marine Corps should move toward an integrated friendly and enemy position and reporting system, incorporating GPS, PLRS, and possibly JSTARS (Joint Surveillance Target Attack Radar System).

The LAVC² is currently listed at \$592,911 on 2nd LAI Battalion's Consolidated Memorandum Receipt. This amount was verified in an interview with the Supply Chief of 2nd LAI Battalion on 10 Jan 93. Given the Marine Corps budget in FY-93, the cost of the LAVC² is a small investment for a tremendously capable and necessary communications vehicle. In the Fiscal Year 1993 budget, the Marine Corps allocated \$1.3 billion for 36 F/A-18 C/Ds, \$110.3 million for their advance procurement, and \$889.9 million for research and development for the F/A-18 E/F. Other Marine air purchases include EA-6B upgrades, AV-8B upgrades for outyear procurement, reserve F/A-18s, new CH-53s, AH-1Ws, and

the V-22 at the cost of \$1.9 billion. Although these items are bought with blue dollars, numerous other projects that were funded, including the LAV AD (LAV Air Defense variant), armored combat excavator, Marine enhancement program, 155mm M864 ammunition, light weight 155mm howitzer, logistics vehicle system development, a C-20 aircraft, research and development for the LAV-105 totaling over \$290 million. (7:4) *For less than the cost of two F/A-18s, every battalion level command post and higher (excluding the CARs) could have a reliable and mobile C² platform. Money needs to be allocated for LAVC²s.*

AUTHORS' CHOICE

The authors feel the best overall proposal and most economically feasible is PROPOSAL ONE. The MEF and division command elements would have identified LAVC² sections, while 6 LAVC²s would be maintained in GS of the division. The 6 LAVC²s, coupled with the current 15 AAVC7A1s, would give the division commander sufficient C² platforms and tremendous flexibility. The proposal we feel "Fleet Marines" would like most is **PROPOSAL TWO**. Every unit would have its own identified LAVC² or AAVC7A1. Proposal one is also the most expensive in cost, personnel and maintenance. **PROPOSAL THREE** has potential and the MRC-C² should be pursued as a standard C² platform for our future main command posts. Realistically, we need standardization now. The MRC-C² is just an idea but the LAVC² is reality. The Pentagon N-6 staff

stated, in an interview 22 February 93, "Most C² systems take 10-12 years from idea to production."

CRITICAL FACTORS AFFECTING AUTHORS' CHOICE

The LAVC² provides a standard platform upon which a commander can lead from the front. Fighting on today's advanced battlefields, commanders can no longer afford to project a large footprint or expose themselves to the enemy while moving forward with their forces into battle. Instead of numerous MRC vehicles moving out from the main CP, one or two LAVC²s would be better suited. The LAVC² forward command post would be faster, and have a smaller footprint. The main CP would have more communications reliability since no additional equipment is taken "out of hide" to create the forward command post, and the forward command post would be more readily available for movement. Most importantly, the LAVC² significantly increases the survivability of the command attack when compared to MRC vehicles.

Without exception, commanders from all levels found the necessity for a standard forward command post, instead of "jerry-rigged" configurations to be valid and justified if we are to continually improve as a Corps. Will combat commanders fail to destroy the enemy and achieve their missions if they do not have LAVC²s? No. Commanders will continue to find and invent ways to command from the front and win in combat. We will continue to "jerry-rig" command posts for our commanders. However, it is only

a matter of time before we fail to complete an assigned mission because of the lack of a standardized C² vehicle. We do a disservice to our commanders by not providing a standard vehicle for forward C². The standard vehicle is available today to provide a true combat multiplier for commanders--the LAVC².

BIBLIOGRAPHY

1. Antal, John F., "Forward Command: The Wehrmacht's Approach To Command and Control in World War II. "Armor Nov.-Dec.1991.
2. Von Mellenthin, Generalmajor A.D.F.W. conference notes from Armor Warfare in World War II, (Columbus, Ohio: Battelle Columbus Laboratories) May 10, 1979.
3. Holcomb, Lt. K. "Operation Desert Shield Conducted by USCENTCOM," Marine Corps Lessons Learned (MCLLS: 22555-171000) March 21, 1991.
4. Mountcastle, Lt. "Command and Control of Armor Units in Combat," Military Review Nov. 1985.
5. Petronzio, MAJ. "Operations Desert Shield Conducted by USCENTCOM," Marine Corps Lessons Learned (MCLLS: 31624-02300) March 16, 1991.
6. Moore, John R., "Communications and Maneuver Warfare," Marine Corps Gazette Mar. 1990.
7. "News," Marine Corps Gazette Nov. 1992.

APPENDIX 1

ACRONYMS

AAV	Assault Amphibian Vehicle
AAVC7A1	Amphibious Assault Vehicle Communications Variant
AN/MRC-C ²	Mobile Radio Communications Command & Control Variant
AN/PSC-3 Battalion C ²	Portable Satellite Communications -3 Battalion Command & control
CAR	Combined Arms Regiment
CE	Command Element
CG	Commanding General
COC	Combat Operations Center
CP	Command Post
CPX	Command Post Exercise
FMF	Fleet Marine force
FONS	Fleet Operational Needs Statement
FSSG	Force Service Support Group
G/S	General Support
G/S-2	General/Special Staff Intelligence Officer
G/S-3	General/Special Staff Operations Officer
GCE	Ground Combat Element
GPS	Global Positioning System
Gerry-rigged	System that is never standardized (hasty put-together)
HF	High Frequency
HMMWV	High Mobility Multi Wheel Vehicle
JSTARS	Joint Surveillance Target Attack Radar System
LAI	Light Armored Infantry
LAR	Light Armored Reconnaissance
LAV	Light Armored Vehicle
LAVC ²	Light Armored Vehicle Command & Control variant
MAGTF	Marine Air Ground Task Force
MCLLS	Marine Corps Lessons Learned
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MRC	Mobile Radio Communications
MRC-C ²	Mobile Radio Communications Command & Control variant

PLRS	Position Location Reporting System
POL	Petroleum Oil Lubricants
SWA	South West Asia
T/E	Table of Equipment
T/O	Table of Organization
USCENTCOM	United States Central Command