



DEPARTMENT OF THE NAVY  
OFFICE OF THE SECRETARY  
WASHINGTON, D. C. 20350

~~CONFIDENTIAL~~

(2)

25 NOV 1977  
SEC DEF HAS STRA

25 November 1977

11/25  
Para account  
for staffing  
1723

~~CONFIDENTIAL~~

MEMORANDUM FOR THE SECRETARY OF DEFENSE

Subj: AV-8B Versus A-18 - ACTION MEMORANDUM

One has to be impressed with the amount of time and effort that has been spent in analysis and discussion on the question of whether to develop and buy for Marine Corps light attack aviation, the AV-8B or the A-18. Our staffs have done a creditable job in the examination of the issues. Now that we have arrived at the point of discussion, I would like to set down my views as simply and briefly as possible.

Your PDM tasking, in effect, asked the Department of the Navy to prove, if it could, the cost effectiveness of the AV-8B. My impression of the resultant study, when it was presented to me, was that it was surprisingly, almost artlessly, objective. I believe a similar impression ~~was articulated by members of your staff.~~ The PA&E evaluation delivered to me on Wednesday, which builds a case for the opposite conclusion, does not share this view of objectivity in our study effort.

You will recall that our leading conclusion was that overall relative effectiveness of the two airplanes is heavily dependent upon scenario and employment assumptions. Our assumption that the airplane will be used predominantly in the CAS role -- the mission with which Marine Corps light attack forces are charged -- favors the AV-8B. If the assumption is that the airplane will be extensively employed in achieving and maintaining air superiority or to engage in deep interdiction then the A-18 is the favored airplane. The point is that there is a judgment call to be made about the likely employment scenarios -- availability of supporting air forces, the air threat, basing availability, and vulnerability -- for Marine Corps light attack aviation. In this regard, the Department of the Navy study implicitly assumed the availability of Carrier air forces to provide initial air superiority and deep interdiction for large amphibious operations and to continue to do so until Marine air units can be integrated with the forces ashore. In developing the opposing view by placing heavy emphasis on the multi-mission aspects of the A-18, the PA&E study fails to consider the overall scheme of air operations in an amphibious operation or the priorities of the individual elements. In the overall evaluation of effectiveness, our assumptions are based on actual Fleet/Fleet Marine Force experience, and not surprisingly, tend to favor the AV-8B. PA&E's assumptions, also not surprisingly, tend to favor the

DECLASSIFIED IN FULL  
Authority: EO 13526  
Chief, Records & Declass Div, WHS  
Date: NOV 17 2015

~~CLASSIFIED BY OPA~~  
~~UNCLASSIFIED BY OPA~~  
~~DATE 11/15/82~~  
~~31 Dec 1980~~

~~CONFIDENTIAL~~  
~~CONFIDENTIAL~~

✓  
C 11/138

330-80-0017, box 54, 432 v. 8, 1977 800 3385 3385

15-m-1595

~~CONFIDENTIAL~~

A-18. The analytical balance can be shifted either way, but a really compelling case that eliminates either alternative is not easily made. As in the case in most analyses, the decision maker must judge the treatment of large uncertainties.

In the matter of costing, again the outcome hinges on the rules. We chose to stay with the undiscounted case wherein costs are equal. If discounting is to be a tool in the cost evaluation, then so should be consideration of inflation. It is clear to me that, in the middle ground, costs are not a driving determinant. The near term bill for AV-8B development is a problem. On the other hand, I have no reason to hope that higher A-18 procurement and operating costs will, in the future, be more easily borne.

Aside from Marine Corps Light Attack Force structure, there is another aspect of this decision that is of great importance. As highlighted in the study conclusion, the AV-8B, with its improved military characteristics, is the only option in the 1980s for substantial growth in U.S. VSTOL experience and tactical knowledge and is thus important to potential future expansion in VSTOL capability and application.

I have attached at Tab A, the brief summary of comments on the PA&E study.

Given the many uncertainties inherent in this kind of an exercise, General Wilson's best professional judgment is that the AV-8B will serve the Marine Corps' light attack mission more effectively than the A-18. I respect and share that judgment. For that reason, I support the restoration of the AV-8B program.

Department of the Navy
DON/AA DRMD
Date: <u>10-1-2015</u> Authority: EO 13526
Declassify: <u>X</u> Deny in Full: _____
Declassify in Part: _____
Reason: _____
MDR: <u>2015</u> -M- <u>12992</u>

*W. Graham Clayton Jr.*

W. Graham Clayton, Jr.  
Secretary of the Navy

50.S.C. § 552

Office of the Secretary of Defense  
 Chief, RDD, ESD, WHS +  
 Date: 17 Nov 2015 Authority: EO 13526  
 Declassify: X Deny in Full: \_\_\_\_\_  
 Declassify in Part: \_\_\_\_\_  
 Reason: \_\_\_\_\_  
 MDR: 15 -M- 1595

DECLASSIFIED IN FULL  
 Authority: EO 13526  
 Chief, Records & Declass Div, WHS  
 Date: NOV 17 2015

- PA&E concludes that the A-18 offers far better interdiction capability.

Comment: Better A-18 interdiction capability is stipulated, but again, other forces are designed for the interdiction mission. The dominant light attack role is CAS. The AV-8B can kill the same interdiction targets with equal effectiveness within its range payload capability.

- The PA&E study indicates that the DON effort failed to account for extra logistic burden of AV-8B forward sites.

Comment: The logistic requirements addressed by PA&E were included in the study, however, if all AV-8B's (160 UE) were to be employed in forward sites and were supported only by helicopter, or only by truck (one or the other, not a mixture), there would be a shortage of assets to maintain all forward sites simultaneously. A combination of these methods solves the shortfall with current assets.

DECLASSIFIED IN FULL  
Authority: EO 13526  
Chief, Records & Declass Div, WHS  
Date:

NOV 17 2015

Major Comments on the PA&E Analysis  
of the AV-8B/A-18 Study

- The PA&E study concludes that if constant FY 77 dollar costs are discounted at 10%, AV-8B force would suffer a 25% disadvantage.

Comment: Discounting generally has not been used in the past nor universally accepted as meaningful in Defense management. DOD does not have the option of investing capital for profit over time versus investing in goods and services. If done, discounting should also be applied to then year, escalated dollar costs, because it is equally as significant as discounting constant dollars since inflation is of concern, and results favor AV-8B by about 5%. Further, application of the discounting principle to the current plans to develop and buy the F/A-18 for Navy fighter and attack forces for comparison with discounted costs of an all F-14/A-7 force would favor the latter.

*Poor  
argument.  
The issue  
is what  
costs are  
used, not  
an constant  
costs*

- The PA&E study states that the method of operating prescribed for A-18 (scramble from ground alert) is not optimum and that the A-18 does better by maintaining airborne CAP station 20 miles from the target.

Comment: Within the many assumptions of target occurrence, value and decay used in the study, A-18 does do better, but still not better than AV-8B, by maintaining CAP stations. DON study said this, but airborne CAP stations would also improve the AV-8B. (This sensitivity variation was not computed.) Also, maintenance of maximum CAP reduces the Commander's reserve air support capacity.

It remains that the A-18's CAS operations are inflexibly tied to CTOL support requirements (substantial weight bearing runways, matting, redundant arresting gear, greater POL demand), and cannot be optimally focused to each of the specific forward area tasks easily handled by the AV-8B. The CTOL A-18 must effect (and pay for) brute force solutions.

- PA&E states that the target value decay time assumptions favor AV-8B. Doubling/halving decay times eliminates AV-8B advantage. This parameter is inherently very subjective and variable in definition.

Comment: Agree that target urgency/decay is subjective and variable, although the values used are best judgments of the JCS. Halving and doubling did reduce AV-8B advantage but did not give A-18 the edge. Thus, over a large range AV-8B retained overall margin.

DECLASSIFIED IN FULL  
Authority: EO 13526  
Chief, Records & Declass Div, WHS  
Date: NOV 17 2015

~~CLASSIFIED BY OPA~~  
~~EXEMPT FROM GENERAL DECLASSIFICATION~~  
~~ORDER OF 11952~~  
~~EXEMPT FROM DECLASSIFICATION~~  
~~ORDER OF 21 Dec 1989~~

- PA&E states that the base vulnerability methodology and assumptions favor the AV-8B, and if factual have similar implications to other Marine CTOL tactical aircraft. Study presupposes AV-8B ability to operate under enemy air superiority, neglected need for other CTOL support, ignored attrition of enemy raids enroute to rear base target, and discounted special vulnerabilities (such as being overrun) of AV-8B sites.

Comment: The study limited the analysis of airbase vulnerability to assessment of conventional air strikes. However, extrapolation could be made to assess surface-to-surface missile attack on CTOL bases, without addressing the nuances of air superiority.

While the study did not assume enemy air superiority, it did assume our air superiority as less than total. The implication was not that all CTOL is neglected or destroyed, but that its effectiveness would be degraded by enemy raids on the base. It is true that enemy attrition will differ between strikes on forward and rear bases and collateral damage to POL, personnel, logistics were not accounted for, nor was the special vulnerability of forward sites. Enroute attrition would lessen A-18 (and other CTOL) effectiveness degradation, while collateral damage would reduce both CTOL and VSTOL effectiveness. Tacit assumption is that 20-50 nm distance from FEBA does not pose significant special vulnerability problem. While it is agreed that the base vulnerability analysis is not strongest part of study, it clearly indicates that the AV-8B is less subject to base strike degradation. This is borne out by current AV-8A exercises in Europe.

- The PA&E study states that a most important omission in the DON effort was the A-18's outstanding air-to-air capability/mission flexibility which offered a commander more than twice the AV-8B force mix air-to-air capability to defend bases.

Comment: Multi-mission capability was not a major determining factor because Marine tactical aviation structure is balanced to provide reasonable levels of both air-to-air and air-to-ground capability.

Predominant mission of Marine Light Attack is Close Air Support.

Other forces, such as Navy TACAIR, can contribute well to Air Defense, but do not offer the integrated, responsive CAS capability of AV-8B.

The A-18 is not perfectly interchangeable between fighter and attack roles--largely due to crew training. Moreover, the AV-8B can contribute to air superiority in a balanced TACAIR force.

DECLASSIFIED IN FULL  
 Authority: EO 13526  
 Chief, Records & Declass Div, WHS  
 Date: NOV 17 2015