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1983

DEFENSE SCIENCE BOARD

SUMMER STUDY BRIEFING REPORT

FOR

JOINT SERVICE

ACQUISITION PROGRAMS

1-12 AUGUST 1983

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1983
DEFENSE SCIENCE BOARD
SUMMER STUDY
BRIEFING REPORT
FOR
JOINT SERVICE ACQUISITION PROGRAMS

1-12 August 1983

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CHAIRMAN
DEFENSE SCIENCE BOARD

DR. EUGENE G. FUBINI
VICE CHAIRMAN
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FOREWORD

The Defense Science Board held its 1983 Summer Study at the Naval Ocean Systems Center, San Diego, California, from 1 to 12 August 1983. The Summer Study addressed three topics, (1) Joint Service Acquisition Programs, (2) NATO TACAIR Ground Survivability, and (3) Conventional Munitions and the Nuclear Threshold.

The final briefing of the Summer Study was presented on 12 August 1983 to Dr. Richard D. DeLauer, Under Secretary of Defense for Research and Engineering, and other high level representatives from OSD and the Military Departments. The briefing was repeated in the Pentagon on 27 August 1983.

Attached for your information is a copy of the final briefing charts presenting the conclusions and recommendations for Joint Service Acquisition Programs. Also included is a copy of the Terms of Reference establishing the Study and the panel membership list. A final report, including supporting text, will be published on this Study in the future. In the meantime, the briefing charts may prove useful to you.

If you have any questions, or need more detailed information than is contained in the briefing charts prior to receiving the final report, please contact the Executive Secretary of the Joint Service Acquisition Programs Study.


Paul J. Berenson
Executive Officer
Defense Science Board

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THE SECRETARY OF DEFENSE

WASHINGTON, THE DISTRICT OF COLUMBIA

5 JUL 1983

Dear Summer Study Participant:

Welcome to the Defense Science Board's 1983 Summer Study.

The three topics to be pursued this year were selected because of their importance to national security and the likelihood in each instance that near-term actions may be appropriate.

The topic of Joint Service Acquisition Programs is based on the need to make best use of our research, development and acquisition funds to meet the increasing threat. Some believe that joint Service acquisition programs are a way to achieve these economies without loss of system performance. However, our track record with such joint efforts has not been good. Your recommendations on how and when to use joint projects will be extremely valuable.

The subject of Conventional Munitions & the Nuclear Threshold is of particular interest to the Military Services, who have identified insufficient conventional warhead lethality as a critical problem; and we may be behind the Soviets in this area. Compounding the problem is the slow pace of transition of munitions into the inventory in adequate quantity. Your recommendations will be of considerable help in the efforts of the recently established Munitions Office and Board.

Finally, Ground Survivability of NATO Tactical Aircraft/Air Bases is of critical importance to the conduct of air operations in support of the air/land battle in Europe. The increasing threat to NATO air bases requires a fresh look at this problem and recommendations for improving survivability.

Your willingness to contribute your time in support of the study of these topics is very much appreciated. Best wishes for a successful undertaking, and I look forward to your recommendations for specific actions.

Sincerely,

A handwritten signature in cursive script, reading "Stephen H. Kuntz", is written over the typed name "Stephen H. Kuntz".

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JOINT SERVICE ACQUISITION PROGRAMS

CHAIRMAN:

ADM ISAAC C. KIDD, JR., USN (RET)

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THE UNDER SECRETARY OF DEFENSE

WASHINGTON DC 20301

18 MAY 1983

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD *Norm*

SUBJECT: Defense Science Board Summer Study: Management of
Joint-Service Acquisition Programs

You are requested to undertake a Summer Study to determine what needs to be done to achieve successful joint-Service acquisition programs.

There is a tendency toward increasing the number of joint acquisition programs. There are a number of reasons for this including growing requirements for increased joint-Service warfighting and the need to preclude redundant acquisition efforts among the Services. Although joint programs are intended to rationalize requirements, experience has shown, however, that many have been extremely difficult to manage, and, for a variety of reasons, have not been successful. Nonetheless, it is anticipated that the need for joint-Service acquisition programs will continue.

This Summer Study should examine joint acquisition programs and make recommendations on how the OSD, JCS, and the Services might formulate and execute them more effectively. The study scope should include, but not be limited to, the following:

1. Examining past and present joint programs (successes as well as failures), and ascertaining why the examined programs succeeded or failed. What factors uniquely contributed to joint program success and problems?
2. Recommending changes, if necessary, in our procedures to increase the motivation for Service support of joint programs. What incentive, management and other changes would improve the effectiveness of executing joint acquisition programs?

I am sponsoring this Summer Study. Admiral Isaac C. Kidd, Jr., USN (Ret.) has agreed to serve as Chairman, and Mr. John Smith, OUSDRE/AM, will be the Executive Secretary. Dr. Ralph E. Chatham, LCDR, USN, will be the DSB Secretariat representative. It is not anticipated that your inquiry will need to go into any "particular matters" within the meaning of Section 208 of Title 18, United States Code.

Isaac C. Kidd, Jr.
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DSB 1983 Summer Study
on
JOINT SERVICES ACQUISITION PROGRAMS

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- WE WERE TASKED TO ASSUME THAT THERE WILL BE AN INCREASING NUMBER OF JOINT PROGRAMS BECAUSE OF:
 - INCREASING REQUIREMENTS AND DEMANDS FOR MORE JOINT WARFIGHTING.
 - A NEED TO PRECLUDE REDUNDANT ACQUISITION EFFORTS - IN OTHER WORDS - SAVE MONEY.
 - AND BECAUSE NEW TECHNOLOGY DOES NOT RESPECT TRADITIONAL SERVICE BOUNDARIES (E.G., SPACE).
- ALSO, WE WERE ASKED TO RECOMMEND HOW THE JCS, THE SERVICES AND THE OSD MIGHT FORMULATE AND EXECUTE THEM MORE EFFECTIVELY.
- FINALLY, ONE OF THE REASONS WE ARE HERE IS TO ALLAY RECENTLY EXPRESSED CONGRESSIONAL CONCERNS ABOUT JOINT ACQUISITION PROGRAMS. THE CONCERNS HAVE INCLUDED THE FOLLOWING:
 - PAST JOINT PROGRAMS HAVE OFTEN FAILED, DUE TO MANY REASONS, AND
 - OPERATIONAL NEEDS AND BUDGETARY RESTRAINTS WILL RESULT IN MORE JOINT PROGRAMS IN THE FUTURE.

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TERMS OF REFERENCE
USDRE MEMO OF 18 MAY 1983

BACKGROUND:

- INCREASING NUMBER OF JOINT PROGRAMS
- EXTREMELY DIFFICULT TO MANAGE
- NEED FOR JOINT PROGRAMS WILL CONTINUE
 - JOINT WARFIGHTING
 - SAVE MONEY
 - NEW TECHNOLOGY

UNDERTAKE SUMMER STUDY TO:

- EXAMINE PAST AND PRESENT JOINT PROGRAMS
 - ASCERTAIN WHY SUCCESS OR FAILURE
 - RECOMMEND CHANGES TO INCREASE MOTIVATION FOR SERVICE SUPPORT
 - IDENTIFY INCENTIVES TO IMPROVE EFFECTIVENESS OF JOINT PROGRAMS
-

ALSO:

- ALLAY CONGRESSIONAL CONCERNS

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- THE PANEL APPROACHED THE JOINT ACQUISITION ISSUE WITH AN OPEN MIND. WE HEARD THE CRITICS SAYING THAT "PAROCHIALISM" AND THE "NOT INVENTED HERE" SYNDROME CAUSED THE PROBLEMS WITH JOINT PROGRAMS. WE INTUITIVELY FELT THERE WERE A WHOLE HOST OF OTHER ISSUES THAT NEEDED HIGHLIGHTING.
- TO INVESTIGATE THIS, THE PANEL ESTABLISHED FOUR SUBPANELS TO DIVIDE THE STUDY INTO COMPONENT PARTS. THE POLICY PANEL STUDIED CROSS-CUTTING ISSUES AND POLICY GUIDANCE, THE R&D PANEL EXAMINED JOINTNESS IN SCIENCE AND TECHNOLOGY, DEVELOPMENT AND TECHNOLOGY PUSH PROGRAMS, WHILE THE PRODUCTION PANEL LOOKED AT THE JOINT BENEFITS OF PRODUCTION PROGRAMS AND THE MANAGEMENT ISSUE. ALSO, BILL DEPUY'S PANEL LOOKED AT THE FRONT END REQUIREMENTS PROCESS TO ENSURE THAT KEY ISSUES ARE ADDRESSED BEFORE A PROGRAM STARTS.
- FINALLY, WE DID NOT FIND ANY SUBSTANTIAL ISSUES PECULIAR TO JOINT ACQUISITION PROGRAMS IN THE TESTING ARENA. JOINT OPERATIONAL TESTING WAS NOT REVIEWED AS AN ISSUE.
- TODAY FOR OUR AGENDA I WILL INTRODUCE THE REPORT AND TALK TO THE MAJOR POLICY ISSUES. BILL DEPUY WILL FOLLOW WITH THE REQUIREMENTS AND MANAGEMENT PROCESS. OUR CHAIRMAN, IKE KIDD, WILL SUMMARIZE THE R&D AND PRODUCTION ISSUES AND CONCLUDE OUR REPORT.

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SUB-PANELS

POLICY

MR. VINCENT COOK

R&D

MR. CHARLES A. FOWLER

MANAGEMENT, LOGISTICS AND PRODUCTION

MR. NICHOLAS PETROU

REQUIREMENTS

GENERAL WILLIAM DEPUY (RET.)

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- BEFORE THE PANEL STARTED FOCUSING ON SOLUTIONS AND RECOMMENDATIONS, WE HEARD FROM PEOPLE REPRESENTING VARIOUS POINTS OF VIEW AND REVIEWED RELEVANT CASE STUDIES AND REPORTS. THIS CHART SUMMARIZES OUR DATA BASE. IN SUMMARY, WE WERE BRIEFED BY THE GAO, OSD, THE SERVICES, CONGRESSIONAL STAFF, JCS, JLC, INDUSTRY, NUMEROUS PROGRAM MANAGERS AND SOME SENIOR OSD PAST MEMBERS.

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PANEL DATA BASE

WE HAVE:

- BEEN BRIEFED BY
GAO ARMY USMC
OSD NAVY CONGRESSIONAL STAFF
DARPA AIR FORCE JCS
- LISTENED TO THE JLCs, INDUSTRY AND OVER 20 SERVICE PROGRAM MANAGERS
- STUDIED DETAILED QUESTIONNAIRES
FOUR SERVICES: 64 JOINT PROGRAMS
OSD (USDRE): 40 JOINT PROGRAMS
- REVIEWED CASE STUDIES: 64 IN GENERAL
15 DETAILED ANALYSES
- CONSTRUCTED LIBRARY/REVIEWED OVER 20 REPORTS RELEVANT TO JOINT
PROGRAMS

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- BEFORE GOING ON TO DISCUSS OUR KEY ISSUES AND FINDINGS, I'D LIKE TO SPEND A MINUTE DESCRIBING HOW WE DEFINED "JOINT PROGRAMS." SIMPLY STATED, WE CONSIDERED PROGRAMS JOINT IF:

- TWO OR MORE SERVICES OR
- SERVICE PLUS ANOTHER DoD COMPONENT (LIKE DARPA)

JOINED FORCES BY JOINTLY DEVELOPING AND/OR PROCURING A MAJOR, LESS THAN MAJOR SYSTEM OR SUBSYSTEM/COMPONENT.

- THIS JOINING OF FORCES COULD OCCUR IN ANY OR ALL PHASES OF THE LIFE CYCLE.
- IT SHOULD BE NOTED THAT WE DID NOT EXAMINE INTERNATIONAL PROGRAMS ISSUES OR PROGRAMS THAT ARE JOINT BETWEEN DoD AND ANOTHER GOVERNMENT AGENCY ALTHOUGH WE WERE ABLE TO GLEAN SOME "LESSONS LEARNED" FROM THESE PROGRAMS AS THEY APPLIED TO JOINT DoD PROGRAMS.

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DEFINITIONS/SCOPE

- CONSIDERED PROGRAM "JOINT" IF:
 - TWO OR MORE SERVICES
 - SERVICE PLUS OTHER DOD COMPONENT
- EXAMINED MAJOR (DSARC), NON-MAJOR SYSTEMS, SUBSYSTEM/
COMPONENT, AND S&T PROGRAMS
- "JOINTNESS" COULD OCCUR IN ANY OR ALL PHASES:
 - CONCEPT EXPLORATION
 - DEMONSTRATION AND VALIDATION
 - FULL SCALE DEVELOPMENT
 - PRODUCTION AND DEPLOYMENT
- DID NOT STUDY INTERNATIONAL PROGRAM ISSUES

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- AS A POLICY ISSUE, ONE OF THE INITIAL QUESTIONS WE ASKED OURSELVES WAS WHAT "IS" THE PROBLEM?
- TO LISTEN TO SOME ONE WHO WOULD THINK THAT THERE HAVE BEEN NO SUCCESSSES. THE GAO, IN ITS RECENT DRAFT REPORT WENT AS FAR AS TO SAY THAT THERE HAVE BEEN "NO SUCCESSFUL" JOINT PROGRAMS. HOWEVER, THEY ONLY EXAMINED A LIMITED NUMBER (15) OF MAJOR AND NON-MAJOR DEVELOPMENT PROGRAMS; SECONDLY, MOST OF THE SELECTED CASE STUDIES (F-111, CRUISE MISSILE, J VX) WERE, OR ARE, PROBLEM PROGRAMS WITH TROUBLES STEMMING USUALLY FROM REAL DOCTRINAL AND REQUIREMENTS DIFFERENCES.
- THE STUDY PANEL APPOINTED A WORKING GROUP TO REVIEW "ALL" JOINT PROGRAMS WE COULD IDENTIFY TO DETERMINE THE "RELATIVE" DEGREE OF SUCCESS OR FAILURE OF SUCH PROGRAMS.

THE PANEL IDENTIFIED SOME SIXTY-FOUR PROGRAMS FOR THE WORKING GROUP. THEY RANGED FROM S&T EFFORTS TO PRODUCTION. THE WORKING GROUP USED A SUCCESS/FAILURE CRITERIA CONSISTING OF:

- OVER 50% COMMONALITY
- SYSTEM/COMPONENTS FIELDIED IN LARGE NUMBERS
- GOALS ACHIEVED WITHOUT MAJOR (I.E., OVER TWO YEARS) SCHEDULE SLIPPAGES

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QUESTION: ARE PROBLEMS ASSOCIATED WITH THE INITIATION, PROSECUTION, AND TERMINATION OF JOINT SERVICE PROGRAMS:

- A. GENERIC TO THE CLASS?
- B. APPLICABLE ONLY TO CERTAIN TYPES?
- C. APPLICABLE ON A CASE-BY-CASE BASIS?

BACKGROUND:

- GAO REPORT CITES "NO SUCCESSFUL JOINT PROGRAMS."
- 64 JOINT PROGRAMS EXAMINED. MORE "SUCCESSSES" THAN "FAILURES"
- NON-MAJOR PROGRAMS AND SCIENCE AND TECHNOLOGY HAVE LESS PROBLEMS THAN MAJOR END ITEM DEVELOPMENT PROGRAMS.
- JOINT PROGRAMS WITH PROBLEMS CAN BE TRACED TO:
 - NO INITIAL CONVERGENCE ON REQUIREMENTS
 - SHIFTING SERVICE PRIORITIES/FUNDING INSTABILITIES
 - AD HOC ENVIRONMENT

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- USING THESE CRITERIA, WE DETERMINED THAT OVER TWO-THIRDS OF THE PROGRAMS WERE "SUCCESSSES" OR HAD GOOD PROSPECTS FOR SUCCESS AT THE CURRENT TIME.
- IN THE GROUP OF SIXTY-FOUR, APPROXIMATELY TWO-THIRDS WERE EITHER NON-MAJOR SYSTEMS, SUBSYSTEMS AND COMPONENTS OR TECHNOLOGY PROGRAMS. MOSTLY, THESE TYPES OF JOINT PROGRAMS, ALTHOUGH NOT HIGHLY PUBLICIZED, PROCEED REASONABLY SMOOTHLY, AND ARE USUALLY STARTED BY THE SERVICES. THE HIGH DEGREE OF SUCCESS ON THESE PROGRAMS STEMS PRIMARILY FROM THE FACT THAT:
 1. THE FRONT END WORK IS ADEQUATELY DONE
 2. THE SERVICES AGREED ON THE APPROACH
- WE DID FIND, HOWEVER, THAT JOINT DEVELOPMENT PROGRAMS DO NOT ALWAYS PROCEED SMOOTHLY, BUT THERE IS NO SINGLE CAUSE OF PROBLEMS OR FAILURE. WE FOUND THE FOLLOWING TO BE PRINCIPAL CAUSES:
 1. NO INITIAL AGREEMENT AMONG SERVICES OR WITH OSD/CONGRESS ON REQUIREMENTS AND DOCTRINE;
 2. SHIFT IN SERVICE PRIORITIES DUE TO CHANGING BUDGETS AND PERCEIVED THREATS; AND
 3. AD HOC ENVIRONMENT TO SELECT EXECUTIVE SERVICE, MANAGEMENT, AND THE REVIEW PROCESS.

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QUESTION: ARE PROBLEMS ASSOCIATED WITH THE INITIATION, PROSECUTION, AND TERMINATION OF JOINT SERVICE PROGRAMS:

- A. GENERIC TO THE CLASS?
- B. APPLICABLE ONLY TO CERTAIN TYPES?
- C. APPLICABLE ON A CASE-BY-CASE BASIS?

BACKGROUND:

- GAO REPORT CITES "NO SUCCESSFUL JOINT PROGRAMS."
- 64 JOINT PROGRAMS EXAMINED. MORE "SUCCESSSES" THAN "FAILURES"
- NON-MAJOR PROGRAMS AND SCIENCE AND TECHNOLOGY HAVE LESS PROBLEMS THAN MAJOR END ITEM DEVELOPMENT PROGRAMS.
- JOINT PROGRAMS WITH PROBLEMS CAN BE TRACED TO:
 - NO INITIAL CONVERGENCE ON REQUIREMENTS
 - SHIFTING SERVICE PRIORITIES/FUNDING INSTABILITIES
 - AD HOC ENVIRONMENT

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CONCLUSIONS:

FROM THE DISCUSSION ABOVE WE DREW THE FOLLOWING CONCLUSIONS:

- THERE HAVE BEEN MANY SUCCESSFUL JOINT PROGRAMS WITH PROSPECTS FAVORABLE FOR SEVERAL CURRENT JOINT PROGRAMS.
- WHILE CERTAIN TYPES OF JOINT PROGRAMS ARE MORE DIFFICULT TO MANAGE THAN THEIR SINGLE SERVICE ALTERNATIVES, THERE ARE NO PROBLEMS THAT APPLY TO ALL JOINT PROGRAMS.
- JOINT DEVELOPMENT PROGRAMS CAN, AND DO HAVE PROBLEMS, BUT THESE PROBLEMS ARE NOT GENERIC PROBLEMS.
- LACK OF A FORMAL SYSTEM RESULTS IN PROGRAMS BEING STARTED ON AN AD HOC BASIS. IN THIS ENVIRONMENT THE MAJOR PROBLEMS ARE:
 - FAILURE TO ADEQUATELY INVOKE THE JOINT REQUIREMENTS AND MANAGEMENT PROCESS.
 - SHIFTING PRIORITIES DUE TO CHANGING BUDGETS AND/OR PERCEIVED THREATS THAT LEAD TO TURBULENCE IN PROGRAMS.
- FINALLY, WE BELIEVE THE AD HOC ENVIRONMENT LEADS TO CONFUSION AND MISSED OPPORTUNITIES.

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CONCLUSIONS:

- "SUCCESSFUL" JOINT PROGRAMS OUTNUMBER FAILURES. LARGE DEVELOPMENT PROGRAMS MORE PRONE TO PROBLEMS, BUT ON A CASE-BY-CASE BASIS.
- NO UNIQUE PROBLEMS ENDEMIC TO ALL JOINT PROGRAMS; CERTAIN CLASSES/PROGRAMS EXPERIENCE SOME UNIQUE PROBLEMS.
- AD HOC ENVIRONMENT RESULTS IN PROBLEMS THAT CAN BE TRACED TO:
 - FAILURE TO ADEQUATELY ADDRESS THE JOINT REQUIREMENTS AND MANAGEMENT PRIOR TO PROGRAM INSTITUTION
 - FUNDING INSTABILITY/SHIFT IN SERVICE PRIORITIES
- MISSED JOINT PROGRAM OPPORTUNITIES

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AS A SECOND POLICY ISSUE, WE GRAPPLED WITH THE QUESTION OF WHETHER IT MADE SENSE TO ESTABLISH A PROCEDURE OR ORGANIZATION TO EVALUATE AND SELECT CANDIDATES FOR JOINT PROGRAMS.

- AS NOTED PREVIOUSLY, VIRTUALLY ALL INSTANCES OF FAILURES IN JOINT PROGRAMS STEMMED FROM THE FACT THAT LITTLE OR NO ATTENTION WAS PAID TO THE EARLY REQUIREMENTS AND MANAGEMENT WORK SO NECESSARY TO ESTABLISH A FIRM FOUNDATION FOR A SUCCESSFUL PROGRAM. EITHER THE PROSPECTIVE PARTIES WERE NOT CONSULTED ON COMMON REQUIREMENTS OR THE RELATIVE PRIORITIES OF THE PARTNERS WERE SUFFICIENTLY DIVERGENT THAT FUTURE PROBLEMS WERE VIRTUALLY INESCAPABLE. THESE DEFICIENCIES GENERALLY RESULTED FROM THE AD HOC MANNER IN WHICH THE DECISION WAS MADE TO EMBARK UPON A JOINT PROGRAM.
- OUR STUDY REVEALED THAT LITTLE OR NO FORMAL POLICY OR DIRECTION EXISTS. DoD DIRECTIVES 5000.1 AND 5000.2, WHICH PROVIDE POLICY AND IMPLEMENTATION INSTRUCTIONS FOR DoD SYSTEM ACQUISITION, PROVIDE NO SPECIFIC IMPLEMENTATION GUIDANCE FOR JOINT PROGRAM ACQUISITIONS.
- GUIDANCE WHICH DOES EXIST IS PUBLISHED IN A MANUAL SPONSORED BY THE JOINT LOGISTICS COMMANDERS, HOWEVER, THIS GUIDANCE IS NOT DIRECTIVE UPON THE SERVICES.
- POLICY, DIRECTION, GUIDANCE, AND REGULATIONS EXIST, FOR EVERY ASPECT OF SYSTEM ACQUISITION FOR SINGLE SERVICE PROGRAMS.
- FINALLY, CONGRESSIONAL LACK OF CONFIDENCE IN THE ABILITY OF THE DEPARTMENT OF DEFENSE TO IMPLEMENT AND MANAGE JOINT PROGRAMS, SEEMS TO DEMAND SOME CHANGE IN THE WAY WE APPROACH THIS ASPECT OF OUR BUSINESS. AS A FOOTNOTE, A LARGE NUMBER OF THE PROGRAMS WE ANALYZED, ARE OR WERE SCRUTINIZED IN A DETAILED FASHION BY CONGRESS.

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ISSUE:

SHOULD A PROCEDURE OR ORGANIZATION BE ESTABLISHED, USING EXISTING ENTITIES, THAT WOULD PROVIDE A FRAMEWORK FOR A SYSTEMATIC AND FORMAL PROCESS TO EVALUATE CANDIDATES, SELECT JOINT PROGRAMS, AND RESOLVE DISPUTES AFTER PROGRAM INITIATION?

BACKGROUND:

- CURRENT ENVIRONMENT IS AD HOC.
- LITTLE FORMAL POLICY OR IMPLEMENTATION GUIDANCE/DIRECTION.
- JOINT LOGISTICS COMMANDERS - SOME POLICY GUIDANCE.
- SINGLE SERVICE PROGRAMS HAVE ESTABLISHED MECHANISMS.
- CONGRESSIONAL SKEPTICISM.

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WE CONCLUDED:

- FIRST, THAT THE AD HOC MANNER IN WHICH JOINT PROGRAMS ARE INITIATED IS NOT CONSISTENT WITH SOUND, STABLE PROGRAMS; AND
- SECOND, THAT A FORMAL, INSTITUTIONALIZED PROCESS SHOULD BE ESTABLISHED BY WHICH THE JCS AND SERVICES CAN SYSTEMATICALLY EVALUATE REQUIREMENTS, PROGRAMS, AND TECHNOLOGY TO IDENTIFY CANDIDATES WITH THE "PREREQUISITES" FOR SUCCESS; AND TO RESOLVE DISPUTES AMONG THE PARTNERS ONCE A JOINT PROGRAM IS UNDERWAY.
- THEREFORE, WE RECOMMEND THAT THE SECRETARY OF DEFENSE MODIFY THE FIVE THOUSAND SERIES DIRECTIVES TO INSTITUTIONALIZE THE "REQUIREMENTS AND MANAGEMENT" PROCESS. THIS PROCESS WILL BE DISCUSSED LATER, BUT WE WANT TO FOCUS NOW ON AN INSTRUMENT BY WHICH THE PROCESS CAN BE EXECUTED.
- WE RECOMMEND THAT A PERMANENT, FORMALLY CHARTERED BOARD BE ESTABLISHED, ONE WE CALL THE "JOINT REQUIREMENTS AND MANAGEMENT BOARD." THIS WOULD BE THE "CLEARING HOUSE" FOR POTENTIAL JOINT PROGRAMS. THE BOARD WOULD ALSO SPONSOR SUFFICIENT REQUIREMENTS AND MANAGEMENT ANALYSES TO FEEL CONFIDENT THAT THE PROPOSED PROGRAMS CAN SUCCEED, AND WOULD RESOLVE ANY DISPUTES ON SPONSORED PROGRAMS THAT ARISE ONCE THE JOINT PROGRAM IS UNDERWAY.

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CONCLUSIONS:

- AD HOC ENVIRONMENT NOT CONDUCTIVE TO STABILITY
- MORE FORMALIZED, INSTITUTIONALIZED PROCESS NECESSARY TO INSURE JCS AND SERVICE INVOLVEMENT

RECOMMENDATIONS:

- SECDEF INSTITUTIONALIZE PROCESS IN FORMAL DIRECTIVE
- ESTABLISH "JOINT REQUIREMENTS AND MANAGEMENT BOARD"
 - JOINT REQUIREMENTS AND MANAGEMENT
 - DISPUTE RESOLUTION
- HIGH LEVEL SERVICE/JCS COMPOSITION (E.G., VICE CHIEFS, DIRECTOR OF JOINT STAFF), ROTATING CHAIR
- PERMANENT SMALL JOINT SECRETARIAT
- ANALYSIS/STUDY SUPPORT FROM EXISTING INSTITUTIONS
- ANNUAL REPORT TO CONGRESS

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- WE BELIEVE THAT TO BE SUCCESSFUL, THE COMPOSITION OF THE BOARD MUST MEET TWO CRITERIA: FIRST, IT MUST BE COMPRISED OF OFFICIALS FROM AGENCIES RESPONSIBLE FOR DEFINING REQUIREMENTS AND DEVELOPING WEAPONS SYSTEMS, NAMELY JCS AND THE SERVICES; SECOND, THE BOARD MUST BE OF SUFFICIENTLY HIGH LEVEL TO ASSURE THAT DECISIONS CAN BE IMPLEMENTED. WE RECOMMEND THAT THE BOARD MEMBERSHIP CONSIST OF THE VICE CHIEFS OF THE FOUR SERVICES AND THE DIRECTOR OF THE JOINT STAFF. CHAIRMANSHIP OF THE BOARD COULD ROTATE AS IS DONE IN THE JOINT LOGISTICS COMMANDERS.
- THE BOARD SHOULD HAVE A SMALL PERMANENT JOINT SECRETARIAT TO SCREEN PROGRAMS AND ESTABLISH THE BOARD AGENDA. PARENTHETICALLY, IF THIS ORGANIZATIONAL STRUCTURE SOUNDS FAMILIAR, IT IS PATTERNED ALMOST ENTIRELY ON THAT VERY SUCCESSFUL STRUCTURE UTILIZED BY THE JOINT LOGISTICS COMMANDERS.
- THE JOINT REQUIREMENTS AND MANAGEMENT BOARD (JRMB), FUNCTIONING AS DESCRIBED LATER, SHOULD BE RESPONSIVE TO THE CONCERNS OF CONGRESS. WE RECOMMEND ANNUAL REPORTS THAT WOULD ADDRESS CONGRESSIONAL CONCERN.
- NOW THAT WE HAVE DEFINED THE BOARD, THE DUTIES AND RESPONSIBILITIES AND ITS TIE-IN TO JCS WILL BE DISCUSSED BY GENERAL DEPUY.

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CONCLUSIONS:

- AD HOC ENVIRONMENT NOT CONDUCTIVE TO STABILITY
- MORE FORMALIZED, INSTITUTIONALIZED PROCESS NECESSARY TO INSURE JCS AND SERVICE INVOLVEMENT

RECOMMENDATIONS:

- SECDEF INSTITUTIONALIZE PROCESS IN FORMAL DIRECTIVE
- ESTABLISH "JOINT REQUIREMENTS AND MANAGEMENT BOARD"
 - JOINT REQUIREMENTS AND MANAGEMENT
 - DISPUTE RESOLUTION
- HIGH LEVEL SERVICE/JCS COMPOSITION (E.G., VICE CHIEFS, DIRECTOR OF JOINT STAFF), ROTATING CHAIR
- PERMANENT SMALL JOINT SECRETARIAT
- ANALYSIS/STUDY SUPPORT FROM EXISTING INSTITUTIONS
- ANNUAL REPORT TO CONGRESS

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REQUIREMENTS

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- ALMOST EVERY WITNESS WHO APPEARED BEFORE US, IN ONE WAY OR ANOTHER, EMPHASIZED THE IMPORTANCE OF STARTING A JOINT PROGRAM ON THE RIGHT FOOT BY RESOLVING THE BASIC REQUIREMENTS ISSUES AT THE OUTSET.
- WE QUICKLY CAME TO FIND THAT THIS FRONT-END PROCESS INVOLVED MORE THAN REQUIREMENTS, AND EXTENDS INTO A NUMBER OF MANAGEMENT AND TECHNICAL ISSUES AS WELL. AS BOB FURMAN HAS SAID, WE HAVE LABELED IT JRM (JOINT REQUIREMENTS AND MANAGEMENT) AND WILL SCOPE IT FOR YOU IN A MOMENT.
- BASED ON CASE-STUDIES WE HAVE IDENTIFIED A NUMBER OF MAJOR JOINT DEVELOPMENT PROGRAMS WHICH SUFFERED ABORTS, RESTARTS, DELAYS AND ATTENDANT INCREASED COSTS.
- ON THE OTHER HAND WHEN THE JRM WORK IS DONE, AND FRONT-END ISSUES ARE RESOLVED AT THE FRONT END THE PROGRAMS SEEM TO HAVE A REASONABLE CHANCE OF SUCCESS.
- SOMETIMES FAILURE TO RESOLVE JRM ISSUES AND A DECISION NOT TO GO JOINT SHOULD BE VIEWED AS A SUCCESS - FOR EXAMPLE F-16 & F-18 PROGRAMS.
- WHEN A SECOND SERVICE DECIDES TO CATCH A MOVING TRAIN E.G., F-4, BLACKHAWK, MARINE JAO, THE JRM PROCESS WILL NOT TAKE PLACE AT THE FRONT-END, BUT NONETHELESS IT MUST TAKE PLACE.
- WE CONCLUDE THAT THE RESOLUTION OF JRM ISSUES IS A PREREQUISITE TO JOINT PROGRAM SUCCESS.

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ISSUE: HOW IMPORTANT TO THE SUCCESS OF JOINT PROGRAMS IS THE FRONT END JOINT REQUIREMENTS & MANAGEMENT (JRM) PROCESS?

BACKGROUND:

- FAILURE TO RESOLVE JRM ISSUES AT THE FRONT END OF A JOINT PROJECT CAN RESULT IN A VARIETY OF PROGRAM ABORTS, RESTARTS, DELAYS OR INCREASED COSTS.

-F111-
-BETA/JTFP-
-JTACMS-
-JSTARS-
-HARM-

- WHEN THE SERVICES INVOLVED RESOLVE JRM ISSUES UP FRONT THE JOINT PROGRAMS CAN PROCEED WITH A REASONABLE CHANCE OF SUCCESS.

-AIM-9L-
-ASPJ-
-MILSTAR-
-AMRAAM-
-HMMWV-
-DSCS-

- FAILURE TO RESOLVE JRM ISSUES, LEADING TO A DECISION NOT TO PROCEED JOINTLY, CAN BE VIEWED AS A SUCCESS F-16, F-18 PROGRAMS.
- WHEN A SERVICE DECIDES TO CATCH A MOVING DEVELOPMENT TRAIN (BLACK HAWK, F-4, TAOC), THE JRM PROCESS MAY NOT TAKE PLACE AT THE FRONT-END, BUT NONE THE LESS, MUST TAKE PLACE.

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- HAVING CONCLUDED THAT THE JRM PROCESS IS IMPORTANT WE TURNED OUR ATTENTION TO THE NATURE OF THAT PROCESS.
- THE OBJECTIVE IS TO STRUCTURE A JOINT PROGRAM WHICH WILL:
 - INCREASE MILITARY EFFECTIVENESS AND/OR
 - ACHIEVE ECONOMIES AND EFFICIENCIES
 - EXPLOIT TECHNOLOGY
 - BE CREDIBLE TO THE PUBLIC AND CONGRESS.
- THERE IS ALWAYS DEBATE ABOUT THE "TECHNOLOGY PUSH" VS. THE "REQUIREMENTS PULL". THE PROCESS MAY START EITHER WAY AS LONG AS A RECONCILIATION TAKES PLACE. WE NOTE THAT:
 - THE PROCESS IS CIRCULAR - AND ITERATIVE. IT IS A MARRIAGE OF TECHNOLOGY AND OPERATIONAL NEEDS.
 - IT MUST ALSO PRODUCE A RELIABLE AND AFFORDABLE SYSTEM.

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WHAT IS THIS FRONT-END JOINT REQUIREMENTS AND MANAGEMENT (JRM) PROCESS?

- THE OBJECT IS TO STRUCTURE A JOINT ACQUISITION PROGRAM WHICH WILL:
 - IMPROVE MILITARY EFFECTIVENESS AND/OR
 - ACHIEVE ECONOMIES AND EFFICIENCIES AND
 - EXPLOIT AVAILABLE TECHNOLOGIES.
 - BE CREDIBLE IN THE EYES OF THE PUBLIC, AND THE CONGRESS
- THE PROCESS MAY START EITHER WITH THE EXPRESSION OF A MILITARY NEED OR WITH THE AVAILABILITY OF NEW TECHNOLOGY.
 - IT IS A CIRCULAR EFFORT TO ACHIEVE A MARRIAGE BETWEEN OPERATIONAL NEEDS AND TECHNOLOGICAL OPPORTUNITIES IN THE FORM OF A RELIABLE AND AFFORDABLE SYSTEM.
 - IT INCLUDES THE SELECTION OF A MANAGEMENT STRUCTURE AND DEVELOPMENT CONCEPT.
 - IT INVOLVES TRADE-OFFS, COMPROMISES AND RECONCILIATION OF VIEWS.

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- THE SCOPE OF THE JRM PROCESS IN WEAPONS SYSTEM ACQUISITION TERMINOLOGY IS A JOINT CONCEPT DEFINITION EFFORT AND DONE CORRECTLY COULD CARRY THE PROGRAM THROUGH RFP AND DSARC 1. IT COULD ALSO REVEAL THAT A JOINT PROGRAM WOULD NOT BE VIABLE.
- THE ISSUES TO BE RESOLVED IN THE JRM PROCESS INCLUDES THOSE LISTED. THERE IS EVIDENCE TO SUPPORT THE INCLUSION OF EACH. A FEW EXAMPLES:
 - OPERATIONAL CONCEPT - THE ROLE AND RANGE OF ARMY CSWS MISSILE IS UNRESOLVED. THE AIR FORCE SEES ROLES AND MISSION IMPLICATIONS IN LONG RANGE ARMY MISSILES. THE ARMY MIGHT SETTLE FOR A SHORTER RANGE MISSILE THAN OSD PREFERS IN CONNECTION WITH COUNTER AIR 90. IF THE JCS WANTS THE ARMY TO ASSIST THE AIR FORCE IN AIRFIELD ATTACK, LONG RANGE SEAD OR ATTACK OF TACTICAL MISSILES, THEY SHOULD RESOLVE THESE OPERATIONALLY SIGNIFICANT ISSUES. THIS IS A QUINTESSENTIALLY PERFECT CASE FOR JCS INVOLVEMENT.
- CONFIGURATION - THE NAVY CONCLUDED THAT THE F-111 WAS NOT SUITABLE FOR CARRIER OPERATIONS.
- SERVICE PRIORITIES - THE ARMY NEED FOR JVB WAS OF A RADICALLY LOWER PRIORITY THAN THAT OF THE MARINES. THE ARMY HAS BEEN TRYING TO JUMP SHIP.
- MANAGEMENT STRUCTURE - CRUISE MISSILE MANAGEMENT WAS BIFURCATED IN MID-STREAM -- THAT IS, MANAGEMENT OF SLCM AND ALCM WAS SEPARATED.
- WE BELIEVE THIS LIST OF ISSUES REPRESENTS A CHECKLIST OF PREREQUISITES FOR DETERMINING THE POTENTIAL VIABILITY OF A JOINT PROGRAM START.
- IT IS SAFE TO SAY THAT AGREEMENT ON ALL THESE PREREQUISITES WILL NOT BE AUTOMATIC OR EASY - THE COROLLARY SHOULD BE THAT JOINT DEVELOPMENT HAS ITS PROBLEMS AND SHOULD ONLY BE UNDERTAKEN WHEN NECESSARY FROM AN OPERATIONAL STANDPOINT OR WHEN CLEARLY ATTRACTIVE FROM A COST STANDPOINT.

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WHAT IS THE SCOPE OF THE FRONT-END JOINT REQUIREMENTS AND MANAGEMENT (JRM) PROCESS?

- THE SCOPE OF JOINT REQUIREMENTS AND MANAGEMENT IS A CONCEPT DEFINITION EFFORT. IT WOULD CARRY THE PROGRAM THROUGH RFP AND DSARC #1.
- THE JRM ISSUES TO BE RESOLVED AT THE FRONT-END INCLUDE:
 - OPERATIONAL CONCEPTS
 - PERFORMANCE SPECS - EFFECTIVENESS CRITERIA
 - TECHNICAL APPROACHES AND OPTIONS
 - CONFIGURATION PARAMETERS
 - ACQUISITION STRATEGY
 - COST AND SCHEDULE
 - RELATIVE WORTH vis-a-vis CURRENT SYSTEM AND ALTERNATIVES
 - SERVICE PROGRAM PRIORITIES
 - PROGRAM MANAGEMENT STRUCTURE
 - INTEROPERABILITY
 - SUPPORTABILITY
- THESE ELEMENTS OF THE JRM PROCESS ALSO CONSTITUTE A PREREQUISITE CHECKLIST FOR JOINT PROGRAM INITIATION.

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- ASSUMING AGREEMENT UP TO THIS POINT, THE QUESTION ARISES AS TO THE NECESSARY PARTICIPANTS IN THE JRM PROCESS.
- THERE ARE THOSE WHO BELIEVE THAT THE SERVICES ARE, OR ARE NOT, THE REAL OPERATORS AND OTHERS WHO BELIEVE THAT THE JCS AND THE UNIFIED COMMANDERS AND THEIR COMPONENTS ARE THE ONLY REAL OPERATORS.
- WE BELIEVE THERE ARE FIVE LEGITIMATE POINTS OF VIEW WHICH MUST BE HEARD DEPENDING UPON THE JOININESS OF THE PROGRAM.
 - OSD - OVERALL DEFENSE GUIDANCE AND MANAGEMENT VIEWS
 - JCS - STRATEGIC AND TOP-DOWN VIEWS
 - UNIFIED COMMANDS - REGIONAL AND OPERATIONAL MISSION VIEWS
 - SERVICES - OPERATIONAL, TACTICAL, AND TECHNICAL VIEWS PLUS THEIR CONCERNS ABOUT SUPPORTABILITY AND AFFORDABILITY
 - TECHNOLOGICAL VIEWS
 - INDUSTRY -- OTHER GOV'T AGENCIES
 - OSD/DARPA -- ALLIES

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ISSUE: WHO ARE THE PARTIES TO THE JOINT REQUIREMENTS AND MANAGEMENT (JRM) PROCESS?

BACKGROUND:

● WE BELIEVE THAT THERE ARE FIVE LEGITIMATE POINTS OF VIEW WHICH MUST BE HEARD:

- OSD - DEFENSE GUIDANCE AND MANAGEMENT
- JCS - THE STRATEGIC AND TOP DOWN VIEW
- UNIFIED COMMANDS - THE REGIONAL AND MISSION VIEW
- SERVICES - THE OPERATIONAL, TACTICAL, AND TECHNICAL VIEW AND THEIR CONCERNS WITH SUPPORT AND AFFORDABILITY
- TECHNOLOGICAL - THE VIEWS OFFERED BY:
 - INDUSTRY
 - OSD/DARPA
 - OTHER GOVERNMENT AGENCIES
 - ALLIES

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- NOW WE WANT TO ORGANIZE THE PLAYERS AND DESCRIBE FUNCTIONS AND PROCEDURES.
- THE ORGANIZATIONAL APPROACH ARISES OUT OF THE FACT THAT WE SEE THREE MAJOR CATEGORIES OF JOINT PROGRAMS.

CATEGORY A - THOSE PROGRAMS WITH CRITICAL JOINT OPERATIONAL SIGNIFICANCE - THIS REALLY MEANS THAT THEIR ARE MAJOR JOINT OPERATIONAL ISSUES WHICH MUST BE RESOLVED AT THE FRONT END AND THAT THE SERVICES EITHER HAVE NOT, OR ARE UNLIKELY TO, RESOLVE THEM.
- CATEGORY B - THOSE PROGRAMS WITH JOINT OPERATIONAL DIMENSIONS BUT PROGRAMS IN WHICH THE SERVICES EITHER HAVE ALREADY RESOLVED OR CAN BE EXPECTED TO RESOLVE THE JOINT ISSUES.
- CATEGORY C - THOSE PROGRAMS WHICH HAVE BEEN UNDERTAKEN SOLELY FOR PURPOSES OF ECONOMY AND EFFICIENCY.
 - NEEDLESS TO SAY, ECONOMIES AND EFFICIENCIES MIGHT BE ASSOCIATED WITH CATEGORIES A AND B.
- OBVIOUSLY THE JCS MUST ASSUME RESPONSIBILITY FOR CATEGORY A AND AT LEAST MAINTAIN INTEREST IN CATEGORY B.
- CATEGORIES B & C REMAIN THE PROVINCE OF THE SERVICES JOINTLY, THUS WE NEED A JOINT MECHANISM FOR THIS PURPOSE.
- THIS LEADS US TO THE ORGANIZATIONAL FRAMEWORK.
 - A JOINT REQUIREMENT AND MANAGEMENT BOARD JRMB, AS INTRODUCED BY BOB FUHRMAN, COMPOSED OF:
 - THE FOUR SERVICE VICE CHIEFS (ROTATING CHAIRMANSHIP)
 - THE DIRECTOR OF THE JOINT STAFF
 - OSD CONSULTANTS AS NECESSARY
 - A PERMANENT SECRETARIAT TO SUPPORT THE JRMB
 - AN ELEMENT IN OJCS TO INTERACT WITH THE JRMB

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ORGANIZATION OF THE PLAYERS

- ORGANIZATIONAL APPROACH VARIES DEPENDING UPON THE NATURE AND ORIGINS OF JOINT PROGRAMS:
 - A. THOSE WITH CRITICAL JOINT OPERATIONAL SIGNIFICANCE
 - B. THOSE WITH OPERATIONAL SIGNIFICANCE BUT WITHOUT UNRESOLVED OPERATIONAL ISSUES
 - C. THOSE UNDERTAKEN SOLELY FOR ECONOMIES AND EFFICIENCIES
- DIVISION OF JRM RESPONSIBILITIES
 - CATEGORY A - JCS & UNIFIED COMMANDS
 - CATEGORY B & C - SERVICES JOINTLY
- ORGANIZATION OF THE PLAYERS
 - A JOINT REQUIREMENTS AND MANAGEMENT BOARD (JRMB) COMPOSED OF
 - SERVICE VICE CHIEFS OF STAFF
 - DIRECTOR OF THE JOINT STAFF
 - OSD OFFICIALS AS NECESSARY FOR CONSULTATION
 - A PERMANENT SECRETARIAT FOR THE JRMB
 - AN ELEMENT IN OJCS TO INTERACT WITH THE JRMB

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HAVING PROVIDED AN ORGANIZATIONAL FRAMEWORK FOR JRM, LET US TURN TO FUNCTIONS AND PROCEDURES.

- RECOGNIZING THE INITIATIVES BEING TAKEN BY THE CHAIRMAN OF THE JCS, AND WISHING TO SUPPORT HIM IN EVERY WAY, WE CAN SEE THE LIKLIHOOD THAT THE JCS WILL IDENTIFY CERTAIN PROGRAMS OF CRITICAL JOINT SIGNIFICANCE WHICH ARE FACED WITH CONCEPTUAL DIFFICULTIES AND WILL WISH TO INITIATE THE JRM PROCESS ON ITS OWN. THE JCS WILL PROBABLY BE HIGHLY SELECTIVE IN THIS RESPECT.
- JRM WILL CONSTITUTE AN ESSENTIAL JOINT SERVICE MECHANISM PERFORMING THE FUNCTIONS LISTED:
 - SEEKS OPPORTUNITIES FOR JOINT DEVELOPMENT.
 - RECEIVES RECOMMENDATIONS FROM ALL SOURCES SPECIFICALLY INCLUDING OSD, ITS STAFF AND AGENCIES.
 - SCREENS CANDIDATES.
 - RECOMMENDS ADDITIONAL OR ALTERNATIVE PROGRAMS FOR JCS SPONSORSHIP.
 - SETS THE JRM PROCESS IN MOTION FOR SELECTED NON-JCS PROGRAMS.
 - ASSISTS JCS AS REQUIRED AND REQUESTED.
- JRM PROCEDURES:
 - SPONSORS (JCS OR JRMB OR SERVICES JOINTLY AND VOLUNTARILY) CHARTER SPECIAL STUDY GROUPS TO UNDERTAKE FRONT-END JRM PROCESS FOR SELECTED JOINT PROGRAMS.
 - SPONSORS CONFIGURE SSG'S TO INCLUDE THE SERVICE AND/OR JCS REQUIREMENTS AGENCIES, DEVELOPMENT AND ACQUISITION AGENCIES AND APPROPRIATE STUDIES AND ANALYSIS ORGANIZATIONS. DARPA, DCA, NSA OR DNA WOULD BE INVOLVED AS REQUIRED.
 - SPONSORS RECOMMEND FOR OR AGAINST JOINT DEVELOPMENT AND INITIATE APPROPRIATE ACTIONS IN PPBS.
 - STUDY GROUPS DISSOLVE AND AN APPROVED MANAGEMENT STRUCTURE TAKES OVER.
 - PROBLEMS OCCURRING DURING DEVELOPMENT SUCH AS EFFECTIVENESS SHORTFALLS, PRICE INCREASES OR CHANGING SERVICE PRIORITIES WHICH CANNOT BE RESOLVED BY THE PROGRAM MANAGER OR THE EXECUTIVE AGENT (POSSIBLY A SINGLE SERVICE) MUST GO BACK TO THE SPONSOR (JCS OR JRMB) FOR RESOLUTION AND THEN IF NECESSARY TO THE SECDEF DIRECTLY, OR MORE LIKELY THROUGH A DSARC OR DRB.
 - SECDEF IS FINAL ARBITER.

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FUNCTIONS AND PROCEDURES

- JCS - INITIATES THE JRM PROCESS FOR PROGRAMS IN CATEGORY A.
- JRMB
 - SEEKS OPPORTUNITIES FOR JOINT DEVELOPMENT.
 - RECEIVE RECOMMENDATIONS FOR JOINT PROGRAMS FROM ALL SOURCES
 - SCREENS CANDIDATES
 - RECOMMENDS ADDITIONAL PROGRAMS FOR JCS SPONSORSHIP
 - SETS JRM PROCESS IN MOTION FOR SELECTED NON-JCS JOINT PROGRAMS
 - ASSISTS JCS AS REQUIRED
- JRM PROCEDURES
 - SPONSOR (JCS OR JRMB OR THE SERVICES JOINTLY AND VOLUNTARILY) CHARTERS OR DIRECTS SPECIAL STUDY GROUP TO UNDERTAKE FRONT-END JRM PROCESS FOR SPECIFIC CANDIDATE JOINT PROGRAMS
 - SPONSORS REVIEW SPECIAL STUDY GROUP FINDINGS
 - RESOLVES ISSUES AS NECESSARY
 - RECOMMENDS FOR OR AGAINST JOINT DEVELOPMENT TO OSD
 - STUDY GROUPS DISSOLVE AND PROGRAM MANAGEMENT STRUCTURE TAKES OVER - MAY INCLUDE STEERING COMMITTEES
 - PROBLEM RESOLUTION DURING PROGRAM DEVELOPMENT
 - SEC DEF IS FINAL ARBITER

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CONCLUSION

WITH THIS ORGANIZATION AND ITS OPERATING PROCEDURES WE BELIEVE THAT OPERATIONAL NEEDS AND TECHNOLOGIES CAN BE PRODUCTIVELY COMBINED TO FORM THE BASIS FOR VIABLE JOINT PROGRAMS.

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IF FRONT END AGREEMENT CANNOT BE ACHIEVED, JOINT ACQUISITION SHOULD NOT BE UNDERTAKEN.

RECOMMENDATION

OSD INCORPORATE THIS PROCESS INTO THE 5000 SERIES OF DIRECTIVES.

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CONCLUSION:

- WITH THIS ORGANIZATION AND ITS OPERATING PROCEDURES WE BELIEVE THAT OPERATIONAL NEEDS AND TECHNOLOGIES CAN BE PRODUCTIVELY COMBINED TO FORM THE BASIS FOR VIABLE JOINT PROGRAMS.
- IF FRONT END AGREEMENT CANNOT BE ACHIEVED, JOINT ACQUISITION SHOULD NOT BE UNDERTAKEN.

RECOMMENDATION: OSD INCORPORATE THIS PROCESS INTO THE 5000 SERIES OF DIRECTIVES.

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R&D

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INTRODUCTION

THE R&D PANEL REVIEWED ALL ASPECTS OF THE R&D PROCESS FROM THE TECHNOLOGY BASE THROUGH FULL-SCALE ENGINEERING DEVELOPMENT AND IDENTIFIED FOUR KEY ISSUES. THESE FOUR ISSUES ARE CONCERNED WITH:

- THE TECHNOLOGY BASE
- "TECHNOLOGY PUSH" PROGRAMS, ESPECIALLY THE DARPA-INITIATED "TECHNOLOGY DEMONSTRATIONS"
- JOINT ACQUISITION OF SUBSYSTEMS, THAT IS ITEMS SUCH AS AIRCRAFT ENGINES AND RADIOS
- FUNDING OF JOINT PROGRAMS

WE ALSO EXAMINED THE ISSUE OF DEVELOPING A "SYSTEM OF SYSTEMS" FOR JOINT (E.G., UNIFIED) COMMANDERS. THIS WILL BE DISCUSSED LATER.

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R&D TOPICS

- THE TECHNOLOGY BASE
- "TECHNOLOGY PUSH" PROGRAMS
- JOINT ACQUISITION OF SUBSYSTEMS
- FUNDING OF JOINT PROGRAMS

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A CAUTIONARY NOTE

BEFORE DISCUSSING THE R&D ISSUES, THE R&D PANEL WISHES TO MAKE SOME OBSERVATIONS ABOUT JOINT PROGRAMS, IN GENERAL.

THE IDEA OF DEVELOPING AND PROCURING WEAPON SYSTEMS AND EQUIPMENT THAT SERVE MORE THAN A SINGLE MILITARY SERVICE HAS STRONG APPEAL. CLEARLY, RESEARCH AND DEVELOPMENT MONEY CAN BE SAVED, ECONOMIES OF SCALE CAN BE REALIZED, AND, THE SPARE PARTS, MAINTENANCE AND TRAINING ACTIVITIES THAT ARE NEEDED FOR SUPPORT CAN BE PROVIDED MORE EFFICIENTLY AND ECONOMICALLY.

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JOINT R&D AND PRODUCTION PROGRAMS ARE ONE WAY OF OBTAINING THESE ADVANTAGES. HOWEVER, THEY ARE NOT THE ONLY WAY, AND ARE OFTEN A VERY DIFFICULT WAY. DIFFERENCES IN SERVICE MISSIONS, OPERATING ENVIRONMENT, TECHNICAL EXPERTISE AND SENSE OF PRIORITY ALL MAKE AGREEMENTS ON REQUIREMENTS AND MANAGEMENT OF JOINT PROGRAMS VERY DIFFICULT TO ACHIEVE. THIS PANEL BELIEVES THAT AGREEMENT ON THESE ISSUES IS NECESSARY TO GAIN THE ADVANTAGES CITED ABOVE, AND IF AGREEMENT CANNOT BE OBTAINED, THE EXPECTED BENEFITS OF JOINTNESS WILL NOT BE REALIZED.

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R&D TOPICS

- THE TECHNOLOGY BASE
- "TECHNOLOGY PUSH" PROGRAMS
- JOINT ACQUISITION OF SUBSYSTEMS
- FUNDING OF JOINT PROGRAMS

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THE BURDEN THAT "JOINTNESS" PLACES ON A PROGRAM INCLUDES: CASCADING OF REQUIREMENTS, MERGING OF DISSIMILAR LOGISTIC SYSTEMS, COMPLICATION OF MANAGEMENT AND DECREASING FLEXIBILITY TO DEAL WITH THE IMPACTS ON THE PROGRAM OF TECHNICAL AND FINANCIAL PROBLEMS, OR THREAT CHANGES, DURING THE DEVELOPMENT AND PRODUCTION PHASES.

SINGLE-SERVICE PROGRAMS CAN HANDLE SUCH CHANGES MORE RESPONSIVELY AND MORE EFFICIENTLY TO MEET THEIR SINGLE-SERVICE NEEDS. AS LONG AS THE CRITICALLY-IMPORTANT ABILITIES TO INTEROPERATE AND INTERCOMMUNICATE ARE PRESERVED, THE OPERATIONAL AND FISCAL COSTS OF DISSIMILAR SERVICE SYSTEMS MAY NOT EXCEED THE OPERATIONAL AND FISCAL COSTS OF TRYING TO COMBINE REQUIREMENTS THAT APPLY IN DIFFERING ENVIRONMENTS, WITH DIFFERING MISSION CONTEXTS AND DIFFERING SUPPORT SYSTEMS.

THOSE FEW PROGRAMS WHERE THIS IS NOT THE CASE ARE PROPER CANDIDATES FOR JOINT PROGRAMS AND FOR THOSE PROGRAMS THE SPECIAL MANAGEMENT PROVISIONS PROPOSED HEREIN SHOULD APPLY.

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R&D TOPICS

- THE TECHNOLOGY BASE
- "TECHNOLOGY PUSH" PROGRAMS
- JOINT ACQUISITION OF SUBSYSTEMS
- FUNDING OF JOINT PROGRAMS

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ISSUE

THE FIRST R&D PANEL ISSUE ADDRESSES WHETHER THE TECHNOLOGY BASE CAN BE MADE MORE EFFICIENT AND EFFECTIVE WITH INCREASED JOINT SERVICE ACTIVITY.

BACKGROUND

MANY SERVICE AND DARPA/SERVICE 6.2 AND 6.3A PROGRAMS NOW ARE JOINT, OR COORDINATED IN A JOINT WAY. ALTHOUGH WE DID NOT ATTEMPT TO PROBE THIS AREA IN DEPTH, OUR IMPRESSION IS THAT, IN ESSENTIALLY ALL AREAS OF MUTUAL INTEREST, THE PROGRAMS ARE COORDINATED AND A FAIR NUMBER ARE JOINT--WITH ONE SERVICE AS EXECUTIVE AGENT AND THE OTHER COST SHARING THE EFFORT, OR WITH THE TWO SERVICES WORKING COMPLEMENTARY PARTS OF A TECHNOLOGY AREA.

OCCASIONALLY, ONE SERVICE WILL DROP ITS FUNDING CONTRIBUTION DUE TO SHIFTING PRIORITIES OR TO ACCOMMODATE TO OVERALL SERVICE RDT&E BUDGET CUTS. WE FIND THAT THESE PERTURBATIONS ARE UNDERSTOOD BY THE OTHER SERVICE AND PROGRAMS ARE ADAPTED TO SUCH CHANGES IN A REASONABLY ACCEPTABLE WAY.

THE OFFICE OF THE DEPUTY UNDER SECRETARY OF DEFENSE, RESEARCH AND ENGINEERING/ RESEARCH AND ADVANCED TECHNOLOGY (OUSDR&E/R&AT) PROVIDES OVERSIGHT OF THE SERVICE'S 6.2/6.3A PROGRAM.

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ISSUE: COULD THE EFFECTIVENESS AND EFFICIENCY OF THE DOD SCIENCE AND TECHNOLOGY BASE BE IMPROVED BY MORE JOINT SERVICE ACTIVITY?

BACKGROUND

- MANY 6.2/6.3A PROGRAMS ARE JOINT/COORDINATED
- UNILATERAL FUNDING REDUCTIONS DUE TO CHANGING SERVICE PRIORITIES ARE ACCOMMODATED
- OUSDR&E/R&AT PROVIDES OVERSIGHT
- A FORMAL JLC COORDINATION MECHANISM EXISTS
- OVERSIGHT AND COORDINATION ARE IMPORTANT
- TECHNOLOGY INFORMATION EXCHANGE NEEDS TO BE IMPROVED

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A FORMAL JOINT LOGISTICS COMMANDERS (JLC) TECHNOLOGY BASE COORDINATION MECHANISM EXISTS (VIA THE JOINT DIRECTORS OF LABS AT THE SERVICE 2-STAR LEVEL) WHICH CREATES, ORGANIZES AND MONITORS THESE JOINT-SERVICE EFFORTS. THE MECHANISM APPEARS TO BE WORKING WELL.

SUCH OSD OVERSIGHT AND JLC COORDINATION IS IMPORTANT TO:

- ENSURE COMPETITION OF IDEAS,
- REQUIRE INFORMATION EXCHANGE,
- IDENTIFY AREAS FOR COORDINATED EFFORTS, AND
- PROVIDE DECISION MECHANISMS FOR MAJOR CAPITAL INVESTMENTS.

IN A NUMBER OF AREAS WE FIND THAT THE DOCUMENTS DESCRIBING TECHNOLOGY PROGRESS IN VARIOUS AREAS ARE NOT AVAILABLE ON A TIMELY BASIS TO OTHER WORKERS IN THE FIELD, WHICH PROMOTES TECHNOLOGY BASE WASTE AND INEFFICIENCY. THIS IS TRUE BETWEEN THE SERVICES, BETWEEN DARPA AND THE SERVICES, AND ESPECIALLY SO WITH INDUSTRY.

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ISSUE: COULD THE EFFECTIVENESS AND EFFICIENCY OF THE DOD SCIENCE AND TECHNOLOGY BASE BE IMPROVED BY MORE JOINT SERVICE ACTIVITY?

BACKGROUND

- MANY 6.2/6.3A PROGRAMS ARE JOINT/COORDINATED
- UNILATERAL FUNDING REDUCTIONS DUE TO CHANGING SERVICE PRIORITIES ARE ACCOMMODATED
- OUSDR&E/R&AT PROVIDES OVERSIGHT
- A FORMAL JLC COORDINATION MECHANISM EXISTS
- OVERSIGHT AND COORDINATION ARE IMPORTANT
- TECHNOLOGY INFORMATION EXCHANGE NEEDS TO BE IMPROVED

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CONCLUSIONS

WE CONCLUDED THAT TECHNOLOGY BASE PROGRESS AND EFFICIENCY ARE REASONABLY GOOD, THAT PROBLEMS CREATED BY ONE SERVICE REDUCING ITS TECHNOLOGY BASE FUNDING ARE MANAGEABLE, AND THAT IMPROVEMENT IS NEEDED IN TECHNICAL INFORMATION DISSEMINATION.

RECOMMENDATIONS

WE RECOMMEND:

- KEEPING UP THE GOOD WORK IN GENERAL, BUT THAT THE
- OUSD&E/R&AT SHOULD TAKE ACTIONS TO IMPROVE AND SPEED UP TECHNICAL INFORMATION DISSEMINATION BETWEEN THE SERVICES, BETWEEN DARPA AND THE SERVICES, AND ESPECIALLY BETWEEN DOD AND INDUSTRY.

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ISSUE: JOINT SCIENCE AND TECHNOLOGY PROGRAMS

CONCLUSIONS

- GENERALLY GOING OK
- FUNDING PRIORITIES ISSUES GET RESOLVED
- TECHNICAL INFORMATION SYSTEMS NEED IMPROVING

RECOMMENDATIONS

- KEEP IT UP
- IMPROVE TECHNICAL INFORMATION DISSEMINATION

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ISSUE

THE SECOND ISSUE DEALS WITH "TECHNOLOGY PUSH" PROGRAMS AND WHAT CAN BE DONE TO MAKE THEM MORE PRODUCTIVE.

BACKGROUND

THE SERVICES ARE ORGANIZED TO CARRY OUT THEIR OPERATIONAL MILITARY ASSIGNMENTS AND TO ACQUIRE NEEDED SYSTEMS. THEY ARE NOT AS WELL ORGANIZED OR FUNDED TO CREATE AND ASSIMILATE WHOLLY NEW CAPABILITIES - ESPECIALLY THOSE THAT REQUIRE THE COMBINATION OF "THINGS" - SUCH AS SENSORS, PLATFORMS, WEAPONS AND C³. BUT VARIOUS STUDIES OF INNOVATION -- SUCH AS "PROJECT HINDSIGHT" -- SAY THAT MOST NEW DEVELOPMENTS ARE THE RESULT OF THE SYNERGISTIC EFFECTS OF COMBINING MANY INDIVIDUAL TECHNOLOGICAL ADVANCES, RATHER THAN FROM ANY ONE SINGLE MAJOR NEW TECHNOLOGICAL BREAKTHROUGH.

MANY IDEAS FOR SUCH NEW "SYSTEMS" (EVEN THOUGH "SEED" IDEAS MAY HAVE ORIGINATED FROM WITHIN THE SERVICES) HAVE BEEN ADVOCATED BY THE SERVICE TECHNICAL ADVISORY COMMITTEES (THE ARMY SCIENCE BOARD, THE NAVY RESEARCH ADVISORY COMMITTEE, AND THE AIR FORCE SCIENCE ADVISORY BOARD), THE DSB, AND DARPA. THIS IS ESPECIALLY TRUE FOR "SYSTEMS" THAT INVOLVE JOINT-SERVICE ACTIONS.

"PROJECT HINDSIGHT" ALSO CONCLUDED THAT MOST TECHNOLOGICAL ADVANCES RESULTED FROM EXPERIMENTS CONDUCTED WITH REAL HARDWARE AND SOFTWARE, RATHER THAN FROM PURELY ANALYTICAL RESEARCH.

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ISSUE: HOW CAN WE INCREASE THE PROBABILITY OF SUCCESS OF
"TECHNOLOGY PUSH" PROGRAMS ORIGINATING OUTSIDE THE NORMAL SERVICE FRAMEWORK?

BACKGROUND

- SOME REVOLUTIONARY APPLICABLE TECHNOLOGY AND SYSTEMS HAVE ORIGINATED OUTSIDE THE NORMAL SERVICE FRAMEWORK
- SERVICE ACCEPTANCE OF SUCH EXTERNAL TECHNOLOGIES IS SOMETIMES DIFFICULT
 - ESPECIALLY WHEN THEY CONFLICT/COMPETE WITH ON-GOING SERVICE PROGRAMS.
- ONE-SHOT (LIMITED SCOPE) "TECHNOLOGY DEMONSTRATIONS" ARE OFTEN NOT PERSUASIVE.
 - AN ITERATIVE, EVOLUTIONARY PROCESS IS REQUIRED.

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DARPA HAS UNDERTAKEN THE ROLE OF DEVELOPING AND TRYING OUT SO CALLED "LEADING EDGE" NEW IDEAS TO DETERMINE IF THEY HAD SIGNIFICANT MILITARY WORTH. THEIR SO-CALLED "TECHNOLOGY DEMONSTRATIONS" NORMALLY RELATE TO A SINGLE SERVICE, BUT SOMETIMES INVOLVE TWO OR MORE. THE "DEMOS" ARE SOMETIMES QUITE LARGE AND COSTLY -- GREATER THAN \$100 MILLION, AND INVOLVE, BY DESIGN, HIGH RISK. NATURALLY, SOME TECHNICAL FAILURES SHOULD BE EXPECTED.

THE SERVICES RECOGNIZE THE NEED TO TRY OUT NEW "LEADING EDGE" IDEAS EVEN WHERE NO FORMAL "REQUIREMENT" FOR SUCH A DEVICE OR CAPABILITY EXISTS. AFTER ALL, THERE WAS NO "REQUIREMENT" FOR AN ATOMIC BOMB. HOWEVER, SERVICE ACCEPTANCE OF SUCH HIGH-RISK, EXTERNALLY-GENERATED IDEAS IS DIFFICULT, ESPECIALLY WHEN THEY APPEAR TO CONFLICT WITH ESTABLISHED DOCTRINE, COMPETE WITH ON-GOING SERVICE PROGRAMS, OR APPLY IN AREAS WHERE NO DOCTRINE EXISTS. THIS IS FURTHER COMPLICATED IF THE IMPLIED FOLLOW-ON TO THE DARPA PROGRAM INVOLVES MORE THAN ONE SERVICE.

SO IF THE IDEA SEEMS REASONABLE TO THE SERVICE AND DOESN'T "DO-IN" ITS OWN PROGRAMS, THE SERVICE WILL SUPPORT - OR AT LEAST TOLERATE - THE DARPA "TECHNOLOGY DEMONSTRATIONS". THIS IS TRUE EVEN WHEN THEY HAVE NOT HAD AN OPPORTUNITY TO ANALYZE HOW AND IN WHAT FORM THE NEW DEVICE OR SYSTEM WOULD FIT INTO AND IMPACT ITS OPERATIONS AND FORCE STRUCTURE.

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ISSUE: HOW CAN WE INCREASE THE PROBABILITY OF SUCCESS OF
"TECHNOLOGY PUSH" PROGRAMS ORIGINATING OUTSIDE THE NORMAL SERVICE FRAMEWORK?

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IF, HOWEVER, THE NEW DEVICE OR SYSTEM IS THEN IMPOSED UPON A SERVICE (OR SERVICES) WITHOUT AN OPPORTUNITY TO CARRY OUT SUCH AN ANALYSIS, THERE IS UNDERSTANDABLE RESISTANCE, AND THE PROBABILITY OF EVENTUAL DEPLOYMENT OF THE DIRECTED SYSTEM OR DEVICE IS LOW, AND OFTEN FOR GOOD REASON.

UNLIKE THE ATOMIC EXPLOSION AT ALAMAGORDO, ONE-SHOT (LIMITED SCOPE) "DEMONSTRATIONS" ARE NORMALLY NOT CONVINCING, AND FURTHER ITERATIONS ARE REQUIRED TO CONVERT THE BASIC IDEA INTO THE GENESIS OF A NEW MILITARY CAPABILITY. FOR EXAMPLE, IT TOOK SEVERAL YEARS OF TESTING AND "LEARNING-BY-DOING" WITH SOTAS PROTOTYPES FOR THE OPERATIONAL AND TECHNICAL BRANCHES OF THE ARMY TO EVOLVE THE BATTLEFIELD AIRBORNE MOVING TARGET RADAR REQUIREMENT.

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ISSUE: HOW CAN WE INCREASE THE PROBABILITY OF SUCCESS OF
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UNCLASSIFIEDCONCLUSION

WE CONCLUDE THAT "TECHNOLOGY PUSH" IS A VITAL PART OF THE R&D PROCESS. DARPA PROVIDES A MECHANISM THAT IS NEEDED FOR TESTING NEW, RELATIVELY-RISKY, IDEAS IN A FLEXIBLE AND RELATIVELY-UNFETTERED MODE. THE DARPA "TECHNOLOGY DEMONSTRATIONS" PROVIDE THIS MECHANISM AND ARE AN IMPORTANT ASPECT OF OUR OVERALL R&D CAPABILITY AND SHOULD CONTINUE. WE BELIEVE THAT, IN MOST CASES, A SERIES OF EVOLUTIONARY "LEARN-BY-DOING" DEMOS, WITH STRONGER USER INVOLVEMENT, WILL BE REQUIRED TO PROVIDE A FAIR AND CONVINCING MEASURE OF MILITARY WORTH.

ALTHOUGH MUCH INFORMAL DISCUSSION OCCURS BETWEEN DARPA AND THE INVOLVED SERVICE BEFORE INITIATION OF THESE "DEMOS", IN THE CASE OF THE LARGE (>\$100M) DEMOS, WE BELIEVE THAT PRIOR TO STARTING A "BIG TICKET" DEMO, THE INVOLVED SERVICE SHOULD MAKE AN ANALYSIS OF THE POTENTIAL MILITARY VALUE OF THE "NEW SYSTEM". THE FORM OF THIS "SO-WHAT TEST" COULD VARY, BUT PERHAPS AN APPROACH DERIVED FROM THE DARCOM-TRADOC LETTER OF AGREEMENT OR THE AFSC "VANGUARD" METHOD COULD BE USED. THIS ANALYSIS SHOULD BE ACCOMPLISHED IN A FEW MONTHS, AND SHOULD ASSUME THE SYSTEM WORKS AS ADVERTISED. IT SHOULD NOT BE CONSIDERED ANY FORM OF COMMITMENT BY THE SERVICE(S) TO THE NEW SYSTEM. SUCH COMMITMENT CAN ONLY COME ABOUT AFTER THE FORMAL REQUIREMENTS PROCESS HAS BEEN ACCOMPLISHED. THIS FORMAL PROCESS, WHICH ITSELF IS AN ITERATIVE ONE, CAN BEST BE DONE IN PARALLEL WITH THE ITERATIVE, EVOLUTIONARY "LEARN-BY-DOING" TESTING SUGGESTED EARLIER. IN THIS WAY, ADJUSTMENTS CAN BE MADE TO ACCOUNT FOR THE ACTUAL MILITARY CAPABILITY, OR LACK THEREOF, FOUND AND EVOLVED DURING THE "DEMONSTRATIONS."

THE SERVICE MAY CONCLUDE THAT THE CAPABILITY IS NOT OF SUFFICIENT VALUE TO WARRANT FULL-SCALE DEVELOPMENT. IF OSD DISAGREES, THE MATTER CAN BE DECIDED BY THE SECRETARY OF DEFENSE IN AN ENVIRONMENT WHERE ALL PARTIES HAVE EXAMINED THE ISSUES AND PRESENTED THEIR VIEWS.

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ISSUE: ACCEPTANCE/USE OF "TECHNOLOGY PUSH"

CONCLUSIONS

- NEW AND REVOLUTIONARY IDEAS NEED AN ITERATIVE "LEARN-BY-DOING" PROCESS, WITH STRONGER "USER" INVOLVEMENT TO DETERMINE MILITARY WORTH AND FOR EVOLVING TO NEW MILITARY CAPABILITIES
- A DOCUMENTED ANALYSIS BY THE INVOLVED SERVICE(S) OF THE POTENTIAL MILITARY VALUE SHOULD BE MADE PRIOR TO STARTING ANY LARGE (>\$100M) DEMONSTRATION
- FORMAL REQUIREMENTS ANALYSIS SHOULD BE DONE IN PARALLEL AND INTERACTIVELY, WITH THE ITERATIVE CAPABILITY DEMONSTRATIONS
- DECISIONS TO ENTER FULL-SCALE DEVELOPMENT SHOULD BE BASED ON RESULTS OF THE DEMONSTRATIONS AND THE REQUIREMENTS ANALYSES

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RECOMMENDATIONS

OUR RECOMMENDATIONS ARE:

THAT DARPA CONTINUE A VIGOROUS PROGRAM OF TECHNOLOGY DEMONSTRATIONS BUT PLAN FOR ITERATION AND EVOLUTION OF THE IDEA WITH STRONGER USER PARTICIPATION.

NEXT, A MILITARY IMPACT ANALYSIS BY THE INVOLVED SERVICE(S) SHOULD BE REQUIRED BEFORE INITIATION OF LARGE TECHNOLOGY DEMONSTRATIONS. THE RESULTS OF THIS ANALYSIS SHOULD BE ONE OF THE FACTORS CONSIDERED IN DETERMINING WHETHER THE "DEMO" SHOULD TAKE PLACE.

NEXT, THE INVOLVED SERVICE SHOULD CARRY OUT THE FORMAL REQUIREMENTS ANALYSIS IN PARALLEL AND INTERACTIVELY WITH THE EVOLUTIONARY "DEMONSTRATIONS".

AND FINALLY, THE DECISION TO GO INTO FULL-SCALE ENGINEERING DEVELOPMENT SHOULD BE BASED UPON THE RESULTS OF "DEMOS" AND THE FORMAL REQUIREMENTS AND MANAGEMENT PROCESS.

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ISSUE: ACCEPTANCE/USE OF "TECHNOLOGY PUSH"

RECOMMENDATIONS

- CONTINUE A VIGOROUS PROGRAM OF "TECHNOLOGY DEMONSTRATIONS"
 - PLAN FOR ITERATION AND EVOLUTION WITH STRONG USER PARTICIPATION
- REQUIRE THAT AN ANALYSIS OF THE MILITARY WORTH BE MADE BY THE INVOLVED SERVICE(S) PRIOR TO INITIATION OF A LARGE (>\$100M) "DEMO".
- THE FORMAL REQUIREMENTS ANALYSIS SHOULD BE CARRIED OUT IN PARALLEL WITH THE EVOLUTIONARY "DEMOS".
- FULL-SCALE ENGINEERING DEVELOPMENT DECISION SHOULD BE BASED UPON RESULTS OF "DEMOS" AND THE FORMAL REQUIREMENTS PROCESS

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ISSUE

THE THIRD R&D PANEL ISSUE ADDRESSES JOINT ACQUISITION AT THE "LESS-THAN-SYSTEM" LEVEL.

BACKGROUND

JOINT ACQUISITION BELOW THE SYSTEM LEVEL IS ANOTHER APPROACH WHICH, AS NOTED EARLIER IN THIS REPORT, HAS PRODUCED ECONOMIES AND EFFICIENCIES. THESE JOINT ACQUISITIONS OCCUR AT THE COMPONENT LEVEL SUCH AS FLIR COMMON MODULES, AT THE EQUIPMENT LEVEL SUCH AS TACAN TRANSCIEVERS, AND AT THE MAJOR SUB-SYSTEM LEVEL SUCH AS AIRCRAFT ENGINES.

JOINT ACQUISITION AT THESE LEVELS OCCURRING RATHER BROADLY AND SUCCESSFULLY. BUT, THE SELECTION PROCESS IS AD HOC, SO SOME IMPORTANT OPPORTUNITIES MAY BE NEEDED.

AS A CAUTIONARY NOTE, IT WAS OBSERVED THAT WIDE USE OF A COMMON SUBSYSTEMS, SUCH AS COMMON FLIR SENSORS, COULD BRING WITH IT COMMON VULNERABILITIES. SEVERAL SOLUTIONS TO A PARTICULAR PROBLEM COMPLICATE THE ENEMY'S COUNTER-MEASURES PROBLEM.

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ISSUE: IS JOINT ACQUISITION OF SUBSYSTEMS EFFECTIVE?
IF SO, HOW CAN THIS FORM OF JOINT PROGRAMS BE ENLARGED?
(6.3B/6.4/6.6)

BACKGROUND

- SUCH JOINT ACQUISITION IS OCCURRING, RATHER BROADLY AND SUCCESSFULLY.
- SELECTION PROCESS IS AD HOC
- COMMON SUBSYSTEMS HAVE COMMON VULNERABILITIES

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CONCLUSIONS AND RECOMMENDATIONS

WE CONCLUDE THAT JOINT ACQUISITIONS BELOW THE SYSTEM LEVEL MAKE SIGNIFICANT CONTRIBUTIONS IN ECONOMIES, EFFICIENCIES AND INTEROPERABILITY. AND IT IS LIKELY THERE ARE ADDITIONAL OPPORTUNITIES THAT SHOULD BE PURSUED.

BUT A BETTER MECHANISM IS NEEDED: (1) TO ENSURE METHODOICAL REVIEW AND SELECTION OF CANDIDATE SUB-SYSTEMS, EQUIPMENTS AND COMPONENTS, (2) TO DETERMINE WHERE JOINT ACQUISITION WOULD BE APPROPRIATE, (3) TO ASSIGN THE PROGRAM TO AN EXECUTIVE SERVICE, AND (4) TO ASSURE ADEQUATE SUPPORT.

THE JOINT LOGISTICS COMMANDERS (JLC's) ARE ORGANIZATIONALLY BEST SITUATED TO DO THIS AND HAVE THE REQUISITE AUTHORITY TO MAKE AND ENFORCE DECISIONS. WE CONCLUDE THAT THE JOINT LOGISTIC COMMANDERS SHOULD ESTABLISH A FORMAL MECHANISM FOR DOING THIS, AND SO RECOMMEND. OF COURSE THE "THREAT" OF OSD'S "ENLIGHTENED ASSISTANCE" SHOULD HELP MAKE THIS MECHANISM WORK.

OVERSIGHT WOULD BE PROVIDED BY AN ANNUAL REPORT TO USDR&E. A SUITABLE REPORT ALSO COULD BE PROVIDED TO THE CONGRESS.

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ISSUE: JOINT SUBSYSTEM ACQUISITION
(6.3B/6.4/6.6)

CONCLUSIONS

- JOINT SUBSYSTEM ACQUISITION MAKES SIGNIFICANT CONTRIBUTIONS IN ECONOMIES, EFFICIENCIES AND INTEROPERABILITY.
- NEED BETTER REVIEW AND SELECTION
- MUST CONSIDER COMMON VULNERABILITY

RECOMMENDATION

- JOINT LOGISTICS COMMANDERS SHOULD ESTABLISH A FORMAL MECHANISM FOR REVIEW AND SELECTION.

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ISSUE

THE R&D PANEL'S LAST ISSUE ADDRESSES THE FUNDING OF JOINT PROGRAMS.

BACKGROUND

WE FIND THAT JOINT R&D PROGRAMS ARE FUNDED IN A VARIETY OF WAYS, ALL OF WHICH WORK REASONABLY WELL WHEN EACH SERVICE STAYS WITH THE ORIGINAL PLAN AND FUNDS ITS SHARE OF ANY OVERRUNS. THE PROBLEM COMES ABOUT WHEN CHANGING PRIORITIES, OR OVERALL BUDGET REDUCTIONS CAUSES ONE SERVICE TO DECREASE ITS SUPPORT. WE LEARNED THAT THIS HAPPENS FREQUENTLY. OCCASIONALLY, A SERVICE WILL PULL OUT OF PROGRAM ALTOGETHER. AS NOTED EARLIER, SUCH FUNDING PERTURBATIONS ON 6.2 AND 6.3A PROGRAMS ARE "MANAGED AROUND" AND ARE NOT CONSIDERED A SERIOUS PROBLEM.

WHEN ONE SERVICE REDUCES ITS FUNDING ON A JOINT PROGRAM, OR IS UNWILLING TO FUND ITS SHARE OF AN OVERRUN, MAJOR PROBLEMS ACCRUE TO THE JOINT PROGRAM. UNFORTUNATELY, THIS HAPPENS FREQUENTLY AS THE SERVICES ADJUST THEIR BUDGETS IN REACTION TO NEW PRIORITIES, OVERRUNS, AND BUDGET CUTS IMPOSED BY HIGHER AUTHORITY. WE DETERMINED THAT THIS ISSUE LARGELY DISAPPEARS FOR SINGLE-SERVICE FUNDED JOINT PROGRAMS.

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ISSUE: HOW SHOULD JOINT ACQUISITION PROGRAMS BE FUNDED?

BACKGROUND

- THERE IS NO STANDARD METHOD OF FUNDING JOINT R&D PROGRAMS
- b.2/6.5A SHARED FUNDING TENDS NOT TO BE A MAJOR PROBLEM
- PROGRAM TURBULENCE IS FREQUENTLY CAUSED BY UNILATERAL FUNDING REDUCTIONS.
- UNILATERAL PULLOUT ON SHARED FUNDING PROGRAMS LEADS TO FISCAL "DISASTERS"
 - BUT THIS HAPPENS INFREQUENTLY.
- CONTROL MECHANISMS HAVE BEEN PROPOSED
 - GIVE BUDGETED FUNDS TO THE REMAINING PARTNER
 - PROHIBIT COMPETING DEVELOPMENTS
- PRODUCTION FUNDING PRACTICES ON JOINT PROGRAMS ARE ACCEPTABLE

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THUS, UNILATERAL FUNDING REDUCTIONS CAUSE ARGUING, MOANING AND PROGRAM PERTURBATIONS, BUT "ALL HELL" BREAKS LOOSE WHEN ONE SERVICE PULLS OUT ALTOGETHER! WITHDRAWAL--SUCH AS THE NAVY'S FROM THE F100/F401 JOINT AIRCRAFT ENGINE DEVELOPMENT PROGRAM--CAN LEAD TO A FISCAL DISASTER FOR THE REMAINING PARTNER. THE REVERBERATIONS OVER THE NAVY'S DECISION ARE STILL ECHOING AROUND THE AIR FORCE A DECADE AFTER THE FACT.

THE GAO, AMONG OTHERS, HAS SUGGESTED THAT A SERVICE BE "PENALIZED" FOR NOT GOING JOINT AND/OR FOR WITHDRAWING FROM A JOINT PROGRAM. SOME HAVE ADVOCATED PROHIBITING A SERVICE FROM EMBARKING UPON A COMPETING DEVELOPMENT WHEN IT DID NOT WISH TO JOIN A JOINT PROGRAM.

ONE CONTROL MECHANISM PROPOSED WOULD TAKE THE FUNDS WHICH THE WITHDRAWING SERVICE BUDGETED AND TRANSFER THEM--LESS THOSE ASSOCIATED WITH ITS SERVICE-UNIQUE NEEDS--TO THE REMAINING PARTNER.

AS COVERED IN MORE DETAIL BY THE PRODUCTION PANEL, JOINT PRODUCTION FUNDING IS ALSO DONE IN A VARIETY OF WAYS. HERE AGAIN, DIFFICULTIES ARE CAUSED WHEN ONE SERVICE REDUCES OR STRETCHES OUT ITS ORIGINALLY-PLANNED BUY TO ACCOMMODATE OTHER NEEDS FOR FUNDS. SUCH PERTURBATIONS, ALTHOUGH SOMETIMES PAINFUL, ARE USUALLY WORKED OUT BETWEEN THE PARTICIPATING SERVICES SO THAT A REASONABLY SATISFACTORY SOLUTION IS OBTAINED.

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ISSUE: HOW SHOULD JOINT ACQUISITION PROGRAMS BE FUNDED?

BACKGROUND

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- 6.2/6.3A SHARED FUNDING TENDS NOT TO BE A MAJOR PROBLEM
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- UNILATERAL PULLOUT ON SHARED FUNDING PROGRAMS LEADS TO FISCAL "DISASTERS"
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- PRODUCTION FUNDING PRACTICES ON JOINT PROGRAMS ARE ACCEPTABLE

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CONCLUSIONS AND RECOMMENDATIONS

OUR CONCLUSIONS AND RECOMMENDATIONS ARE SHOWN HERE:

FIRST, ALL JOINT FULL-SCALE ENGINEERING DEVELOPMENT PROGRAMS, AND MOST 6.3B ADVANCED DEVELOPMENT PROGRAMS, SHOULD BE SINGLE-SERVICE FUNDED. THE EXECUTIVE SERVICE WOULD THEN HAVE IN ITS BUDGET ALL THE FUNDS NEEDED TO CARRY OUT THE PROGRAM, EXCEPT FOR OTHER SERVICE-PECULIAR ITEMS.

SECOND, THE EXECUTIVE SERVICE SHOULD BE THE ONE WITH THE GREATEST NEED AND PRIORITY AND THUS THE ONE LEAST LIKELY TO DEVIATE FROM THE PLAN. IF THE EXECUTIVE SERVICE'S PRIORITIES GREATLY LESSEN, CONSIDERATION SHOULD BE GIVEN TO CHANGING THE EXECUTIVE SERVICE (OR AGENCY) TO THAT WITH THE HIGHER PRIORITY, AS WAS RECENTLY DONE ON JVX.

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THIRD, IF ONE PARTNER WITHDRAWS FROM A COST-SHARED PROGRAM, ITS CURRENT YEAR, BUDGET YEAR, AND AUTHORIZATION YEAR FUNDS SHOULD BE REALLOCATED TO THE REMAINING PARTNER'S BUDGET

FOURTH, FOR MULTI-AGENCY PROGRAMS SUCH AS DOD-NASA AND DOD-FAA, THE DOD SHOULD TRY TO ARRANGE FOR SINGLE-AGENCY FUNDING OF NEW PROGRAMS AND BUDGET REALLOCATION OF ON-GOING JOINT PROGRAMS WHERE ONE PARTNER WITHDRAWS.

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JOINT ACQUISITION PROGRAM FUNDING

CONCLUSIONS AND RECOMMENDATIONS

- ALL JOINT 6.4 PROGRAMS SHOULD BE SINGLE SERVICE FUNDED
- EXECUTIVE SERVICE IS THAT WITH GREATEST NEED AND PRIORITY
- IF A SERVICE PARTNER WITHDRAWS FROM A "COST SHARED" PROGRAM, HIS BUDGETED FUNDS SHOULD BE REALLOCATED TO THE REMAINING PARTNER'S BUDGET
- THESE PRINCIPLES CAN AND SHOULD BE APPLIED TO MULTI-AGENCY PROGRAMS
- JOINT U.S./FOREIGN R&D PROGRAMS SHOULD, WHERE POSSIBLE, BE SINGLE COUNTRY FUNDED

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FINALLY, FOR JOINT U.S./FOREIGN PROGRAMS, WE RECOMMEND THAT DOD SHOULD TRY TO ARRANGE FOR SINGLE COUNTRY FUNDING-- USING THE AMRAAM/ASRAAM APPROACH. IN THIS CASE, IT WAS AGREED THAT THE U.S. WOULD FUND THE DEVELOPMENT OF THE ADVANCED MEDIUM-RANGE AIR-TO-AIR MISSILE, AMRAAM, AND THE EUROPEAN COMBINE WOULD FUND THE DEVELOPMENT OF THE ADVANCED SHORT-RANGE AIR-TO-AIR MISSILE, ASRAAM.

SUMMARY OF RESOURCES

IN CLOSING, THE R&D PANEL BELIEVES THAT NO ADDITIONAL DOD RESOURCES WOULD BE REQUIRED TO IMPLEMENT OUR RECOMMENDATIONS. THE OVERALL RESULT SHOULD BE EVENTUAL GREATER EFFICIENCIES AND ECONOMIES.

THE MOST SIGNIFICANT IMPACT WILL BE NEW SHORT-TERM DEMANDS ON THE TIME OF SENIOR MILITARY PERSONNEL, CAUSED BY THE NEW JOINT REQUIREMENTS AND MANAGEMENT PROCESS. THE PAYOFF, WE BELIEVE, WILL BE SIGNIFICANTLY LESS LATER TIME WASTED BY THESE SAME OFFICIALS (AND MANY OTHERS), TRYING TO SALVAGE SOMETHING USEFUL FROM THE WRECKAGE OF A BIG INVESTMENT IN AN IMPROPERLY-CONCEIVED JOINT PROGRAM.

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JOINT ACQUISITION PROGRAM FUNDING

CONCLUSIONS AND RECOMMENDATIONS

- ALL JOINT 6.4 PROGRAMS SHOULD BE SINGLE SERVICE FUNDED
- EXECUTIVE SERVICE IS THAT WITH GREATEST NEED AND PRIORITY
- IF A SERVICE PARTNER WITHDRAWS FROM A "COST SHARED" PROGRAM, HIS BUDGETED FUNDS SHOULD BE REALLOCATED TO THE REMAINING PARTNER'S BUDGET
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PRODUCTION

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THIS SECTION ADDRESSES THREE ISSUES THAT IMPACT ON THE PRODUCTION OF JOINT PROGRAMS. FIRSTLY, JOINT PROGRAM OFFICE OPERATIONS HAVE A MAJOR INFLUENCE ON THE EFFECTIVENESS OF JOINT PROGRAMS. SECONDLY, WE ADDRESS THE JOINT PROGRAM IMPACT ON INTEGRATED LOGISTICS SUPPORT. LASTLY, WE ADDRESS THE PRODUCTION IMPLICATIONS OF JOINT PROGRAMS. THE BASIC PREMISE OF THE FOLLOWING DISCUSSION IS THAT COMMON PROGRAM REQUIREMENTS HAVE BEEN AGREED TO BY THE JOINT REQUIREMENTS AND MANAGEMENT BOARD OR THE JCS. WE ARE SEEKING ADDITIONAL EFFICIENCIES IN THE MANAGEMENT OF JOINT PROGRAMS.

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MANAGEMENT, LOGISTICS AND PRODUCTION

- JOINT PROGRAM OFFICE OPERATIONS
- INTEGRATED LOGISTICS SUPPORT
- PRODUCTION EFFICIENCIES

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- THE ROLE OF THE JPO (JOINT PROGRAM OFFICE) BECOMES A CRITICAL MANAGEMENT VEHICLE FOR ACHIEVING SUCCESSFUL IMPLEMENTATION.
- MANY PEOPLE STATED THAT PROBLEMS EXIST IN THE JPO FUNCTION PARTICULARLY IN MATTERS OF PERSONNEL AND WORKING AGREEMENTS.
 - 1) SELECTION, STAFFING, PERFORMANCE REVIEWS AND CAREER GROWTH IMPLICATIONS OF PERSONNEL IN THE JPO - PARTICULARLY THOSE FROM OTHER THAN THE EXECUTIVE SERVICE ARE SOURCES OF UNNECESSARY PROBLEMS.
 - 2) FAILURE TO HAVE CLEAR, COMPREHENSIVE ROLES/RESPONSIBILITIES/ PROCEDURES AGREED TO AMONG THE PARTICIPANTS IMPACTS THE EFFECTIVENESS OF THE OFFICE AND CONTRIBUTES TO FRUSTRATION.
- OVERSIGHT COMMITTEES, AT TIMES, ARE SEEN AS HELPFUL BY JPOS. THIS MAY BE DUE TO THE FACT THAT JRM PROCESS HAD NOT TAKEN PLACE. HOWEVER THEY CAN IMPACT EXECUTIVE SERVICE CONTROL OR CREATE ORGANIZATIONAL CONFUSION SUCH AS CURRENTLY IN THE INTERDICTION PROGRAM.
- TESTIMONY HAS BEEN RECEIVED THAT UNLIKE OTHER SERVICES, ASSIGNMENT TO JPO DUTY BY NAVY PERSONNEL IS VIEWED AS LIMITING TO CAREER GROWTH.

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ISSUE: SHOULD THE AUTHORITY AND RESPONSIBILITY OF THE JOINT PROGRAM
OFFICE (JPO) BE STRENGTHENED

BACKGROUND:

- WEAKNESSES IN JPO FUNCTION RE PERSONNEL AND WORKING
AGREEMENTS
- OVERSIGHT COMMITTEES CAN CONTRIBUTE TO ORGANIZATIONAL
CONFUSION OR EROSION OF ROLE OF JPO AND EXECUTIVE
SERVICE
- PERCEPTION THAT JPO DUTY BY NAVY PERSONNEL INHIBITS
CAREER GROWTH

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- A MAJORITY OF THE FRONT END PROBLEMS CONFRONTING JPOS WILL BE ADDRESSED BY THE PROPOSED JRMB (JOINT REQUIREMENTS AND MANAGEMENT BOARD) OR THE JOINT CHIEFS OF STAFF.
- JOINT PROGRAMS TEND TO BE MORE COMPLEX THAN SINGLE SERVICE PROGRAMS AND REQUIRE EXTRAORDINARY MANAGEMENT SKILLS AND COMPREHENSIVE MEMORANDA OF UNDERSTANDING (MOUs) ON HOW THEY ARE TO BE RUN. THE IMPORTANCE OF THE JPO FUNCTION SHOULD NOT BE TAKEN FOR GRANTED OR BE UNDERESTIMATED. THE CHAIN OF COMMAND WITHIN THE EXECUTIVE SERVICE MUST BE CLEAR AND ACKNOWLEDGED BY ALL.

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CONCLUSION: -MOST SEVERE PROBLEMS OF JOINT PROGRAMS DUE TO
WEAKNESSES IN REQUIREMENTS PROCESS AND "FORCED" NATURE
OF SOME JOINT PROGRAMS.

-JOINT PROGRAMS FREQUENTLY MORE COMPLEX THAN SINGLE
PROGRAMS.

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- THE JRMB AND THE EXECUTIVE SERVICE SHOULD ENSURE THAT THE STAFFING AND POWERS GRANTED TO THE JPO ARE COMMENSURATE WITH THE JOINT PROGRAM CHALLENGES.

THERE IS A NEED FOR COMPREHENSIVE MEMOS OF UNDERSTANDING THAT DEFINE ROLE, RESPONSIBILITIES, AUTHORITY AND PROCEDURES AMONG THE PARTICIPATING SERVICES. SPECIFICS ARE INCLUDED IN THE CHART.

THE PROGRAM MANAGER SHOULD WRITE THE FITNESS REPORT FOR ALL PERSONNEL REPORTING DIRECTLY TO HIM REGARDLESS OF SERVICE AFFILIATION.

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RECOMMENDATIONS:

- JRMB AND THE EXECUTIVE SERVICE ENSURE EFFECTIVE JPO
- STAFFING/SKILLS CONSISTENT WITH COMPLEXITY AND
PHASE OF PROGRAM
- COMPREHENSIVE AND AGREED TO MOUS BY PARTICIPANTS
REFLECTING AUTHORITY REQUIRED TO MEET JOINT
PROGRAM OBJECTIVES, E.G.,
 - STAFFING OF QUALIFIED PERSONNEL
 - LINKAGE TO HOME SERVICE
 - HARMONIZATION OF SPEC AND PROCEDURES
 - MINOR CHANGES IN FUNDING, BUDGET
 - SINGLE INTERFACE TO CONTRACTORS, AND
 - EFFECTIVE CHANGE CONTROL
- REINFORCE PROGRAM MANAGER'S ROLE IN FITNESS REPORTS
OF DIRECT SUBORDINATES

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- THE NAVY SEEMS TO HAVE A UNIQUE PROBLEM IN THAT JPO DUTY APPEARS TO INHIBIT CAREER GROWTH. THE NAVY SHOULD IMPLEMENT APPROPRIATE CORRECTIVE ACTIONS TO ADDRESS THE PROBLEM.
- JRMB SHOULD DISCOURAGE OVERSIGHT COMMITTEES UNLESS NECESSARY. FULL WEIGHT SHOULD BE GIVEN TO ENSURING THE JPO IS CAPABLE AND HAS THE BACKING, FULL COMPLEMENT OF SKILLS AND OTHER ELEMENTS REQUIRED FOR SUCCESSFUL PROGRAM EXECUTION. WHEN ONE IS NECESSARY, ITS ROLE MUST BE CLEARLY DEFINED.

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RECOMMENDATIONS (CONT'D)

- NAVY SHOULD INCREASE ATTRACTIVENESS OF
JPO DUTY FOR NAVY PERSONNEL
- JRMB SHOULD DISCOURAGE OVERSIGHT COMMITTEES

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TURNING NOW TO ANTICIPATED SAVINGS IN INTEGRATED LOGISTIC SUPPORT

THERE ARE LEGITIMATE SERVICE DIFFERENCES IN OPERATIONAL NEEDS THAT MUST BE ACCOMMODATED EARLY IN THE REQUIREMENT PROCESS. IF COMMON EQUIPMENT SPECIFICATIONS THAT WILL FULFILL ALL OPERATIONAL REQUIREMENTS CAN BE AGREED UPON, COSTS FOR LOGISTIC SUPPORT SHOULD GO DOWN.

BECAUSE OF DIFFERING SERVICE SUPPORT PHILOSOPHIES, INTEGRATED LOGISTIC SUPPORT ELEMENTS, SUCH AS DATA, PUBLICATIONS, TEST EQUIPMENT AND TRAINING, CAN DIVERGE IN COSTLY WAYS.

IF THE SERVICES ORDER SPARE PARTS ON DIFFERENT SCHEDULES UNDER DIFFERENT CONTRACTS AND ACCOUNTING PROCEDURES, EACH ORDER WILL BE SMALLER AND PROBABLY WILL CARRY A HIGHER PER UNIT PRICE TAG.

DURING SERVICE INTRODUCTION, ANY PROGRAM HAS DIFFICULTY BECAUSE OF LACK OF TRAINED PERSONNEL AND USAGE DATA FOR SPARES. THESE PROBLEMS ARE MAGNIFIED IN JOINT PROGRAMS. INTERIM CONTRACTOR SUPPORT CAN HELP SMOOTH THE INTRODUCTION BY SUPPLEMENTING TRAINING AND ALLOWING AN ORDERLY DEVELOPMENT OF USAGE DATA.

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ISSUE: HOW CAN ANTICIPATED SAVINGS IN INTEGRATED LOGISTIC SUPPORT OF
JOINT PROGRAMS BE MAXIMIZED?

BACKGROUND:

- REQUIREMENT DIFFERENCES CAUSE NON-COMMON CONFIGURATIONS
- SERVICES DEVELOP DATA, PUBLICATIONS, TEST EQUIPMENT AND
TRAINING IN DIFFERENT WAYS
- INDIVIDUAL SPARES PROCUREMENT CAUSES HIGHER PRICES
- THE PROBLEMS OF SERVICE INTRODUCTION CAUSED BY LACK OF TRAINED
PERSONNEL AND USAGE DATA FOR SPARES ARE MAGNIFIED BY JOINTNESS

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OUR CONCLUSIONS GENERALLY FOLLOW THE LINE THAT MAXIMUM SAVINGS ARE ACCRUED BY CONTINUING COMMONALITY AND IDENTICALITY IN DATA, PUBS, TEST EQUIPMENT, TRAINING, AND SPARES AS FAR AS POSSIBLE. IN SAYING THIS WE ARE MINDFUL THAT THE SAVINGS ARE REAL ONLY IF THE ESSENTIAL REQUIREMENTS FOR EACH SERVICE ARE, IN FACT, SATISFIED.

WE RECOMMEND THAT:

JCS OR SECDEF TASK JRMB TO ESTABLISH POLICY FOR TRAINING AND LOGISTIC COMMONALITY.

EXECUTIVE SERVICE JLC MEMBER REQUEST JLC TO ADJUDICATE SERVICE LOGISTIC DIFFERENCES TO EXTENT AUTHORITIES PERMIT.

USING SERVICES REQUEST EXECUTIVE SERVICE TO CONTRACT FOR SPARES AND INTERIM CONTRACTOR SUPPORT WHEN APPROPRIATE.

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CONCLUSIONS: TO MAXIMIZE ILS SAVINGS

- MINIMIZE REQUIREMENT AND SPECIFICATION DIFFERENCES
- MINIMIZE DIFFERENCES IN DATA, PUBLICATIONS, TEST EQUIPMENT AND TRAINING
- COORDINATE SPARES PROCUREMENT
- SMOOTH SERVICE INTRODUCTION

RECOMMENDATIONS:

- JCS OR SECDEF TASK JRMB TO ESTABLISH POLICY FOR TRAINING AND LOGISTIC COMMONALITY
- EXECUTIVE SERVICE JLC MEMBER REQUEST JLC TO ADJUDICATE SERVICE ILS DIFFERENCES AS NECESSARY
- USING SERVICES REQUEST EXECUTIVE SERVICE TO CONTRACT FOR SPARES AND INTERIM CONTRACTOR SUPPORT WHEN APPROPRIATE

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TURNING NOW TO PRODUCTION EFFICIENCIES, A BASIC PREMISE FOR PRODUCTION ECONOMIES IS A CONSISTENT VOLUME OVER A LONG PERIOD OF TIME. THE CONTRACTOR AND THE GOVERNMENT BOTH GAIN THE BENEFIT OF LEARNING.

WITH THE PLANNING, PROGRAMMING AND BUDGETING SYSTEM (PPBS) OF THE DEPARTMENT OF DEFENSE, IT IS ROUTINE THAT EACH PROGRAM IS REVIEWED EACH YEAR.

A JOINT PROGRAM IS NORMALLY FUNDED FOR PRODUCTION BY THE PARENT SERVICE AND IS THEREFORE SUBJECT TO SHIFTING PRIORITIES.

SIGNIFICANT REDUCTIONS IN PLANNED PRODUCTION USUALLY INCREASE UNIT COST.

DIFFERENT PROCEDURES BETWEEN THE SERVICES IMPACT NEGATIVELY ON PRODUCTION EFFICIENCY.

A SERVICE JOINING UP WITH ANOTHER SERVICE ALREADY IN PRODUCTION WILL SAVE ON DEVELOPMENT COSTS AND BOTH SERVICES WILL GAIN PRODUCTION SAVINGS.

IN A SINGLE SERVICE PROGRAM, DESIGN CHANGES MAY OCCUR THAT WILL IMPACT THE JOINING OF ANOTHER SERVICE.

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PRODUCTION

ISSUE: HOW CAN WE MAXIMIZE PRODUCTION EFFICIENCIES
AND MINIMIZE TURBULENCE IN PRODUCTION PHASE?

BACKGROUND:

- LEVEL RATE MOST EFFICIENT
- ANNUAL PPBS TURBULENCE
- UNEQUAL SERVICE PRIORITIES
- SIGNIFICANT REDUCTIONS IN PLAN
LEAD TO HIGHER UNIT COSTS
- DIFFERENT SERVICE PROCEDURES
LEAD TO INEFFICIENT PRODUCTION
- JOINING ONGOING PRODUCTION
LINE SAVES MONEY FOR BOTH
- DESIGN CHANGES IN A SINGLE
SERVICE PROGRAM MAY PREVENT
JOINING OF ANOTHER SERVICE LATER

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IF PRODUCTION HAS BEEN STARTED, THERE DOES NOT SEEM TO BE A SIGNIFICANT IMPACT FROM INDIVIDUAL SERVICE CHANGES, SINCE THE BUDGET PROCESS ALLOWS SUFFICIENT LEAD TIME FOR PRODUCTION PLANNING TO BE ADJUSTED.

THE EFFICIENCY OF PRODUCTION IS MAXIMIZED (AND TURBULENCE IS MINIMIZED) BY MINIMUM CHANGES IN THE PRODUCTION PLAN, IDENTICAL PARTS OR COMPONENTS, AND MINIMUM ENGINEERING CHANGES.

SINGLE PROCEDURES FOR ALL OPERATIONS AFFECTING THE PRODUCTION WILL SAVE MONEY. THIS INCLUDES ALL PROCEDURES SUCH AS CHANGE CONTROL, QUALITY INSPECTIONS, AND ACCEPTANCE SPECIFICATIONS.

PRODUCTION RATES THAT FULLY USE THE AVAILABLE TOOLING ALSO SAVE MONEY. SUCH TOOLING IS SUPPORTED BY THE VARIOUS MANUFACTURING TECHNOLOGY PROGRAMS OF THE SERVICES.

A MONITOR WORKING ON MAJOR PROGRAMS, IN WHICH HIS SERVICE HAS NO IMMEDIATE INTEREST, COULD ALERT HIS OWN SERVICE TO POSSIBLE DESIGN CHANGES THAT MAY AFFECT THE SUITABILITY FOR FUTURE USE.

IT SEEMS CLEAR (AND OF COURSE IS INTUITIVE) THAT JOINING A PRODUCTION LINE ALREADY OPEN IS CHEAPER--PROVIDING THE ITEM MEETS THE REQUIREMENT.

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CONCLUSIONS:

- PPBS PROVIDES SUFFICIENT LEAD
TIME FOR A PROGRAM IN PRODUCTION
- EFFICIENCY MAXIMIZED BY:
 - STABLE, PREDICTABLE FUNDS
 - COMMON, IDENTICAL PARTS
 - MINIMUM CHANGES
 - SINGLE PROCEDURES
 - RATES THAT FULLY USE TOOLING
- MONITORING ANOTHER SERVICE'S
PROGRAM MAY PREVENT SURPRISES
- JOINING AN ONGOING PROGRAM SAVES
MONEY, IF REQUIREMENTS MET

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WE RECOMMEND THAT:

-- AFTER A JOINT PROGRAM HAS BEEN APPROVED, IF THE PPBS PROCESS CREATES TURBULENCE, THE ISSUE SHOULD BE REFERRED TO THE JRMB.

-- DURING THE FRONT END PROCESS THE JRMB SHOULD GIVE SERIOUS CONSIDERATION TO USING SOME ITEM CURRENTLY IN PRODUCTION THAT COULD SATISFY THE NEED.

-- WHEN REVIEWING A PROGRAM FOR JOINTNESS, AND PARTICULARLY WHEN JOINING IS NOT RECOMMENDED, THE JRMB SHOULD MAKE A RECOMMENDATION CONCERNING THE MONITORING OF THE DEVELOPING SERVICE'S WORK.

JOINT PROGRAMS SHOULD HAVE A SINGLE QUALITY ASSURANCE PROGRAM WITH COMMON DOCUMENTATION WHICH WILL CONTRIBUTE TO A SMOOTH PRODUCTION FLOW.

IN ADDITION TO THE USUAL PRECAUTIONS, IT IS BECOMING MORE COMMON FOR THE PROGRAM MANAGER TO "RESTRICT" VISITORS TO HIS CONTRACTOR AS ONE MEANS OF CONTROLLING IMPROPERLY AUTHORIZED CHANGES. THE PANEL ENDORSES THIS PRACTICE.

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RECOMMENDATIONS:

- AS PART OF JRMB PROCESS
 - IF PPBS CAUSES TURBULENCE,
RETURN TO CONFIRM ACCEPTABILITY
 - CONSIDER ALTERNATIVES IN BEING
 - RECOMMEND MONITORING ONGOING
PROGRAMS AS APPROPRIATE
- JLC, WITH JRMB, DIRECT COMMON
PROCEDURES FOR JOINT PRODUCTION
- PROGRAM MANAGER CONTROL
UNAUTHORIZED CHANGES

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SUMMARY

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TO SUM UP

CHAIRING THIS GROUP HAS BEEN PRETTY HEADY STUFF, BUT, AS ANGELIQUE CAUTIONED ME AGAIN AS I LEFT THE ROOM THIS MORNING--KEEP IN MIND, YOUR IMPORTANCE IN THAT CHAIR IS COMPARABLE TO THE STIFF AT AN IRISH WAKE--ESSENTIAL TO THE OCCASION BUT NOT MUCH IS EXPECTED OF IT.

WE HAD THE MOST VIGOROUS OF INTERACTIONS.

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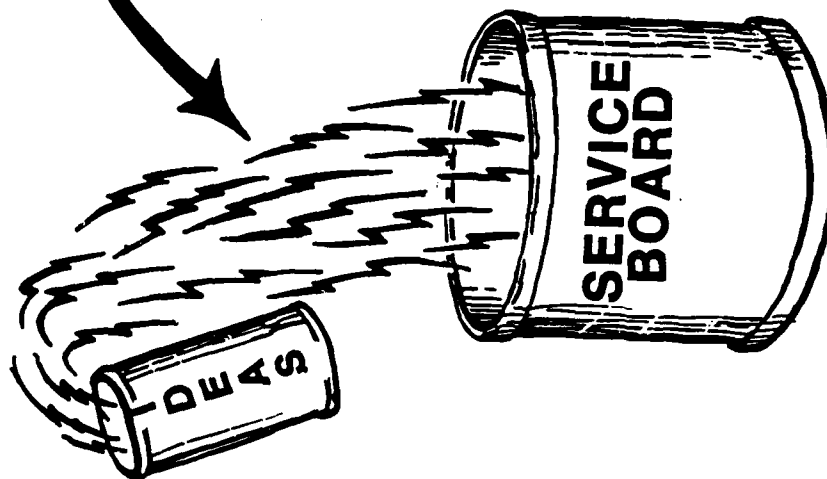
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AS YOUR PANEL WAS GIVEN PERMISSION BY THE TASKING
AUTHORITIES TO OPEN THIS CAN OF WORMS--THAT OF TRANSITIONING
BRILLIANT IDEAS, PREFERABLY THOSE WITH SOME CONTRIBUTING
POTENTIAL FOR WINNING A WAR--INTO MILITARY CAPABILITY AND,
IN SO DOING, ACCOMPLISHING THE EXERCISE JOINTLY--WE
REDISCOVERED, AS PREDICTED, THAT THE ONLY WAY TO REPACKAGE
THE CONTAINER'S CONTENTS WAS TO GET OURSELVES A BIGGER CAN.

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**SERVICE
BIASES**



**JCS CAN
COMPRESSOR FOR
SELECTED CANS**

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WE FOUND, ONCE AGAIN, AS IN OUR DSB HI TECH TRAINING STUDY LAST YEAR, THAT THE JOINT PROGRAM EXPRESS IN THIS CASE HAS LEFT THE STATION WITH OVER SEVEN LOADS OF ADVICE (GOOD STUDIES) IN JUST THE LAST FIVE YEARS. EVERY CAT AND DOG IN CHRISTENDOM SEEMS TO BE IN LINE TO GET ABOARD, LEAVING FEW IF ANY IMPLEMENTORS TO DO THE WORK NEEDED.

IF BUT A FEW PERCENT OF THE VERY USEFUL RECOMMENDATIONS OF RECENT VINTAGE HAD BEEN TAKEN TO HEART, I, FOR ONE, DOUBT THIS SUMMER'S EFFORT WOULD HAVE BEEN NECESSARY.

HOW WE CAN SO CONSISTENTLY ASSUME A WHEELS UP AND LOCKED ATTITUDE TOWARD STUDY EFFORTS IN GENERAL AND THIS SUBJECT IN PARTICULAR PROMISES TO REMAIN A MYSTERY.

HOW CAN WE DO BETTER?

EASILY:

WHY HAVE WE NOT DONE WELL?

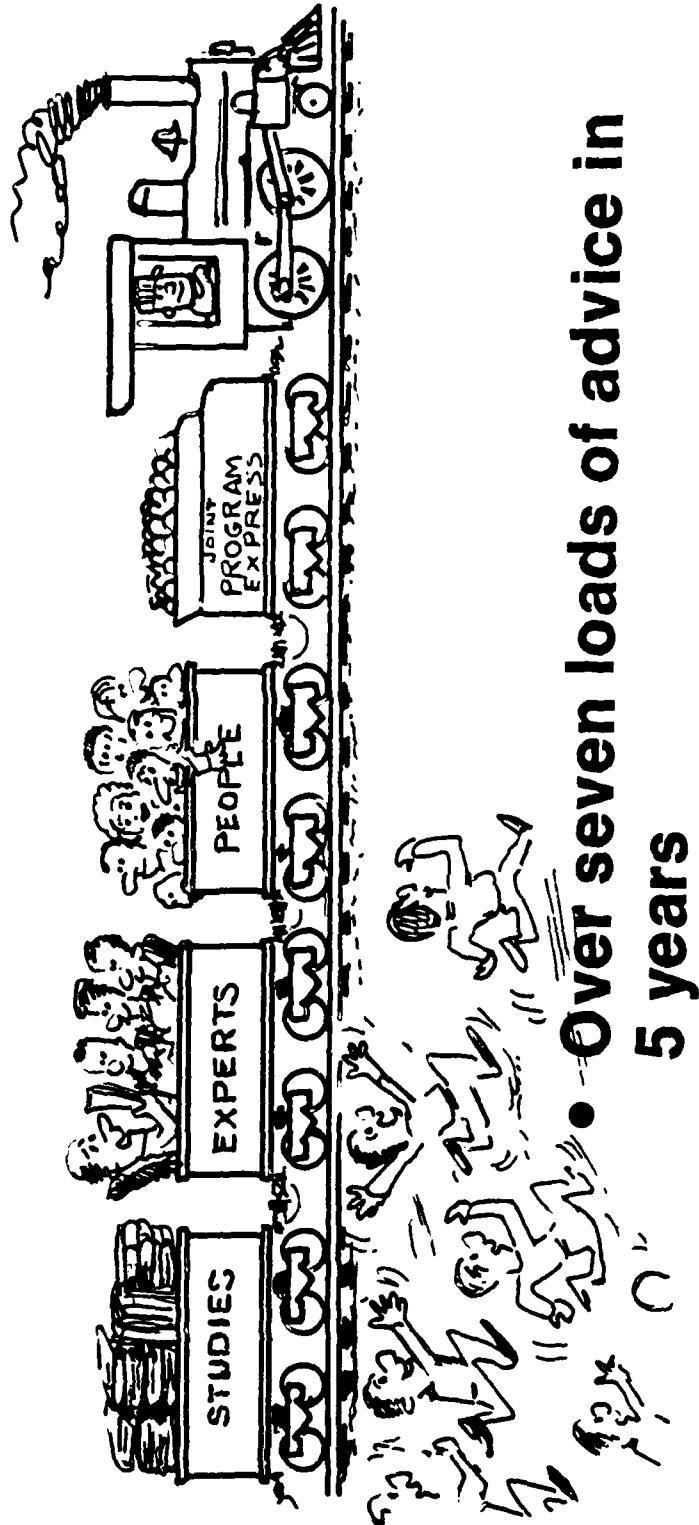
LET ME TELL YOU RIGHT NOW, WELL INDEED HAVE WE DONE--BUT AS ALWAYS--GOOD NEWS ROUTINELY MAKES PAGE A-14 (IF IT'S LUCKY) AND THE HORROR STORIES CONTINUE ASSURED OF PAGE ONE.

WE IN DOD HAVE BEEN UNINSPIRING IN OUR EFFORTS TO ACCENTUATE THE POSITIVE.

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JOINT PROGRAM EXPRESS



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FOR EXAMPLE, OUR JOINT SUCCESSES IN THE BACKWATERS OF COMPONENT DEVELOPMENT TODAY (2 OR MORE SERVICES USING) NUMBERS SOME 720,000 END ITEMS. THAT, COLLEAGUES, IS SOME 33% OF OUR ON-HAND INVENTORY. NOT TOO SHABBY;

DO WE GIVE THE BACK OF OUR HAND TO THE COUNTLESS MAN HOURS OF JOINT SERVICE EFFORT THROUGH, FOR EXAMPLE, THE JOINT LOG COMMANDERS, DEVOTED TO MAKING SUCH SOBERING EVIDENCE POSSIBLE-- BY GEORGE, WE SEEM DETERMINED TO TRY.

IT IS ALWAYS FASHIONABLE TO FOCUS ON THE BAD, THE BIZARRE AND THE BIG, AND LET ME TELL YOU, WE ARE IN THE HIGHEST OF FASHION.

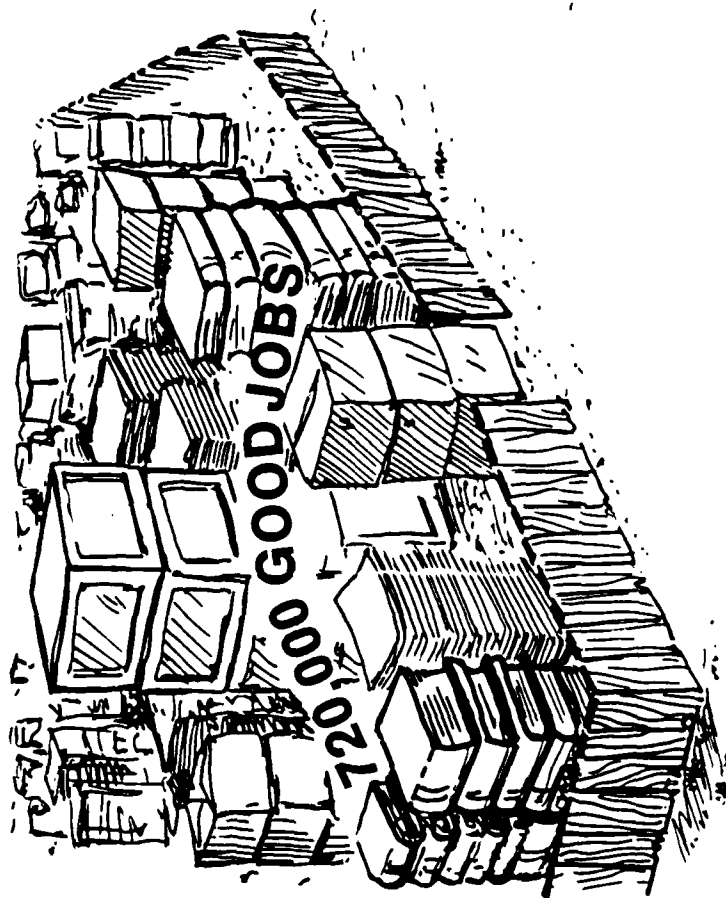
ASSAULT BREAKER COMES TO MIND RATHER QUICKLY AS HOW NOT TO DO IT.

IT CAN BE FIXED. IT IS NOT TOO LATE. BY RUNNING IT THROUGH THE RECOMMENDED LAUNDRY ONE MORE TIME--AND THIS TIME HOPEFULLY HAVING IT COME CLEAN--IT WOULD BE WORTH THE WAIT.

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DOD RECORD



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PAINFUL PIMPLES
OF FAILURE

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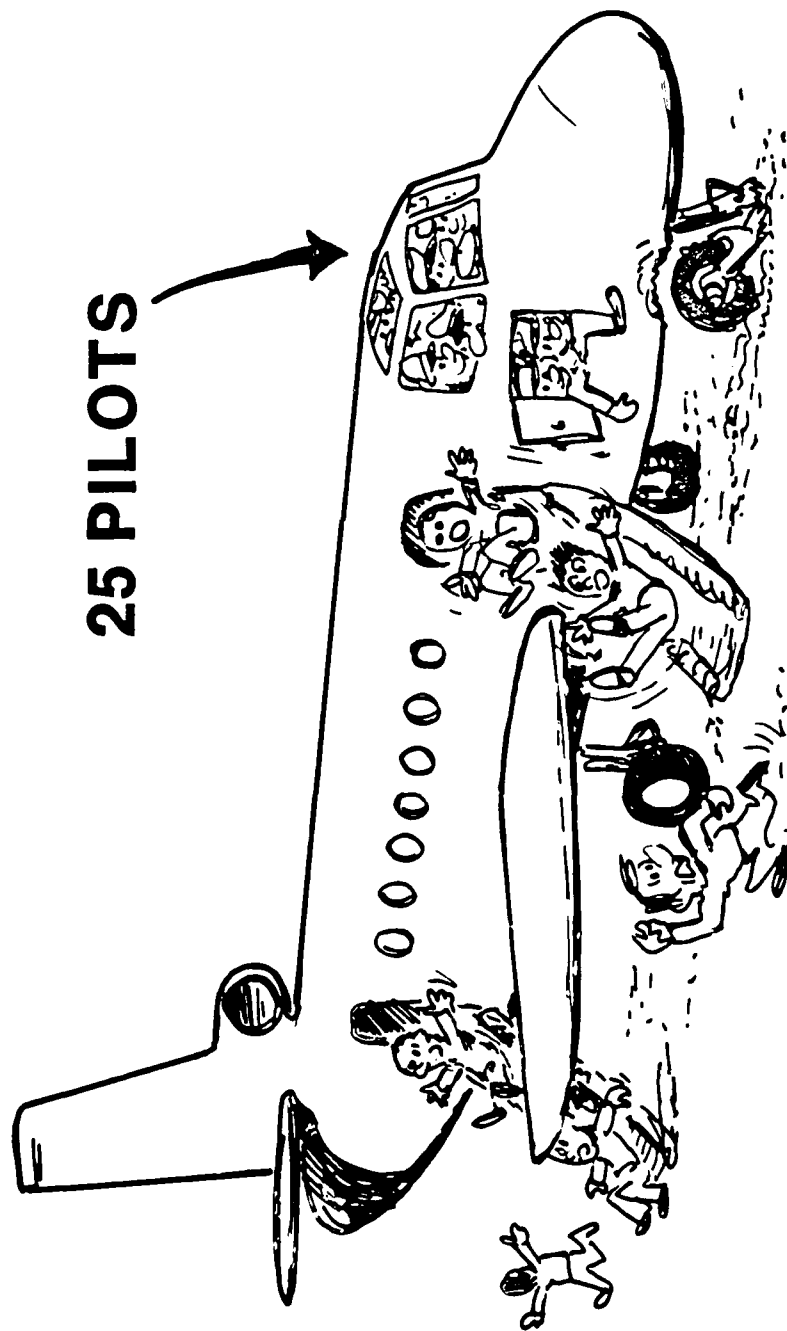
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TRYING TO PLEASE EVERYBODY BY OFFERING A COMMITTEE MEMBERSHIP
HAND ON THE JOY STICK OF ANY PROGRAM IS A GUARANTEE FOR UNSTABLE
FLIGHT.

- PICK THE LEAD SERVICE
- GIVE HIM THE JOB
- ENCOURAGE THE REST OF THE NATIONAL PASSENGERS TO
RELAX AND ENJOY THE TRIP

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25 PILOTS

LESS THAN
ENTHUSIASTIC
PASSENGERS

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WE RESISTED AND REJECTED REORGANIZATION. WE WERE DETERMINED TO USE ESTABLISHED OFFICES AND ORGANIZATIONS TO FULFILL THEIR RESPONSIBILITIES WITHIN ALREADY VOUCHSAFED AUTHORITY. TO STAY WITHIN EXISTING FRAMEWORKS, FOR EXAMPLE, THE JOINT CHIEFS OF STAFF, THE JOINT LOGISTIC COMMANDERS AND THE VICE CHIEFS OF SERVICE HAVE BEEN LOOKED TO FOR QUANTUM INCREASES IN ACTIVE INVOLVEMENT.

AMONG THE SEVERAL WHIPPING BOYS ROUTINELY RECIPIENTS OF ACRIMONIOUS ABUSE WERE DOD AND DARPA.

- THE PANEL FINDS BOTH ABSOLUTELY ESSENTIAL. THE "HAND-OFF" PROCESS FROM DARPA IS, HOWEVER, INCONSISTENT AND THUS IS UNSAT. TOO MANY FUMBLES IN THE BACKFIELD OR EXAMPLES OF CALHOUN NOT WANTING THE BALL.

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FROM THE OUTSET TO THIS MOMENT WE HAVE BEEN MINDFUL OF OUR CHARTER TO SEEK PERFORMANCE INCENTIVES AND WAYS BETTER TO MOTIVATE STEADY, VICE "PERCEIVED TO BE" OSCILLATING SERVICE SUPPORT OF JOINT EFFORTS.

IN OUR VIEW THE INCENTIVES AND MOTIVATIONS ARE THERE, HAVE BEEN THERE, AND, WITH THE SHARPENING SUGGESTIONS OFFERED HEREIN AND IN EARLIER STUDY EFFORTS WILL BE EVEN BETTER.

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A PERCEPTION THAT THE PATIENT IS BUT OBSTINATE WHEN HE RESISTS PRESCRIBED TREATMENT, WHERE IN REALITY IT IS BECAUSE IT MAKES HIM FEEL WORSE, POINTS TO AN INEXPERIENCED CORPSMAN WHERE A MAYO CLINIC IS ESSENTIAL TO CURE.

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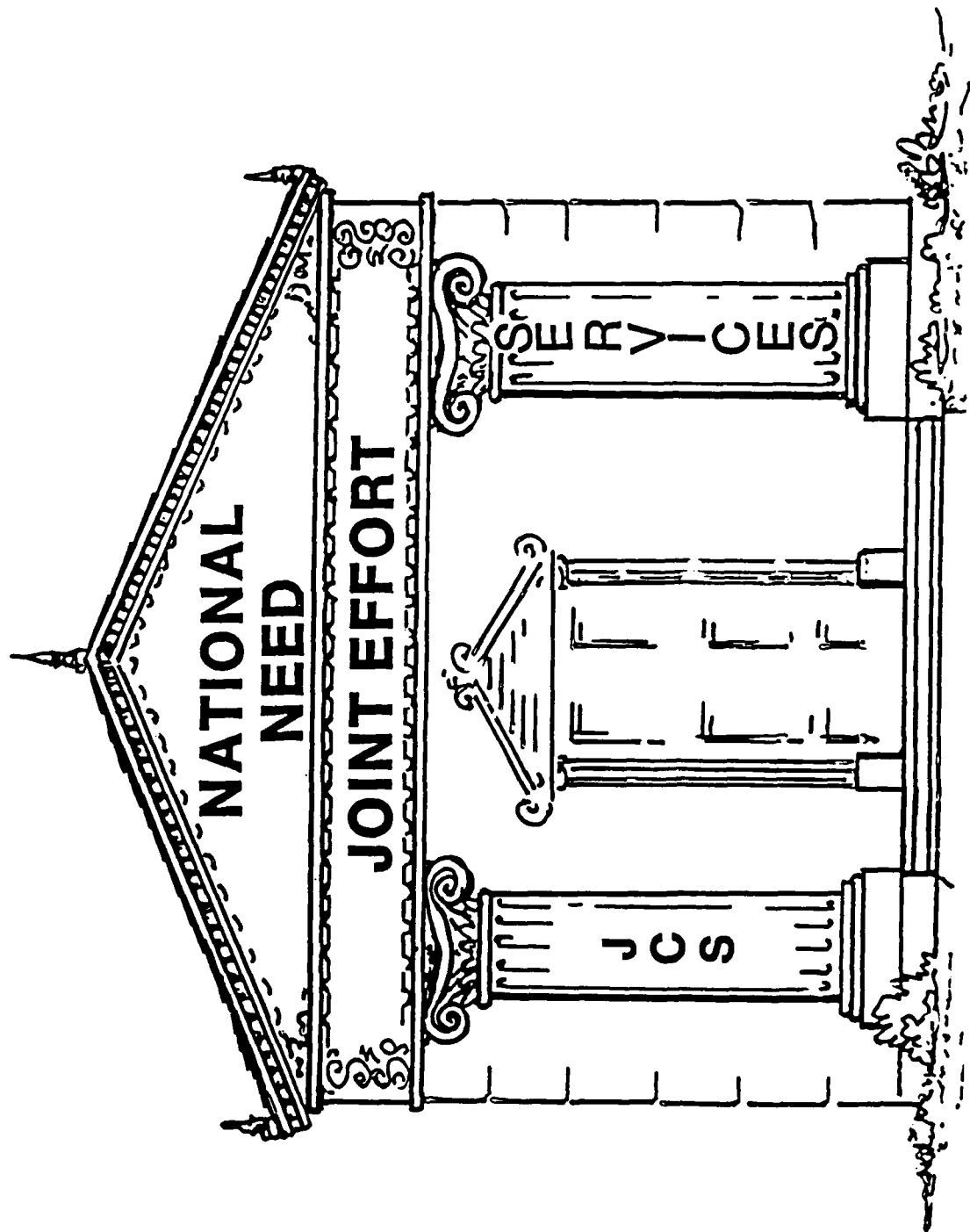
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WE RESPECTFULLY OFFER TWO HIGHLY VISIBLE, CREDIBLE,
SEASONED AND APPROPRIATELY RESPONSIBLE FORA TO SUPPORT
THE ACKNOWLEDGED NEED FOR MORE AND MORE JOINT EFFORTS.

IT IS TIME TO MOVE OUT IN PROPER FORMATION.

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TO SUM UP:

- THE PANEL BELIEVES NO ADDITIONAL DOD RESOURCES WOULD BE REQUIRED TO IMPLEMENT THESE RECOMMENDATIONS. THE OVERALL RESULT SHOULD BE EVENTUAL GREATER EFFICIENCIES AND ECONOMIES. THE MOST SIGNIFICANT IMPACT WILL BE NEW DEMANDS ON THE TIME OF SENIOR MILITARY PERSONNEL.
- WE FAVOR A LEAD SERVICE TO CARRY THE JOINT BALL - ONE WHERE THE PATERNAL RESPONSIBILITY OF A GENE FUBINI ABOUNDS AS APPLIED TO THE JOINT PARTNER.
- HELP FROM UNEXPECTED AND TOO OFTEN UNNEEDED QUARTERS TOO OFTEN THWARTS BEST EFFORTS IN JOINT WORK--AVOID WHERE POSSIBLE.
- JCS OVERSIGHT AND CONTINUING FOLLOW-UP FOR OPERATIONALLY PROMISING ENDEAVORS--RIGHT FROM THE HORSE'S MOUTH AS IT WERE--AND HERE WE MEAN THE HORSE HIMSELF AND NOT THE HORSE HOLDERS, HOWEVER WELL TURNED OUT.
- THE HIGHLY VISIBLE BOARD SUGGESTED OFFERS MUCH PROMISE IN OUR VIEW.
- THE LACKADAISICAL RECALCITRANCE CANNOT BE TOLERATED. THE STAKES ARE TOO HIGH.
- CRISP AND UNMISTAKABLE DIRECTION SIGNALS WILL BE ESSENTIAL, FROM BOTH THE CHIEFS AND FROM THE SERVICE BOARD.

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SUMMING UP (CONT'D)

WHEN ALL IS SAID AND DONE, WE URGE ADOPTION OF THE APPROACHES OFFERED. THEY MUST BE LASTING AND HEAVILY FREIGHTED WITH THOROUGH FOLLOW-UP. AS OUR PANEL SAID TO MOSES--THE TEN COMMANDMENTS SOUND GREAT, BUT DO THEY HAVE THE NECESSARY ENFORCEMENT MACHINERY.

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