The Death Of Airborne Electronic Warfare?

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SUBJECT AREA Aviation

EXECUTIVE SUMMARY

TITLE: THE DEATH OF AIRBORNE ELECTRONIC WARFARE?

THESIS: Although the "death of the Prowler" could result in the loss of Marine Corps airborne electronic warfare capability, it might also open the door to our first multi-mission V/STOL capability.

ISSUE: The Marine Corps is in danger of losing their only airborne electronic warfare capability. The EA-6B Prowler is an expensive platform which is nearing the end of its production life. Although the Navy is exploring options for a replacement aircraft, there are several concerns which the Marine Corps must consider. Production requirements have fallen short of Navy/Marine Corps requirements. This may lead to severe logistical support shortfalls, as well as an inability for the Navy to cover all of their aircraft carrier commitments. As support deteriorates, so does mission readiness capability. This affects our ability to provide quality electronic warfare support to the MAGTF. As Marines are required to fill gaps with carrier deployments, we also degrade our MAGTF capability by pulling our EA-6B assets away from the ACE. The Navy is considering a multi-mission platform as a candidate replacement. This platform exceeds Marine Corps system requirements, but does not address our requirement for timely and flexible response through full integration of the ACE and GCE afloat. Adequate full integration capability can only be achieved through V/STOL technology. Both the helicopter and the MV-22 Osprey provide the essential flexibility needed to support the MAGTF at sea; but of these alternatives, only the MV-22 has the performance capability to support the ACE in over-the-horizon assault capability. If the Navy elects to pursue an aircraft which is not compatible with Marine Corps requirements, we must meet our requirements as efficiently as possible through the pursuit of a multi-mission V/STOL platform.

CONCLUSION: Electronic Warfare capability is essential to the MAGTF. If we are forced to give up the EA-6B Prowler we must find a replacement. By combining the Marine Corps requirements for electronic warfare, airborne command and control, and medium lift, we can provide the MAGTF with three essential mission capabilities for the price of one. The cost of such a platform and capability is small in

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comparison to the cost of not replacing the Prowler.

THE DEATH OF AIRBORNE ELECTRONIC WARFARE?

OUTLINE

THESIS STATEMENT. Although the "death of the Prowler" could result in the loss of Marine Corps electronic warfare (EW) capability, it might also open the door to our first multi-mission capability.

I. Do we need Marine Corps airborne EW capability?
   A. EW capability is essential to the MAGTF.
   B. The Prowler is our only airborne EW capability?

II. Why is Marine Corps EW capability in trouble?
   A. The primary reason is high cost.
   B. The EA-6B is nearing the end of its service life.
   C. The Marine Corps does not have a replacement for the Prowler.

III. Is there potential for trouble in the Navy plan?
   A. The period between the halt of Prowler production and the introduction of the next generation aircraft will away our ability to sustain operations.
   B. Marine Corps assets will be pulled away from the MAGTF to support the Navy.
   C. The Navy ATS concept does not meet Marine Corps requirements.

IV. What are Marine Corps requirements for the future?
   A. The Marine Corps must focus on better supporting the MAGTF.
   B. Timely and flexible response capability is essential.
   C. We must achieve full integration of the ACE and GCE when afloat.
   D. Is the helo a good option?

V. What is the best platform to satisfy future Marine Corps EW requirements?
   A. Multi-mission V/STOL capability is the answer.
   B. The MV-22 offers suitable performance.
   C. Platform versatility is a major selling point.

CONCLUSION: By combining the Marine Corps requirements for electronic warfare, airborne command and control, and medium lift, we can provide the MAGTF with three essential mission capabilities for the price of one. The cost of such a platform and capability is small in comparison to the cost of not replacing the Prowler.

THE DEATH OF AIRBORNE ELECTRONIC WARFARE?

As you sit down with the morning newspaper in hand, you peer through tired eyes at the following headline: "MARINE CORPS KILLS PROWLER." You swallow your first sip of coffee and then continue to read. Are we now involved in combating crime in the streets? No, but the fictitious headline above does reflect concern over a current debate on electronic warfare mission requirements within Marine Corps aviation.

Marine Corps planners are looking specifically at the requirement for Marine Corps airborne electronic warfare capability as we move into the next century. Their attention is focused on whether we need to maintain a dedicated electronic warfare airborne capability, and if so how do we best meet Marine Corps requirements.

DO WE NEED MARINE CORPS AIRBORNE ELECTRONIC WARFARE?

Electronic warfare capability is an essential element to the success of the Marine Air Ground Task Force (MAGTF). The death of the "Prowler" equates to loss of the primary airborne electronic warfare capability for the Marine Corps.

The EA-6B Prowler is the only aircraft in the Marine Corps inventory which was built specifically to counter the electromagnetic threat. With the deadly sophistication of the threat environment likely to be encountered in future conflicts, it is imperative that electronic warfare capability be maintained, continually updated, and readily

available to support Marines in every facet of our expeditionary role.

WHY IS MARINE CORPS ELECTRONIC WARFARE CAPABILITY IN TROUBLE?

Why is the Marine Corps suddenly reevaluating the requirement for airborne electronic warfare? Perhaps the primary reason is high cost. With an approximate price tag of $106.4 million dollars per plane, the Prowler is a very costly asset. This price is based on the FY 91 budget request for $319.3 million dollars to fund Navy procurement of three aircraft.1 It is unclear whether this cost estimate reflects the cost of the basic aircraft, or if it also reflects full system development, continued software support, and overall program support.

Whether an electronic warfare asset is an expendable weapon, a self-protection suite, or a sophisticated airborne electronic warfare platform, the capability does not come inexpensively. According to Rear Admiral Grady Jackson, "the Navy is apparently willing to spend close to $2 million

1Gerald Green, "Few EW Shockers Evident in DOD's FY 91 Budget Request," Journal of Electronic Defense, 13(March 1990), 20.

for four expendable weapons strapped under the wings of tactical aircraft."2

The Prowler seems very cost effective when you consider that its primary "weapon," the ALQ-99 electronic warfare

system, is part of the aircraft. When the aircraft returns safely from the flight, the electronic warfare system returns with it. In contrast, an expendable system must be replaced, at additional cost, before an airplane is back in the fight.

Over the past decade the Prowler has been delivered to the Navy/Marine Corps at a rate of 8-12 per year. Recently however, the Navy has considered discontinuing production of EA-6Bs. If production should terminate when contemplated, both the Navy and Marine Corps will fall far short of acquiring the total 147 aircraft established to meet current requirements.

A current Marine Corps replacement for the Prowler does not exist. If the Navy moves toward a replacement aircraft which does not meet Marine Corps requirements, we will be unable to afford continued EA-6B production on our own. We may also find ourselves priced out of any future electronic

2Hal Gershanoff, "Navy Concerned About Prowler's Future," EC Monitor, Journal of Electronic Defense,12(July 1989),26.

warfare capability.

Massive budget cuts continue to erode procurement for major aviation platforms despite the requirement for specific platforms or systems to meet mission essential needs. It is the concern over high cost that has brought the requirement for Marine Corps airborne electronic warfare

under greater scrutiny. This is true despite the known value of electronic warfare capability.

Other Marine aviation requirements, such as medium lift capability, have received similar attention. To insure that further loss of mission capability does not degrade our ability to fight as an integrated MAGTF, it is essential that we streamline or consolidate system/platform requirements and mission requirements. This is the only way to maintain our effectiveness as an expeditionary fighting force.

IS THERE POTENTIAL FOR TROUBLE IN THE NAVY PLAN?

The Navy is not abandoning electronic warfare. Instead, they are looking forward to the next generation airborne electronic warfare aircraft. Consolidation of mission and platform requirements has been a key consideration in the development of a replacement for the EA-6B. Yet, there is a danger that Marine Corps electronic warfare requirements will not be met in the Navy's current plan. This is due to several factors.

First, the interim period between the halt in Prowler manufacturing and the introduction of the next generation aircraft will bleed away our current ability to sustain electronic warfare operations. This is inevitable given the long lead time required to bring a major program through the acquisition process and into operational use.

An area where sustainment of capability becomes a real

nightmare is in logistical support. The military is notorious for its failure to maintain life-cycle logistical support for equipment which is no longer in production. It is also common to compound this problem by extending the service life of a particular item if a replacement is slow in being introduced to the inventory.

As an example, the Marine Corps has been plagued with numerous items of aviation support equipment which enjoy "hanger queen" status due to obsolescent parts. One such example is the AN/USM-406A electronic warfare system test cart. Over ten years ago this test cart went out of production and spare parts were not funded. Squadrons would send their carts to intermediate or depot level facilities for repair and often the equipment would never return. Many parts simply were not available to repair the equipment. Eventually, maintenance departments began to cannibalize equipment rather than report it inoperable. The lack of adequate support occurred because newer equipment was "on the way" and money spent to maintain support for older equipment could not be justified. Unfortunately, newer equipment arrived years behind schedule and existing equipment often died in place.

Stopping production of the Prowler prior to fielding a suitable replacement aircraft could result in similar reduction in equipment readiness and capability. A degradation in capability will result in sending a carrier to sea or Navy/Marine air into conflict without the full

protection of airborne electronic warfare. Failure to provide electronic protection would invite disaster.

If production of the EA-6B stops before a replacement can be dedicated to Navy aircraft carrier support, a second problem will occur. This problem will result from our collateral mission, as described in the overall Marine Corps aviation mission statement which follows:

> The primary mission of Marine Corps aviation is to participate as the supporting air component of the FMF in the seizure and defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign. A collateral mission of Marine Corps aviation is to participate as an integral component of naval aviation in the execution of such other Navy functions as the fleet commander may direct.3

Marine Corps Prowlers routinely fill Navy aircraft carrier commitments when shortfalls occur. As described in the previous mission statement, it is our responsibility to participate as an "integral component of naval aviation" when directed. As an example, during 1986, Marine EA-6B aircraft assigned to Carrier Air Wing One, USS America, participated in operations against Libya. This occurred because there were insufficient numbers of Navy electronic warfare aircraft to support the number of aircraft carriers.

As aircraft production falls further below Navy/Marine Corps requirements, and as greater asset attrition occurs due to inadequate life-cycle aircraft support, the frequency of Marine Corps Prowler support being pulled away to cover Navy commitments will increase. As we shift support to

cover these commitments, we will bleed airborne electronic warfare capability away from the MAGTF.

The third area of concern is with the Navy's concept for the next generation electronic warfare aircraft. This multi-mission platform, currently dubbed the Advanced Tactical Surveillance Aircraft (ATS), is planned to replace

3MCDEC,USMC, Marine Aviation, FMFM 5-1 (Quantico, 1979), p. 5.

the E-2C, S-3B, EA-6B, and ES-3A aircraft.4

A multi-mission platform is a tremendous idea from both a Navy and Marine Corps standpoint. It greatly reduces the requirement for maintenance support equipment, parts, personnel, facilities, and training. For these reasons, significant cost reductions can be realized. The negative side to this concept centers around the specific missions for which the Navy's proposed system would be designed, and the flexibility of the platform itself.

WHAT ARE MARINE CORPS REQUIREMENTS FOR THE FUTURE?

Marine Corps critics of the Prowler seldom dispute the necessity for airborne electronic warfare capability. The primary criticism rests with the fact that it is an asset which is seldom seen in support of Marines. For this reason, as we determine the requirements for a future electronic warfare platform, the Marine Corps must focus on better supporting the MAGTF.

Multi-mission capability and platform flexibility seem to be the most important considerations as we determine how best to provide electronic warfare support. Yet, the ATS as currently envisioned is not really suited to meet Marine

4Gerald Green, "Washington Report," Journal of Electronic Defense, 12,(July 1989), 17.

Corps needs.

Electronic warfare and airborne command and control are certainly two compatible areas for integration into a single platform. Indeed, both of these mission areas are established as Marine Corps requirements. However, the Navy ATS concept goes well beyond these capabilities. Mission areas such as anti-submarine warfare would have little value in respect to serving Marine Corps mission requirements. This capability will, however, add tremendous cost to the system.

An even greater concern is in the ability of the aircraft to provide timely support to Marines. This is a common problem with most of Marine fixed-wing aviation today. It is also the reason we must look beyond the conventional fixed- wing platform in defining our future electronic warfare requirements.

As the military begins to reduce in size, amphibious doctrine will become paramount. We are currently faced with the likelihood that numerous overseas facilities, currently serving as forward deployed bases of operation, may be

closed to future United States use. One such example is Naval Air Station Cubi Point in the Republic of the Philippines. As more facilities close, our fixed-wing aviation assets will be required to provide support from greater distances or from afloat.

Providing support from distant bases of operation will become a problem. Although the majority of Marine Corps fixed wing aviation assets can ferry great distances and can refuel in flight, there are additional factors which affect our ability to provide timely and flexible response.

International overflight rights, landing rights, and contingency forward basing rights, are very dependent on the given political situation. These rights may well be denied when needed. The Air Force ran into problems of this type when called upon to support the 1986 raid on Libya.

Transit of long distances affects both aircraft and pilot performance. The element of surprise, crucial to the success of any attack, may also be denied when travelling great distances. Therefore, the preferred option would be to have Marine air deployed with the Carrier Battle Group. This assumes, of course, that the carrier is in close proximity to Amphibious Task Forces. Unfortunately this is not always the case.

Each of factors mentioned above affect the ability of most Marine aviation assets to quickly link up with our

ground forces afloat. Helicopters and AV-8 Harrier aircraft are currently the only Marine aviation assets capable of accompanying our Marines at sea.

The only way to ensure electronic warfare support to the Air Combat Element of the MAGTF is to fully integrate the air and ground components. This cannot be accomplished with our conventional platforms. In fact, the Marine Corps Warfighting Center has proposed that the Marine Corps achieve an all Vertical/short take-off (V/STOL) air capability by the year 2010.

Even without the availability of rapidly responsive fixed-wing fighter protection and all weather attack capability, a MAGTF has some capability to support an amphibious landing with Harrier attack aircraft and Cobra attack helicopters. However, we do not have the capability to provide sustained Marine Corps electronic warfare support, without bringing a Prowler from another location.

Since we routinely deploy as a Marine Expeditionary Unit (MEU) or Marine Expeditionary Brigade (MEB), without the benefit of airborne electronic warfare support, electronic warfare is seldom integrated into the overall concept of operations. This is another reason why some officials within the Marine Corps fail to see the value of an electronic warfare platform. Their theory being that we routinely practice without electronic warfare support: therefore, it can't be that important.

Electronic warfare capability is not just a luxury, it is a necessity during amphibious operations. Those who profess to understand maneuver warfare realize the importance of staying one step ahead of an adversary's thought process. We must be able to deny information to the enemy, deceive him as to our intentions, and gain information on his capabilities and intentions. This becomes even more important as threat system improvements force the Marine Corps into over-the-horizon assault operations.

Without Electronic Surveillance Measures (ESM) and Electronic Countermeasures (ECM) capability, the MAGTF commander cannot adequately shape the modern battlefield. Unless we are landing on unopposed terrain, our aviation combat element must gain superiority in order to support movement ashore. To attack any adversary equipped with today's sophisticated threat systems would be disastrous without the tactical advantage which electronic warfare provides.

If electronic warfare capability is not fully integrated into the Amphibious Task Force there is no guarantee that it will be available when needed. It is therefore essential to ensure that any candidate replacement for the EA-6B be flexible enough to accompany the MAGTF at all times.

At present, there are very few acceptable alternatives for achieving the optimum flexibility required of a Marine

Corps electronic warfare platform. Of equipment currently in the Marine Corps inventory, only the helicopter would have sufficient capacity and flexibility to accompany the MAGTF when afloat, and to provide electronic warfare support to an amphibious assault.

The Soviets have utilized helicopters in an electronic warfare capacity for many years. HIP J and HIP K helicopters are deployed throughout the Soviet Union and integrated with normal helicopter squadrons. These assets are used for both RADAR and communication jamming. It is also important to realize that the Soviets are great believers in the importance of electronic warfare on the modern battlefield and their tactical doctrine and equipment are utilized by many third world countries.

The United States Army has also used helicopters in an electronic warfare role. The EH-60A Quick FIX ECM equipped helicopter has proven quite effective in land warfare training since its introduction.

While the helicopter has proven itself a suitable jamming platform in land warfare, it is not without certain weaknesses. The main problem concerning use of the helicopter as an electronic warfare platform is in its inability to achieve the speed and range needed to support both fixed-wing and helicopter assets during an amphibious assault. In particular, a helicopter would need to launch well in advance of a potential Harrier assault and would be

required to maintain much longer "on-station" time in order to adequately support such an assault.

WHAT IS THE BEST ALTERNATIVE TO MEET FUTURE REQUIREMENTS?

A better platform alternative is available. This platform can provide support to an assault force attacking from over-the-horizon. Unfortunately, there is still a major controversy over whether the aircraft will find its way into the Marine Corps inventory. I am referring to the Marine Corps medium lift replacement (MLR) candidate, the MV-22 Osprey, which was cut from this year's procurement budget.

The design of the Osprey is such that it has more than ample cargo capacity and airframe suitability to assume a multi-mission role. If the Marine Corps were to pursue a multi-mission role for the Osprey it could easily adapt the platform for electronic warfare, command and control, as well as medium lift.

The key to flexibility would be in having needed power supplies, avionics connection points, and antennas installed at all times. This would allow for a module type work station set-up, which could be easily installed to meet mission requirements. When not needed in this special warfare mode, it can be deconfigured to resume the primary role of medium lift.

An alternative which is equally attractive but allows for slightly less mission flexibility is to have a

permanently configured "electronic" Osprey. This platform would give up the medium lift capability, but would still perform both electronic warfare and command and control missions. Either configuration alternative should have both communications and RADAR intercept and jamming capability.

The three most important factors which make the Osprey an ideal candidate for a Marine Corps multi-mission platform are speed, range, and V/STOL capability. The aircraft can operate in a hover or as a conventional aircraft, allowing it to deploy with helicopter and Harrier assets. It is also "faster and longer ranged than any present Marine Corps helicopter."[5] The following comparison of capabilities between the MV-22 Osprey and the EH-60 Quick Fix serve to illustrate the difference in capabilities:

TABLE I

	MV-22 OSPREY	EH-60 QUICK FIX
MAX SPEED:	300KTS	160KTS
SERV CEILING:	26,000FT	19,000FT
MAX RANGE:	1200-2100NM	324-1200NM

Source: Jane's All the Worlds Aircraft 1989-1990.[6]

If the Marine Corps hopes to acquire the Osprey to meet its medium lift requirement, it must sell each of the

services on the versatility of the V/STOL platform. In the words of our Commandant, "Given the era of declining budgets, the Pentagon must consider multi-mission aircraft for the future. Officials should consider the MV-22's potential for missions like anti-submarine warfare and drug

5Elizabeth Donovan and David Steigman, "Gray: V-22 substitute scheme 'ridiculous'," Navy Times, March 5, 1990, p.4.

6John W. R. Taylor, ed., Jane's All the World's Aircraft, 1989-1990, Eighteenth Anniversary Edition, (Alexandria, Va: Janes Information Group, 1989),pp.226-227 and 369-370.

interdiction."7

By combining the Marine Corps requirements for electronic warfare, airborne command and control, and medium lift, we can provide the MAGTF with three essential mission capabilities for the price of one. The cost of such a platform and capability is small in comparison to the cost of not replacing the Prowler.

Although the "death of the Prowler" could result in the loss of Marine Corps electronic warfare capability, it might also open the door to our first multi-mission V/STOL capability.

Electronic Warfare mission support to the MAGTF is an absolute requirement. With careful and diligent planning we can improve our electronic warfare capability, rather than allow it to further degrade. The primary improvement comes with the increased flexibility offered by V/STOL technology. Multi-mission capability is the key to cost reduction. Lack

of progressive thinking, and lack of movement toward fielding an acceptable electronic warfare aircraft, will result in the death of Marine Corps airborne electronic warfare capability shortly after the turn of the century.

7Donovan, p.4.

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