

ELECTRONIC WARFARE; NAVY/AIR FORCE TTILL DEVELOPING
SEPARATE COSTLY RADAR (U) GENERAL ACCOUNTING OFFICE
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July 1987

ELECTRONIC WARFARE

Navy/Air Force Still Developing Separate, Costly Radar Warning Receivers

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National Security and
International Affairs Division

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July 1, 1987

The Honorable Caspar W. Weinberger
The Secretary of Defense

Dear Mr. Secretary:

On April 28, 1987, we testified at a hearing before the Subcommittee on Legislation and National Security, House Committee on Government Operations, on the Air Force's and the Navy's radar warning receiver (RWR) programs. (See app. I.) Our testimony focused on the

- lack of response by the Department of Defense (DOD) to prior recommendations for achieving commonality in RWR acquisition programs,
- continuing proliferation of Air Force and Navy RWRS, and
- adverse effects stemming from concurrent production and testing of RWRS.

Nonresponsiveness to Prior Recommendations and Continuing Proliferation

We reviewed DOD's attempt to merge the Navy's ALR-67 program and the Air Force's ALR-69 upgrade¹ program and testified in related congressional hearings in 1982. Our prior report² and the House Committee on Government Operations report³ recommended several actions for overcoming obstacles to the merger and for otherwise promoting commonality in RWR programs.

Our recent review showed that these recommendations have not been implemented, with the Air Force and the Navy continuing their separate programs and otherwise continuing the proliferation of RWRS. Also, the Air Force has started a program to improve the ALR-69, currently installed in all F-16 aircraft, estimated to cost over \$500 million. The Navy has started an ALR-67 improvement program, estimated to cost over \$1.3 billion. Both services are acquiring nine different RWRS for existing tactical aircraft at an estimated cost of over \$6.6 billion. None are common to both Air Force and Navy aircraft, and seven of them have entered development or production since the 1982 hearings.

¹ Air Force's ALR-69 upgrade program is now designated the ALR-74.

² Lack of Cooperation Precludes Navy And Air Force From Developing Common Radar Warning Receivers (June 11, 1982, GAO/C-MASAD-82-38).

³ Failure of the Air Force and Navy to Develop Common Radar Warning Receivers is Costly (Aug. 12, 1982, House of Representatives, House Report 97-728).

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The services have not capitalized on several opportunities to develop common RWRs. In particular, the Air Force chose to acquire different RWRs for its F-15, F-16, and F-111 aircraft despite the opportunity for a common RWR being pointed out by Air Force technical elements.

The main problem in achieving commonality seems to be a procurement process led by service preferences and the perpetual updating of unique systems. Each service believes that its concept for a system is best and will oppose compromise of its design or performance goals. Once an RWR has been developed, the only alternative seriously considered when improvements are needed is an update of that RWR or a new service-unique system.

The services' main argument against changing to a common system was the cost involved in the aircraft wiring adjustments to accommodate a replacement RWR. DOD's policy requires an economic analysis of program alternatives before resource commitments. Such an analysis, in our opinion, should consider not only the cost of wiring adjustments, but also the potential savings that could result from a program alternative achieving commonality. We found, however, that the service analyses done in justifying their RWR programs did not consider the cost benefits of commonality.

We believe that a common RWR is feasible. The numerous RWRs perform a common function and face a common threat. With required interfaces, a common RWR could be developed for use on different tactical aircraft.

Concurrent Production and Testing

Despite the importance of adequately testing weapon systems before producing them, we found that the Air Force's and the Navy's RWR programs are marked by widespread concurrency and that this acquisition strategy has resulted in adverse consequences.

On one program, the Air Force contracted for system support equipment costing \$17.5 million before testing the RWR. Subsequent testing on the RWR resulted in deferring its production pending redesign. The support equipment can no longer be used with the redesigned RWR, and Air Force officials are uncertain how it will be used.

On another program, the Air Force started producing the RWR before beginning its testing. Later testing showed that the new RWR's performance was worse than that of the RWR it was to replace. The Air Force

continued production of the new RWR, placing it in storage pending redesign to solve its problems.

Subsequently, the Air Force started installing the RWR in aircraft even though its performance is still considered operationally unsuitable.

Similarly, the Navy started to produce an RWR while testing was underway. The testing revealed serious deficiencies. Nevertheless, the Navy continued production and in February 1987 contracted for the last of its total program quantity for the RWR. As of March 1987, the Navy had made no further operational testing of the RWR and thus bought its total program requirement, in our opinion, without assurance that its performance will be satisfactory.

The Navy started production of another RWR before beginning its operational testing. In two subsequent attempts to test the RWR, it performed so poorly that testing was curtailed. Nevertheless, the Navy has continued production and is installing the RWR in operational aircraft while its performance deficiencies remain unresolved.

Despite these experiences, the Air Force plans to start producing another RWR before completing its testing.

Recommendations

We recommend that the Secretary of Defense (1) select the best RWR, based on cost and effectiveness, for maximum common use on existing Air Force and Navy tactical aircraft and (2) stop those RWR programs that cannot be demonstrated as cost effective. To ensure selection of the best RWR, we also recommend that cost-effectiveness analyses performed should not be restricted to short-term cost, but should consider the life-cycle costs, including expected savings to result from commonality.

We further recommend that, until selection of the common RWR, the Secretary of Defense slow production and delay further contract awards for RWRs until operational tests provide reasonable assurance that their performance will be satisfactory.

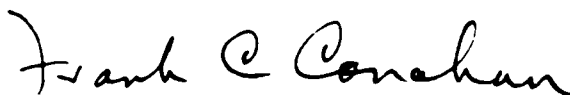
We reviewed the acquisition programs for those RWRs used in or planned for existing Air Force and Navy tactical aircraft. We examined program documents, directives, analyses, test reports, and other records bearing on the issues. We also discussed various aspects of our work with responsible DOD, Air Force, Navy, and contractor representatives. Our

review was performed in accordance with generally accepted government auditing standards from March to December 1986.

The head of a federal agency is required by 31 U.S.C. 720 to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Chairmen of the above Committees and the House and Senate Committees on Armed Services. Copies are also being sent to the Director, Office of Management and Budget.

Sincerely yours,

A handwritten signature in cursive script that reads "Frank C. Conahan".

Frank C. Conahan
Assistant Comptroller General

Testimony on Air Force and Navy Radar Warning Receiver Programs

GAO

United States General Accounting Office

Testimony

For Release on
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Air Force and Navy Radar Warning Receiver Programs

Statement of
Richard Davis
Associate Director
National Security and International Affairs Division

Before the
Legislation and National Security Subcommittee
of the
Committee on Government Operations
United States House of Representatives



GAO/T-NSIAD 87-31

Appendix I
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MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I AM PLEASED TO APPEAR BEFORE YOU TODAY TO DISCUSS OUR REVIEW OF THE AIR FORCE'S AND THE NAVY'S RADAR WARNING RECEIVER (RWR) PROGRAMS. IN A FEBRUARY 6, 1986, REQUEST, THE CHAIRMAN ASKED US TO REVIEW THE PROGRAMS TO DETERMINE WHETHER THEY WERE STRUCTURED TO ENHANCE COMMON-SERVICE USE. OUR REVIEW INCLUDED UPDATING INFORMATION ON THE ALR-74 RWR PROGRAM. THE ALR-74, FORMERLY KNOWN AS THE ALR 67/69, WAS THE SUBJECT OF HEARINGS BEFORE THIS SUBCOMMITTEE IN 1982. THAT HEARING ADDRESSED JOINT-SERVICE EFFORTS AND COMPLIANCE WITH CONGRESSIONAL AND THE DEPARTMENT OF DEFENSE (DOD) GUIDANCE ON ACHIEVING COMMONALITY IN RWR DEVELOPMENT.

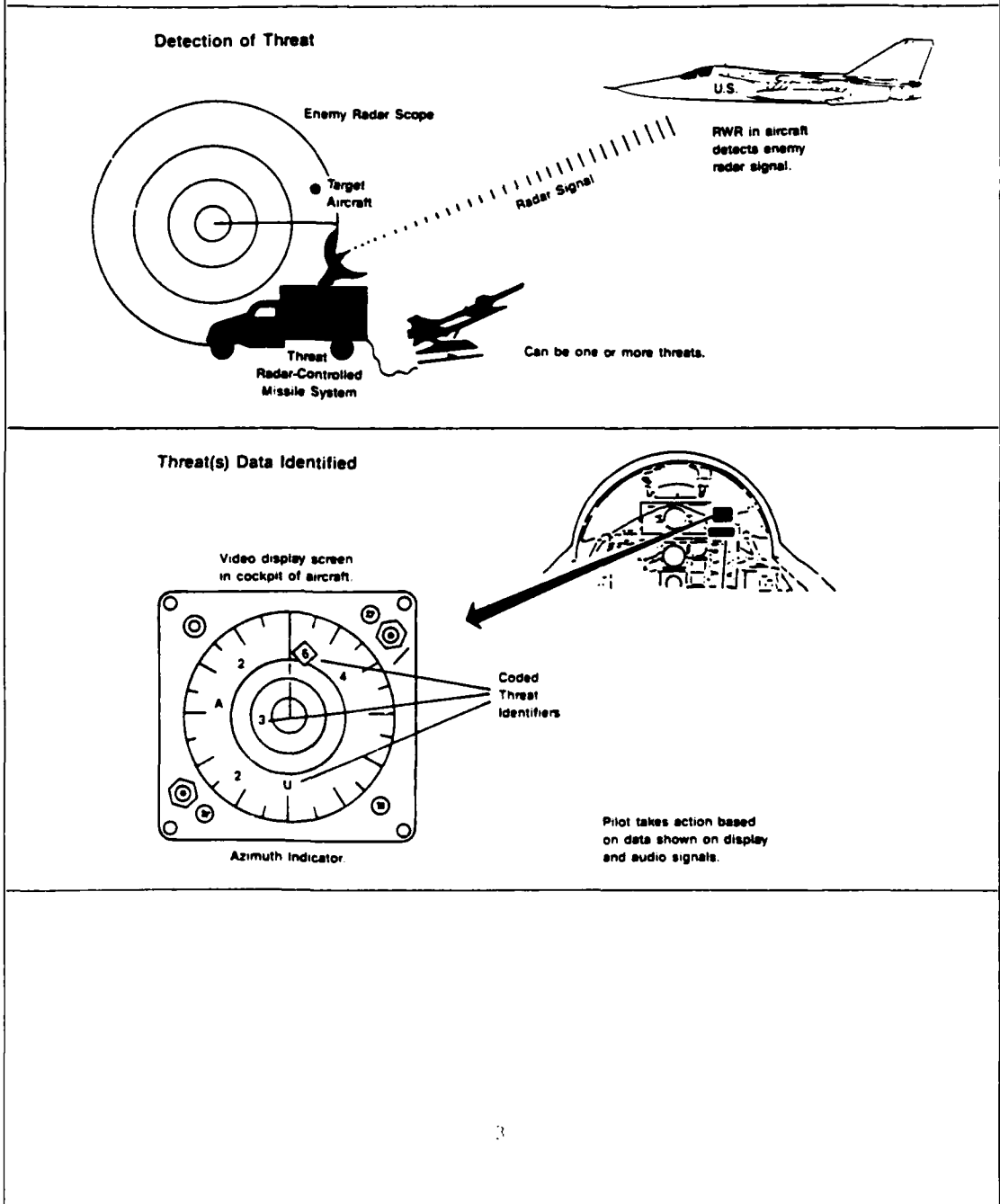
AS ALSO REQUESTED, WE EXAMINED (1) WHETHER DOD WAS FOLLOWING THE PRACTICE OF CONCURRENT TESTING AND PRODUCTION AND (2) WHETHER THE RWRs WERE COMBAT EFFECTIVE.

BACKGROUND

RWRs ARE USED IN MILITARY AIRCRAFT TO ALERT AIRCREWS THAT THEY HAVE BEEN DETECTED BY ENEMY RADAR-CONTROLLED WEAPONS. AS SHOWN IN FIGURE 1.1, RWRs ACCOMPLISH THIS BY SENSING THE SIGNALS FROM THREAT RADARS, PROVIDING AN AUDIO WARNING SIGNAL, AND DISPLAYING THE WARNING INFORMATION ON A VIDEO SCREEN IN THE AIRCRAFT COCKPIT. THE VIDEO DISPLAY AND AUDIO SIGNAL IDENTIFY THE THREATS, PROVIDE THEIR LOCATIONS OR RELATIVE BEARINGS, AND RANK THE THREATS IN ORDER OF DANGER TO THE AIRCRAFT.

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Figure 1.1:



BASED ON THE WARNING, THE PILOT CHOOSES FROM VARIOUS OPTIONS TO DEAL WITH THE THREATS SUCH AS MANEUVERING TO MAKE RADAR TRACKING MORE DIFFICULT OR EMPLOYING ELECTRONIC COUNTERMEASURES SUCH AS JAMMING.

CURRENTLY, THE AIR FORCE AND NAVY HAVE 13 DIFFERENT RWRs IN USE OR BEING ACQUIRED FOR TACTICAL AIRCRAFT. EXPENDITURES FOR THOSE STILL BEING DEVELOPED OR PRODUCED ARE EXPECTED TO EXCEED \$6.6 BILLION OVER THE NEXT FEW YEARS.

CONGRESSIONAL CONCERN FOR COMMONALITY

AS MEMBERS OF THIS SUBCOMMITTEE ARE AWARE, THE CONGRESS HAS FOR SOME TIME BEEN CONCERNED WITH THE NEED FOR REDUCING PROLIFERATION AND ACHIEVING COMMONALITY IN SERVICE PROGRAMS. CONGRESSIONAL COMMITTEES HAVE FREQUENTLY EMPHASIZED THE NEED TO AVOID DUPLICATION IN SERVICE PROGRAMS, IMPROVE THE READINESS OF OUR FORCES, AND REDUCE COSTS BY DEVELOPING SYSTEMS THAT COULD MEET INTERSERVICE NEEDS.

ON SEVERAL OCCASIONS, THIS SUBCOMMITTEE HAS VOICED ITS CONCERNS ABOUT THE LACK OF COMMONALITY IN ELECTRONIC WARFARE PROGRAMS. FOR EXAMPLE, IN 1985 FOLLOWING HEARINGS ON RADAR JAMMER PROGRAMS, THE SUBCOMMITTEE CONCLUDED THAT SOME PROGRAMS WERE CONTINUING A PATTERN OF UNWARRANTED PROLIFERATION AND RECOMMENDED ACTIONS TO FOSTER COMMONALITY.

ALR-74 (ALR-67/69) PROGRAM

THE CONGRESS HAS ALSO ATTEMPTED TO FOSTER COMMONALITY IN RWR PROGRAMS. AFTER ENCOURAGEMENT FROM THE HOUSE ARMED SERVICES COMMITTEE IN 1979, THE DOD EXPRESSED A COMMITMENT TO COMMONALITY AND ATTEMPTED TO ESTABLISH A JOINT NAVY AND AIR FORCE RWR PROGRAM BY MERGING THE NAVY'S ALR-67 WITH THE AIR FORCE'S ALR-69 (LATER DESIGNATED THE ALR-74).

MR. CHAIRMAN, AS YOU WILL RECALL, WE REVIEWED THE ATTEMPT TO MERGE THESE TWO PROGRAMS AND TESTIFIED IN RELATED HEARINGS BEFORE THIS SUBCOMMITTEE IN 1982. WE FOUND THAT THE AIR FORCE AND THE NAVY, CONTRARY TO DOD GUIDANCE, DID NOT COOPERATE AND CONTINUED THEIR SEPARATE PROGRAMS. FOR EXAMPLE, THE AIR FORCE ESTABLISHED A JOINT AIR FORCE AND NAVY ALR-74 PROGRAM OFFICE, AND THE NAVY ASSIGNED A REPRESENTATIVE TO THE OFFICE WHO NEVER REPORTED.

IN ADDITION, THE NAVY AND THE AIR FORCE DISAGREED ON THE BEST TECHNOLOGY FOR USE IN THE RWR AND ON THE PRECISE NATURE OF THE PROJECTED THREAT TO BE FACED BY THE RWR. DOD'S ATTEMPTS TO RESOLVE THESE ISSUES IMPEDING JOINT DEVELOPMENT OF THE ALR-74, WERE NOT SUCCESSFUL.

RECOMMENDATIONS

FOLLOWING THE 1982 HEARINGS ON THESE MATTERS, THE SUBCOMMITTEE AND GAO RECOMMENDED SEVERAL ACTIONS INTENDED TO CORRECT THE PROBLEMS.

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THE THRUST OF THE RECOMMENDATIONS TO THE SECRETARY OF DEFENSE IS SUMMARIZED ON THE FOLLOWING CHART.

COMMITTEE AND GAO RECOMMENDATIONS

- RECOMMIT TO DEVELOPMENT OF COMMON RWRs.
- STOP FUNDING AND WORK ON ALR-74 AND ALR-67 UNTIL A COMMON RWR IS AGREED TO.
- DEVELOP A COMMONALITY PLAN THAT WILL PROVIDE:
 - A MEMORANDUM OF AGREEMENT BETWEEN AIR FORCE AND NAVY AND A JOINT PROGRAM OFFICE,
 - AN ADVISORY GROUP TO RESOLVE DISAGREEMENTS ON THREAT AND THE BEST TECHNOLOGICAL APPROACH TO MEET IT, AND
 - A COMMON NEAR-TERM RWR AND JOINT PROGRAMS FOR FUTURE SYSTEMS.

STATUS OF 1982 RECOMMENDATIONS ON COMMONALITY

MR. CHAIRMAN, OUR CURRENT REVIEW SHOWED THAT THESE RECOMMENDATIONS HAVE NOT BEEN IMPLEMENTED. DOD HAS NOT ISSUED GUIDANCE TO THE AIR FORCE OR THE NAVY ADDRESSING THE RECOMMENDATIONS OR HOW THEY WOULD BE COMPLIED WITH.

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-- THE AIR FORCE AND THE NAVY HAVE CONTINUED THEIR SEPARATE ALR-74 AND ALR-67 PROGRAMS, RESPECTIVELY.

-- DOD HAS MADE NO FURTHER EFFORT TO ESTABLISH A JOINT PROGRAM OFFICE OR TO DEVELOP A PLAN FOR A COMMON, NEAR-TERM RWR.

-- AN ADVISORY GROUP TO RESOLVE DISPUTES HAS NOT BEEN ESTABLISHED, AND THE DISPUTE OVER TECHNOLOGY STILL LINGERS. THE AIR FORCE AND THE NAVY HAVE AGREED THAT THEY FACE A COMMON THREAT BUT USED DIFFERENT THREAT DENSITY INFORMATION WHEN DESIGNING THE ALR-74 AND THE ALR-67.

-- A PLAN FOR JOINT DEVELOPMENT AND ACHIEVING COMMONALITY HAS NOT BEEN PREPARED. A MEMORANDUM OF AGREEMENT FOR THE JOINT PROGRAM WAS COMPLETED IN LATE 1982 BUT IS OF NO CONSEQUENCE SINCE THE JOINT PROGRAM NEVER FORMED.

ON A POSITIVE NOTE, DOD SUPPORTS THE NEW INTEGRATED ELECTRONIC WARFARE SYSTEM, CALLED INEWS, AND RECOMMENDS THAT THE AIR FORCE THE NAVY, AND ARMY USE IT ON THE NEXT GENERATION AIRCRAFT. IF THE SERVICES COMPLY WITH DOD'S RECOMMENDATION, INEWS HAS SOME HOPE FOR ACHIEVING SOME COMMONALITY.

OTHER MISSED OPPORTUNITIES FOR COMMONALITY

NEVERTHELESS, INEWS WILL NOT SOLVE THE PROLIFERATION PROBLEM IN EXISTING AIR FORCE AND NAVY RWR PROGRAMS. THE ABSENCE OF COMMONALITY INDICATED BY THE ALR-67 AND THE ALR-74 PROGRAM EVENTS TELLS ONLY A SMALL PART OF THE STORY.

WE FOUND THAT THE AIR FORCE AND THE NAVY ARE ACQUIRING NINE DIFFERENT RWRs FOR EXISTING TACTICAL AIRCRAFT AT A COST EXPECTED TO EXCEED \$6.6 BILLION. AS INDICATED IN TABLE 1, NONE OF THE RWRs ARE COMMON TO BOTH AIR FORCE AND NAVY AIRCRAFT.

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Table 1: RWRs BEING ACQUIRED FOR EXISTING TACTICAL AIRCRAFT

<u>RWR</u>	<u>AIRCRAFT</u>	ESTIMATED COST (\$ MILLIONS)
AIR FORCE:		
ALR-56C	F-15	\$ 730.9
ALR-62I	F-111	457.9
ALR-69	F-16	137.0
ALR-69I	F-16, A-10, F-4	530.0 ^a
ALR-74/56M	F-16	<u>1,650.0^{a, b}</u>
TOTAL		<u>\$3,505.8</u>
NAVY:		
ALR-45F	F-4, RF-4B, A-4	166.3
	A-6, A-7E, AV-8C	
ALR-67	F/A-18, F-14, A-6E	1,623.3
	EA-6B, AV-8B	
ALR-67I	F/A-18, F-14, A-6E	<u>1,354.5</u>
	EA-6B, AV-8B	
		<u>3,144.1</u>
TOTAL		<u>\$6,649.9</u>

^aREPRESENTS AVERAGE ESTIMATED COST. THE AIR FORCE ESTIMATES THE COST OF THE ALR-69I TO RANGE FROM \$430 MILLION TO \$630 MILLION. THE COST OF THE ALR-74/ALR-56M IS ESTIMATED TO RANGE FROM \$1.3 BILLION TO \$2 BILLION.

^bTHE ALR-74 AND ALR-56M ARE BEING COMPETED FOR USE IN THE F-16.

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WE ALSO FOUND THAT, EXCEPT FOR THE ALR-69 AND ALR-45F PROGRAMS, ALL OF THE RWRs HAVE ENTERED DEVELOPMENT OR PRODUCTION SINCE THE 1982 HEARINGS. TO CREATE AND PERPETUATE EACH RWR PROGRAM REPRESENTS A MISSED OPPORTUNITY TO CAPITALIZE ON THE BENEFITS OF COMMONALITY. FOR EXAMPLE, A MISSED OPPORTUNITY TO CURTAIL PROLIFERATION WITHIN THE AIR FORCE OCCURRED IN 1982 WHEN THE F-15, F-16, AND F-111 AIRCRAFT WERE CONSIDERED TO NEED NEW RWRs.

AN EXCERPT FROM A LETTER TO THE AIR FORCE VICE CHIEF OF STAFF FROM THE COMMANDER OF WARNER ROBINS AIR LOGISTICS CENTER STATES THE BEST EXAMPLE OF THE OPPORTUNITY EXISTING NOW.

". . .REDUCING THE R&D [RESEARCH AND DEVELOPMENT], AS WELL AS INITIAL PRODUCTION COSTS, IS A MUST IN ORDER TO MAXIMIZE THE FUNDS AVAILABLE FOR CONTINUOUS AND EXPEDITED UPDATE. WE NEED TO STANDARDIZE ON A TACTICAL EW SUIT FOR FIGHTER AIRCRAFT. WHY HAVE A COMPLETELY DIFFERENT SUIT FOR THE F-111, F-15, AND THE F-16? WE SHOULD USE THE PLANNED F-16 SUIT OF THE ALR-74 RADAR WARNING RECEIVER AND THE ASPJ [AIRBORNE SELF PROTECTION JAMMER] IN BOTH THE F-111 AND THE F-15. THE ALR-56/ALQ-135 FOR THE F-15 AND THE ALR-62/ALQ-94/137 FOR THE F/FB-111 NEED MAJOR UPDATES. YES, THE GROUP 'A' MOD [AIRFRAME MODIFICATIONS] FOR BOTH WOULD BE MORE THAN UPDATING THE GROUP A FOR THE PRESENT SYSTEM; HOWEVER, R&D WOULD BE TO TEST THE SYSTEMS INSTEAD OF DEVELOPING TOTALLY NEW SYSTEMS. IN ADDITION, FUTURE UPDATES WOULD BE LESS EXPENSIVE, AS WELL AS

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THE SUPPORT WOULD BE GREATLY REDUCED. INSTEAD OF SIX DIFFERENT SYSTEMS TO SUPPORT, WE WOULD ONLY REQUIRE TWO WHICH MEANS CONTINUOUS UPDATES TO TWO SOFTWARE PROGRAMS INSTEAD OF SIX. . ."

DESPITE THIS ENCOURAGEMENT, SEPARATE DEVELOPMENTS WERE ALLOWED TO PROCEED.

WHY IS COMMONALITY DIFFICULT TO ACHIEVE?

THE MAIN PROBLEM IN ACHIEVING COMMONALITY SEEMS TO BE A PROCUREMENT PROCESS LED BY SERVICE PREFERENCES AND THE PERPETUAL UPDATING OF UNIQUE SYSTEMS. EACH SERVICE BELIEVES THAT ITS CONCEPT FOR A SYSTEM IS BEST AND WILL OPPOSE COMPROMISE OF ITS DESIGN OR PERFORMANCE GOALS. ONCE AN RWR HAS BEEN DEVELOPED, THE ONLY ALTERNATIVE SERIOUSLY CONSIDERED WHEN IMPROVEMENTS ARE NEEDED IS AN UPDATE OF THAT RWR OR A NEW SERVICE-UNIQUE SYSTEM.

THE SERVICE OFFICIALS' MAIN ARGUMENT AGAINST CHANGING TO A COMMON SYSTEM WAS THE COST OF SO CALLED GROUP A CHANGES. THESE CHANGES INVOLVE AIRCRAFT WIRING ADJUSTMENTS TO ACCOMMODATE A REPLACEMENT RWR. WE RECOGNIZE THAT AIRCRAFT WIRING CHANGES CAN BE COSTLY. BUT TO REJECT COMMONALITY BASED ON GROUP A COSTS WHILE IGNORING THE OFFSETTING COST BENEFITS OF COMMONALITY IS IMPROPER AND INCONSISTENT WITH DOD POLICY.

DOD's POLICY REQUIRES AN ECONOMIC ANALYSIS OF PROGRAM ALTERNATIVES BEFORE RESOURCE COMMITMENTS. SUCH AN ANALYSIS, IN OUR OPINION, SHOULD CONSIDER NOT ONLY THE COST OF GROUP A CHANGES, BUT ALSO THE POTENTIAL SAVINGS THAT COULD RESULT FROM A PROGRAM ALTERNATIVE ACHIEVING COMMONALITY. WE FOUND, HOWEVER, THAT THE SERVICE ANALYSES DONE IN JUSTIFYING THEIR RWR PROGRAMS DID NOT CONSIDER THE COST BENEFITS OF COMMONALITY.

MR. CHAIRMAN, ANOTHER WAY OF LOOKING AT THE MATTER IS THAT DOD HAS NOT EXERCISED ITS MANAGEMENT AUTHORITY TO OVERCOME THE OBSTACLES TO COMMONALITY, BUT ACQUIESCED TO THE SERVICES' INSISTENCE ON SEPARATE PROGRAMS.

WE BELIEVE THAT A COMMON RWR IS FEASIBLE. THE BASIC FUNCTION OF THE NUMEROUS SERVICE RWRs IS THE SAME, AND EACH FACES A COMMON THREAT. A COMMON RWR COULD BE DEVELOPED WITH REQUIRED INTERFACES, AND COULD BE USED ON THE DIFFERENT TACTICAL AIRCRAFT. SOME GOVERNMENT AND CONTRACTOR OFFICIALS WE SPOKE WITH SHARE OUR OPINION.

CONCURRENT TESTING AND PRODUCTION

AS WITH THE NEED FOR COMMONALITY, THE CONGRESS HAS ALSO EMPHASIZED THE IMPORTANCE OF ADEQUATE TESTING BEFORE DECISIONS ARE MADE TO PRODUCE DEFENSE SYSTEMS. TESTING IS NECESSARY TO PROVIDE REASONABLE ASSURANCE THAT SYSTEMS WILL MEET COMBAT REQUIREMENTS.

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AS YOU MAY RECALL, WE TESTIFIED BEFORE THIS SUBCOMMITTEE ON AIRCRAFT JAMMER PROBLEMS THAT RESULTED FROM STARTING PRODUCTION BEFORE ADEQUATELY TESTING THE SYSTEMS OR CONTINUING PRODUCTION DESPITE THE IDENTIFICATION OF SIGNIFICANT DEFICIENCIES. INADEQUATE TESTING BEFORE PRODUCTION CAN RESULT IN COSTLY RETROFIT PROGRAMS TO SOLVE THE PROBLEMS OR DEPLOYMENT OF UNSUITABLE EQUIPMENT TO OPERATIONAL FORCES. I MIGHT ADD, MR. CHAIRMAN, THAT DOD POLICY PROVIDES FOR OPERATIONAL TESTING TO ENSURE THAT ONLY EFFECTIVE AND SUITABLE SYSTEMS ARE DELIVERED TO OUR FORCES.

WE FOUND WIDESPREAD CONCURRENCY IN THE AIR FORCE AND THE NAVY RWR PROGRAMS. REGRETTABLY, THIS ACQUISITION STRATEGY ALREADY HAS RESULTED IN THE PURCHASE OF EQUIPMENT THAT CANNOT BE USED FOR ITS INTENDED PURPOSE, PRODUCTION OF RWRs THAT WERE PLACED IN BONDED STORAGE RATHER THAN INSTALLED, AND FINALLY, DEPLOYMENT OF RWRs JUDGED OPERATIONALLY UNSUITABLE TO U.S. COMBAT FORCES BY TESTING OFFICIALS.

THE EXTENT OF CONCURRENCY IN THE RWR PROGRAMS IS SHOWN IN TABLE 2.

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TABLE 2: RWR CONCURRENCY

	1981	1982	1983	1984	1985	1986	1987	1988
RWR-A:								
OT&E ^a				*-----*				
SUPPORT EQUIPMENT								
PRODUCTION	*-----*							
RWR-B:								
OT&E							*-----*	
PRODUCTION				*-----*				
RWR-C:								
OT&E	*-----*							
PRODUCTION		*-----*						
RWR-D:								
OT&E			*--*	*-----*		*-----*		
PRODUCTION				*-----*				
RWR-E:								
OT&E							*-----*	
PRODUCTION							*-----*	

^aOT&E REFERS TO OPERATIONAL TEST AND EVALUATION.

ON RWR A, THE AIR FORCE CONTRACTED FOR SYSTEM SUPPORT EQUIPMENT COSTING \$17.5 MILLION BEFORE THE RWR TESTING STARTED. THE TESTS REVEALED THAT THE RWR WAS DEFICIENT, AND ITS PRODUCTION WAS DEFERRED PENDING REDESIGN TO SOLVE THE PROBLEMS. THE SUPPORT EQUIPMENT CAN NO LONGER BE USED WITH THE REDESIGNED RWR AND AIR FORCE OFFICIALS ARE UNCERTAIN HOW IT WILL BE USED. THEY TOLD US THAT IT WILL MOST LIKELY BE USED AS "GENERIC" EQUIPMENT OR AS A SOURCE OF SPARE PARTS.

ON RWR B, THE AIR FORCE STARTED PRODUCTION BEFORE BEGINNING TESTING. SUBSEQUENT DEVELOPMENTAL TESTING SHOWED THAT THE RWR'S

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PERFORMANCE WAS WORSE THAN THAT OF THE RWR IT WAS INTENDED TO REPLACE.

THUS, THE AIR FORCE CONTINUED INSTALLING THE OLDER RWR IN PRODUCTION AIRCRAFT WHICH CAUSED A DRAWDOWN OF WARTIME RESERVES. MEANWHILE, THE AIR FORCE CONTINUED PRODUCTION OF RWR B ONLY TO PLACE IT IN BONDED STORAGE PENDING REDESIGN TO SOLVE THE PROBLEMS.

THE AIR FORCE HAS RECENTLY DECIDED TO BEGIN INSTALLING RWR B BECAUSE LIMITED TESTING HAS SHOWN ITS PERFORMANCE TO BE MARGINALLY BETTER THAN THAT OF THE RWR IT IS TO REPLACE. NEVERTHELESS, THE RELATED TEST REPORT STATED THAT RWR B IS STILL NOT CONSIDERED OPERATIONALLY SUITABLE.

THE NAVY STARTED PRODUCING RWR C WHILE TESTING WAS UNDERWAY. THE TESTING REVEALED SERIOUS DEFICIENCIES. THE TEST REPORT STATED, HOWEVER, THAT RWR C WAS POTENTIALLY EFFECTIVE AND RECOMMENDED THAT THE RWR BE REDESIGNED TO CORRECT THE PROBLEMS. IT ALSO RECOMMENDED THAT THE ADEQUACY OF THE CORRECTIONS BE VERIFIED IN ADDITIONAL TESTING. I MIGHT ADD AT THIS POINT, MR. CHAIRMAN, THAT DOD'S POLICY REQUIRES OPERATIONAL TESTING TO VERIFY THE EFFECTIVENESS AND SUITABILITY OF SYSTEMS FOR THEIR INTENDED USE.

NEVERTHELESS, THE NAVY CONTINUED PRODUCTION AND IN FEBRUARY 1987 CONTRACTED FOR THE LAST OF THE TOTAL PROGRAM QUANTITY OF RWR C.

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AS OF MARCH 1987, NO FURTHER OPERATIONAL TESTING OF RWR C HAD BEEN DONE. THUS, THE NAVY HAS BOUGHT ITS TOTAL PROGRAM REQUIREMENT FOR RWR C WITHOUT ADEQUATE ASSURANCE THAT THE RWR's PERFORMANCE WILL BE SATISFACTORY.

SIMILARLY, IN THE CASE OF RWR D, THE NAVY BEGAN PRODUCING BEFORE OPERATIONAL TESTING WAS STARTED. SUBSEQUENTLY, THE NAVY TRIED ON TWO OCCASIONS TO TEST RWR D TO EVALUATE ITS OPERATIONAL SUITABILITY. ON BOTH OCCASIONS, IT PERFORMED SO POORLY THAT TESTING WAS CURTAILED. THE LIMITED TESTING THAT WAS DONE INDICATED SERIOUS DEFICIENCIES.

MEANWHILE, PRODUCTION HAS CONTINUED WHILE RWR D's PROBLEMS REMAIN UNRESOLVED. YET, RWR D IS BEING INSTALLED IN OPERATIONAL AIRCRAFT.

FINALLY, I WOULD LIKE TO POINT OUT THAT DESPITE THE EXPERIENCES OF BOTH THE AIR FORCE AND NAVY, THE AIR FORCE CONTINUES TO FOLLOW THIS CONCEPT OF CONCURRENCY. AS INDICATED IN TABLE 2, THE AIR FORCE PLANS TO START PRODUCING RWR E BEFORE TESTING IS COMPLETED.

AS YOU WILL RECALL, MR. CHAIRMAN, WE FOUND CONCURRENCY PREVAILING IN AIR FORCE JAMMER PROGRAMS AND TESTIFIED BEFORE THIS SUBCOMMITTEE ABOUT RELATED IMPACTS. THIS ACQUISITION STRATEGY APPEARS TO BE BASED ON THE SERVICES' PERCEIVED NEED TO FIELD IMPROVED SYSTEMS URGENTLY. WHILE WE DO NOT CHALLENGE THIS NEED,

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THE SERVICES SEEM READY TO DISCOUNT THE RISKS OF THE MANY ADVERSE CONSEQUENCES INHERENT IN SUCH AN APPROACH. BASED ON OUR REVIEW OF THE RWR PROGRAMS, ONE OUTCOME OF THIS APPROACH HAS BEEN TO SPEED THE ACQUISITION OF DEFICIENT OR UNPROVEN SYSTEMS. FOR EXAMPLE, HASTENING THE PRODUCTION OF A SYSTEM ONLY TO PUT IT IN STORAGE PENDING FIXES DOES NOT ENHANCE OUR COMBAT POSTURE.

RECOMMENDATIONS

WE RECOMMEND THAT THE SECRETARY OF DEFENSE (1) SELECT THE BEST RWR, BASED ON COST AND EFFECTIVENESS, FOR MAXIMUM COMMON USE ON EXISTING AIR FORCE AND NAVY TACTICAL AIRCRAFT AND (2) STOP THOSE RWR PROGRAMS THAT CANNOT BE DEMONSTRATED AS COST-EFFECTIVE. TO ASSURE SELECTION OF THE BEST RWR, WE FURTHER RECOMMEND THAT COST-EFFECTIVENESS ANALYSES PERFORMED SHOULD NOT BE RESTRICTED TO SHORT-TERM COST, SUCH AS THE COST OF AIRCRAFT GROUP A CHANGES, BUT SHOULD CONSIDER THE LIFE-CYCLE COST OF THE ALTERNATIVES, INCLUDING EXPECTED SAVINGS TO RESULT FROM COMMONALITY.

WE ALSO RECOMMEND THAT UNTIL SELECTION OF THE COMMON RWR, THE SECRETARY OF DEFENSE SHOULD SLOW PRODUCTION AND DELAY FURTHER CONTRACT AWARDS FOR RWRs UNTIL OPERATIONAL TESTS PROVIDE REASONABLE ASSURANCE THAT THEIR PERFORMANCE WILL BE SATISFACTORY.

Appendix I
Testimony on Air Force and Navy Radar
Warning Receiver Programs

EFFECTIVENESS

AS REQUESTED, WE ALSO EXAMINED THE COMBAT EFFECTIVENESS OF THE RWRs. HOWEVER, THE RESULTS OF THIS PART OF OUR REVIEW ARE CLASSIFIED. WE PLAN TO ISSUE A SEPARATE REPORT TO YOU ON THIS MATTER.

MR. CHAIRMAN, THIS CONCLUDES MY TESTIMONY. I WOULD BE PLEASED TO ANSWER ANY QUESTIONS YOU OR MEMBERS OF THE SUBCOMMITTEE MAY HAVE.

END

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