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THE DEFENSE SYSTEMS ACQUISITION AND REVIEW COUNCIL

A Study of Areas of Consideration Affecting the Functions and Process of Defense Major Systems Acquisition

Research Paper
Prepared for Doctor R. Lorette
Course SSM 513--Systems Management
and Organization Theory

Handwritten notes

410 103

The Systems Management Center
University of Southern California, Los Angeles

by

W. A. Sidney
15 September 1976

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PREFACE

This report addresses weapon systems acquisition within the framework of Department of Defense (DoD) procurement and the management of DoD systems. It reviews highlights of the history of weapon systems management from the pre-1947 era to the present. It makes no attempt at a definitive or detailed appraisal but confines itself to a discussion of principal features. The intention is to offer some explanation of how we arrived where we are with respect to acquisition policies and organization, to describe how the system operates, and under what influences, and to provide some perspective about the future.

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The Defense Systems Acquisition Review Council (DSARC) was created to assume better coordination, in the major weapons acquisition process. It assists and monitors the basic effort of responsive acquisition of major weapons for the Armed Forces within the influences of the environment of procurement and DoD management processes. Until relatively recently, the DoD had not had a consistent record for close examination of the systems acquisition process, identification of		

problems involved, and adjustment to changing conditions and times. The Armed Services, for their part, were unable to resolve conflicts as technological advancements outpaced their organization and management capabilities. As a consequence of legislation enacted, beginning with the National Security Act Amendments of 1949 to the issuance of DoD Directive 5000.1, there developed a system by which the Secretary of Defense decided what courses of action should be pursued. His decisions rested primarily on the recommendation of DSARC reviews at critical junctures in the defense major weapon systems acquisition process.

Regulations and directives that formalized these procedures are currently being altered under new policy of increased flexibility within the DOD. A recent example is embodied in OMB Circular A-109, dated 15 April 1976, which directs that the criteria for systems development be based on mission requirements rather than specification satisfaction.

The central and most difficult problem is not much different from that faced in the 1960s: How to obtain sufficient numbers of quality hardware at affordable costs.



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During the course of this research, investigation, and writing, the author contacted and exchanged ideas with executives involved in many aspects and areas of DoD management and weapons acquisition. Individual philosophies and ideas of these men are impossible to identify; undoubtedly many have found their way into this paper. It is to these men that I owe the greatest debt of gratitude for guidance in collecting and preparing materials for this project.

My particular thanks to Mr J. Toomepuu, Training and Doctrine Command; Mr J. Nucci, Office Director Defense Research and Engineering (ODDR&E); Mr L. Birk, Defense System Management Center (DSMC). Mr G. Southerland, ODDR&E; Mr J. Orlanski; Institute of Defense Analysis; MG R. Lowe (USAF, Ret), DSMC; Mr B. Markofsky, Plans and Operations Branch MICV PMO; and Mr W. Babson, Deputy Project Manager AAH PMO.

ABSTRACT

The Defense Systems Acquisition Review Council (DSARC) was created to assume better coordination in the major weapons acquisition process. It assists and monitors the basic effort of responsive acquisition of major weapons for the Armed Forces within the influences of the environment of procurement and DoD management processes.

Until relatively recently, the DoD had not had a consistent record for close examination of the systems acquisition process, identification of problems involved, and adjustment to changing conditions and times. The Armed Services, for their part, were unable to resolve conflicts as technological advancements outpaced their organization and management capabilities. As a consequence of legislation enacted, beginning with the National Security Act Amendments of 1949 to the issuance of DoD Directive 5000.1, there developed a system by which the Secretary of Defense decided what courses of action should be pursued. His decisions rested primarily on the recommendation of DSARC reviews at critical junctures in the defense major weapon systems acquisition process.

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- B. OSD Memorandum, Establishment of DSARC, 30 May 1969
- C. OSD Memorandum, Policy Guidance on Major Weapon Systems Acquisition, 28 May 1970
- D. DoD Directive 5000.1, Acquisition of Major Defense Systems, 22 December 1975

I. INTRODUCTION. THE DEFENSE SYSTEMS ACQUISITION
REVIEW COUNCIL--AN OVERVIEW

The Defense Systems Acquisition Review Council was created in 1969 as a step toward better coordination of the various phases of major systems acquisition.¹ The Council is composed of the Director of Defense Research and Engineering (DDR&E), and other key officials. The Council evaluates and reviews each major system at three critical junctures -- the end of contract definition, the end of engineering development, and prior to the initiation of production.

The review conducted at key system decision points in the acquisition process is held for the purpose of insuring that the service has a viable program and is ready to proceed to the next phase of acquisition. It is the responsibility of the project manager of the ongoing system to provide the DSARC with the pertinent information it needs to make its recommendations regarding programs to the Secretary of Defense (SECDEF). The SECDEF then makes the key decision--proceed, modify, or cancel -- based in part on the DSARC recommendations.

Any key system decision is a high level problem which involves

¹This agency considers (1) dollar value -- programs which have an estimated RDT&E cost in excess of \$50 million, or an estimated production cost of \$200 million; (2) national urgency; (3) recommendations by DoD component heads or OSD officials.

behavioral, legal, political, and non-technical considerations as well as technical ones. These considerations all directly affect defense management and decision making.

II. FOUNDATION

Evolution of the Defense Weapons Acquisition Process

Prior to 1947, decisions regarding defense procurement rested primarily with the two executive departments associated with defense, The Department of War (Army and Army Air Corps) and the Department of the Navy (Navy and Marine Corps).

As technological capabilities increased and world environment became more complex, decisions regarding which defense system to develop became more constrained by political considerations. Differences of opinion arose between the services where areas of responsibility concerning strategic operations overlapped. Technological advancements outpaced the organizational and management capabilities of the individual armed services; the military departments could not resolve the conflicts that developed. A change in organization and management was needed. This need resulted in Congress passing the National Security Act of 1947.

The Act established three executive departments, the Department of the Army, the Department of the Navy, and the Department of the Air Force. The three executive departments were called the National Security Establishment. The head of this organization was called the Secretary of Defense who was limited to the exercise of general authority. The Act did not create a Department of Defense, however.

After two years it was apparent that the original organization needed further refinement. Proposals for change resulted in the National Security Act Amendments of 1949. The Amendments redesignated the National Security Establishment as the Department of Defense and established it as an executive department of the government. The Service Secretaries lost their cabinet status and the SECDEF's authority and responsibility increased. Subsequent legislation, the Reorganization Act of 1958 and an Executive Order in 1961, further increased the responsibilities of the SECDEF.

A system evolved in which the SECDEF decided what course of action to pursue. This was a complete alteration of the pre-1947 concept wherein the services made decisions regarding defense acquisition.

Despite the reorganization changes in the DoD, and until Robert McNamara was appointed SECDEF, the Office of the Secretary of Defense (OSD) involvement in the weapons acquisition decision process was mostly that of loosely monitoring service initiated programs. Under McNamara, the decision making process became centralized at the OSD level. Secretary McNamara made all major decisions and apparently overmanaged the services.² Still, the defense systems acquisition process continued to lack overall coordination between functions necessary for efficient procedure.

²Jack Raymond, "The McNamara Monarchy" American Defense Policy, Second Edition. John Hopkins Press, Baltimore: 1968. pp. 406-412.

In 1969, the OSD came under new management; Melvin Laird was SECDEF, and David Packard was Deputy Secretary of Defense (DEPSECDEF). Packard was tasked with the responsibility of improving the defense acquisition process. The new SECDEF and DEPSECDEF believed in a participating style of management, and gradually restored much of the decision making responsibility to the services. This new management style established the beginning of a material reorganization in systems acquisition. The genesis of this reorganization was DoD Directive 5000.1.

Prior to the actual issuance of 5000.1, two important memoranda were issued by Packard. The first was a memorandum dated 30 May 1969, Establishment of DSARC -- Appendix A -- which resulted from Mr Packard's initial review of systems acquisition management in the DoD. The second memorandum dated 28 May 1970, Policy Guidance of Major Weapons Systems Acquisition -- Appendix B -- was written after a year's study of the acquisition process.

The 28 May memorandum set the final concept for DoD Directive 5000.1. The policy change in the memorandum emphasized the use of trade-offs. The effective use of practical cost schedules and performance trade-offs was delineated as the most important single factor in controlling the cost of developing and acquiring a new system. Possibly the most significant change from previous policy concerned contracting. New policy dictated that the type of contract be tailored to the risk involved. Cost reimbursement contracts were recommended for advanced development and full-scale development and fixed price contracts were recommended for production.

DoD Directive 5000.1, Acquisition of Major Defense Systems -- Appendix C -- restated policy and went into greater detail delineating responsibilities of OSD and the DoD components. Additionally, a more detailed description of program considerations was included. These considerations were a statement of the system need in operation terms, consideration of cost parameters, logistics support, use of milestones, assessment of technical uncertainty, increased use of test and evaluation, contract form consistent with program characteristics, source selection considerations, and use of realistic management information-program control requirements.

The Environment of DoD Procurement

The Armed Services Procurement Regulation (ASPR) defines procurement as follows:

Procurement includes purchasing, renting, leasing, or otherwise obtaining supplies and services. It also includes all functions that pertain to the obtaining of supplies and services including description but not determination of requirements, selecting and solicitation of sources, preparation and award of contract, and all phases of contract administration.³

The procurement process includes all actions taken in obtaining required goods and services. Together with requirements determination, production, and supply management, military procurement is part of one basic effort -- responsive logistics support to the Armed Forces. In the broadest sense, the term "procurement" describes the

³ASPR 1-201

whole process whereby classes of resources required by the Armed Forces obtained. The methods of achieving that process constantly change, and in that atmosphere of change the major weapon systems acquisition function is carried out.

The scope of procurement operations in the Armed Forces can be judged from the fact that the annual operation of DoD generates a greater range of material and service requirements than any other single enterprise in the world. It should be readily apparent that coordinating this broad function into a balanced integrated system poses very real challenges in management.

The process of acquiring major (currently the Trident and B-1 Bomber) weapons is the largest, most complex, and has the greatest dollar volume of any in the DoD. The cycle from concept to delivery may require five to ten years, with technical improvements continually evolving. Consequently, decision-making is the responsibility of the highest organizational levels in the services, and involves concentrations of the top management, technical, procurement, and production talent. It is characterized by a very small volume of extremely complex contracts averaging millions of dollars in value.

The technical and financial risks associated with large acquisition contracts rise proportionately with the trend toward more complex weapons systems and lengthening of necessary development and production lead times. Such considerations have greatly influenced the structure of industry and have reoriented its efforts as advancing technology directs the emphasis towards new systems. The extremely specialized nature of modern weapons development and production has resulted in a high degree of market concentration. Few

firms have the requisite financial strength, the facilities, and the technical capability to meet development and production requirements; it is therefore only logical that the bulk of orders go to the firms demonstrating the required capability.⁴

Due to their magnitude and potential impact on the industrial economy, Federal expenditures are being used more and more to promote the social and economic objectives of the government. One observer has noted that through, "the purpose of procurement, as such, is not to enforce public policies, . . . it would be reprehensible and indeed impossible for the government to execute its procurements in defiance or disregard of such policies."⁵ Thus, the role of defense procurement in national security management is not limited to the acquisition of weapons and services and supplies but is also interpreted so as to strengthen the foundation of our economic and social system.

Small independent business units have traditionally been recognized as a basic and indispensable element of our free enterprise system. Since as far back as 1890, and passage of the Sherman Antitrust Act, Congress has been vitally concerned with the preservation of the competitive structure of

⁴OASD (Comptroller), Directorate for Information Operations, 100 Companies Receiving the Largest Dollar Volume of Procurement Contract Awards, FY 1972, pp 4,7.

⁵Herbert Rovack, "Government Procurement as a Means of Interceding Social Legislation", presentation to the National Contract Management Association, Washington, D.C., January 19, 1972, p.2.

the economy. It is the policy of DoD to place a fair proportion of its total purchases and contracts for supplies, services, and research and development with small business concerns. A 1968 amendment specifies that small businesses are to be given assistance to enable them "to undertake and obtain the benefits of" research and development contracts, a procurement area that accounts for about half of all Federal activities in private business and industry but is dominated in the DoD by major systems contractors⁶.

Since the early 1950s the DoD has pursued a program of assistance in labor surplus areas by placing defense contracts in such areas when it can be done without paying premium prices. The goals of the program are to preserve know-how and skills necessary to fulfill government requirements, utilize manpower, promote national readiness, and disperse essential industries (thus rendering them less vulnerable to air attack) by broadening the industrial base. The labor surplus program is a program that supports small business. In general terms, a contract is negotiated with the firm in the area of highest unemployment.

The Buy American Act passed in 1963 fosters domestic free competitive enterprise by imposing various restrictions on the Federal purchase of supplies of foreign origin and from foreign sources. The Act requires that in the procurement of supplies and services, only domestic source end items shall be acquired for public use in the United States. Articles on

⁶Bernard S. Waterman, "Small Business Participation in Federal Government Research and Development: The Government Perspective," (Ph.D dissertation, George Washington University, 1971), pp 23, 24.

materials or supplies not available in the United States are exempt.

The Buy American Act also applies to the Balance of Payments Program. The magnitude of DoD transactions, that require dollar expenditures on foreign markets, make it essential that overseas defense procurement programs be continually reviewed and carefully managed; otherwise they may have adverse effects on balance of payment deficits. When determining whether or not a foreign source will be awarded a contract, a 50 percent evaluation similar to that specified in the Buy American Act is used; that is, if it is estimated that the cost of a domestic item will not exceed the cost of the foreign item by more than 50 percent, solicitation is restricted to U.S. end products and services.⁷

The Federal Government has two methods by which it has been able to affect the conditions of employment of the American working force and to promote achievement of certain goals of a social nature -- its constitutional powers to regulate interstate commerce and the considerable power of Federal procurement. A difference in the means used by the government to affect a purpose can be seen between that of the Federal Wage and Hour Law and the Service Contract Act. The first has as its basis the federal power to regulate interstate commerce, which the second relies on the economic power of contract to provide minimum wage coverage to workers in

⁷DoD Directive 7060.1, subj; Department of Defense Transactions Entering the International Balance of Payments, July 1, 1963, 3d Amendment, par. II; ASPR 6-104.4, 6-804.1, 6-806.1.

businesses that are essentially interstate.

Weapons acquisition decisions are certainly influenced by the environmental factors of procurement, notwithstanding pure cost considerations. A composite of the pressures of this environment directly affect Armed Forces procurement activities. These activities fall into one of eight broad classes; base support, supply system support, area support, industrial support, transportation services, construction, research and development, and weapons acquisition. Emphasis in this research project is on weapons acquisition.

Basic Concepts Applied to Managing Large Scale DoD Systems

There are essentially nine benchmarks in the process of acquiring major defense weapon systems; identification of need, the conceptual effort, the program initiation decision, the validation effort, the full-scale development decision, the full-scale development effort, the production decision, production effort, and deployment.

Initially, the technical, military, and economic basis for an acquisition program are established through comprehensive system studies and the development and evaluation of experimental hardware. Next, there is a decision by the SECDEF, by means of a Decision Coordination Paper (DCP) supported by the DSARC, to validate the technical, military, and economic effort. During the validation effort, major program characteristics are substantiated through extensive analysis and hardware development by contractors who will do the full-scale development. A decision by the SECDEF, supported by the DSARC, to proceed to full-scale development is usually expected if the earlier predictions of program characteristics are confirmed.

The intended result of the full-scale development effort is a hardware model and documentation needed to produce the system for inventory. The production decision by the SECDEF, supported by the DSARC, concerns whether to produce the item for operational use, the initial quantity to be produced, and plans for future production. The decision to produce for the inventory is normally the decision to deploy the system to operational units and put into service.

Within the parameters of complex constraints and pressures, the DSARC provides the medium of OSD "check & balance" of the military services responsibility for the conduct and management of major systems programs.

Aligned with procurement is the system of large scale management peculiar to the DoD process. Of this total system, three elements appear to have significant impact on major weapons procurement; the DoD components influencing decision (particularly DDR&E), the budgetary process, and the DoD programming system.

The position of DDR&E was created by the DoD Reorganization Act of 1958 to assist the SECDEF in effectively directing and controlling the overall DoD program of research and development. DoD Directive 5129.1, the DDR&E charter, further refined and expanded DDR&E functions -- Appendix D.

Responsibilities of the ODDR&E are: to require research, development, test, and evaluation of weapons, weapons systems, and defense material; to approve, modify, or disapprove programs and projects of the military departments and other DoD agencies in assigned fields; to eliminate

unpromising or unnecessarily duplicating programs; and to initiate or support promising projects for research and development and environmental services. Assistant directors reporting directly to the ODDR&E have broad responsibilities in specific areas that cross organization lines. These areas include system acquisition management and acquisition policy.⁸ Figure 1 depicts the current organization of the DoD.

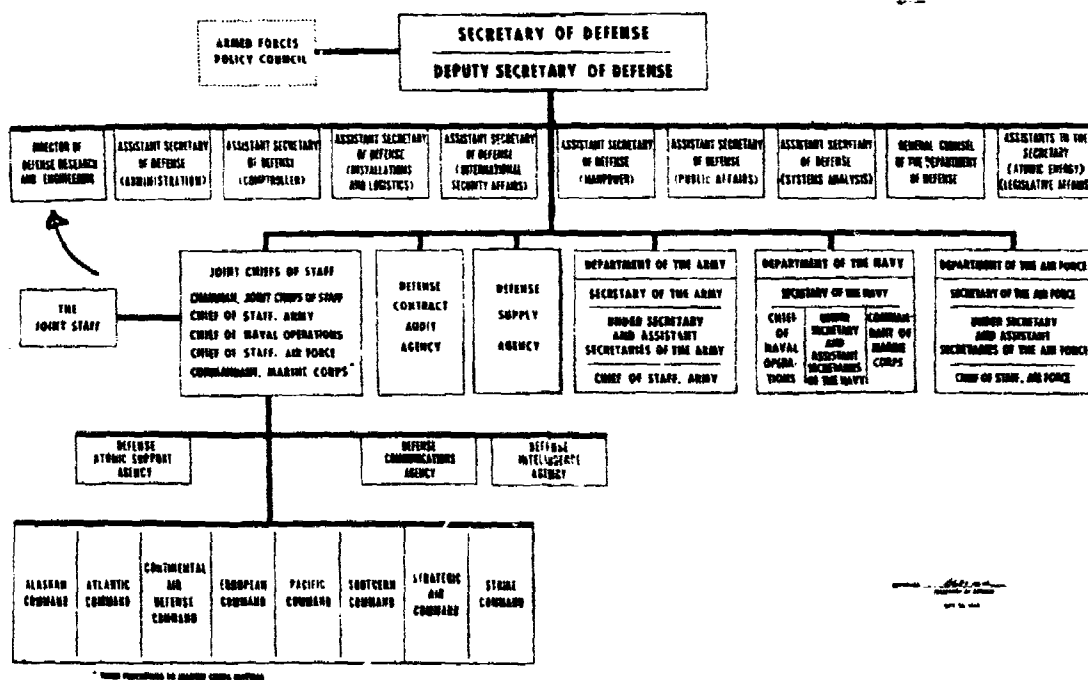


Figure 1. -- Organization, Department of Defense

⁸Research and Development in the Department of Defense, A Management Overview. ODDR&E; Washington, D.C., May 1974.

In the budgetary process, funds are received and authorized annually according to the functional activities involved; military personnel, procurement, RDT&E, etc.⁹ Congress appropriates funds under the sixth titles shown in figure 2. RDT&E (Title V) is further grouped into eight budget activities.

Titles of the Defense Appropriation Act

- | | |
|---------------------------------|--|
| I. Military Personnel | IV. Procurement |
| II. Retired Military Personnel | V. Research, Development,
Test and Evaluation |
| III. Operations and Maintenance | VI. General Provisions |

V. RDT&E Budget Activities

1. Military Sciences	5. Ships, Small Craft and Related Equipment
2. Aircraft and Related Equipment	6. Ordnance, Combat Vehicles and Related Equipment
3. Missiles and Related Equipment	7. Other Equipment
4. Military Astronautics and Related Equipment	8. Programwide Management and Support

Figure 2. -- The budget

There are four RDT&E appropriations and accounts -- Army, Navy (including Marine Corps), Air Force, and Defense Agencies.

⁹National Security Management -- Defense Organization and Management ICAF, Washington, D.C., 1967. p. 182.

Budget activities within the RDT&E appropriations are prescribed for the following purposes; submitting budget estimates, submitting appropriate requests, accounting for financial transactions with regard to the budget, and submitting reports on accounts. This classification is oriented primarily toward equipment types, not toward missions of the DoD.

The DoD programming system, on the other hand, is oriented toward missions: it is based on the current year plus 5 years for funds and the current year plus eight years for forces. This system enables DoD to coordinate long-range and mid-range planning and the annual budget process, orient top-level planning toward major defense missions, conduct cost effectiveness analysis with respect to alternative force structures, relate the impact of resources to the output of military systems and material, and propose, review and approve or reject changes in programs.¹⁰

The programming system organizes all DoD activities into 11 department wide programs as depicted in Figure 3.

Each major program is subdivided into elements whose mission characteristics are closely related; for example, a weapons system may entail development of a cannon, a projectile, and a prime mover. The comprehensive plan that is the outcome of the programming process is called the Five Year Defense Program (FYDP)¹¹

¹⁰ Ibid. pp.178-179.

¹¹ Ibid. pp. 194-195

Program Structure

- | | |
|--------------------------------------|--|
| I. Strategic Forces | VII. Central Supply and Maintenance |
| II. General Purpose Forces | VIII. Training, Medical and Other General Personnel Activities |
| III. Intelligence and Communications | IX. Administration and Associated Activities |
| IV. Airlift and Sealift | X. Support of Other Nations |
| V. Guard and Reserve Forces | XI. Undistributed Adjustments |
| VI. Research and Development | |

Relationship Between Program and Budget Subdivisions

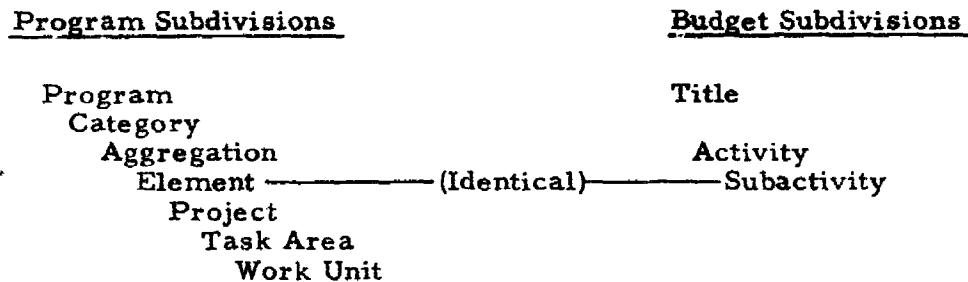


Figure 3. -- The DoD programming system

The DDR&E has the responsibility for the R&D (Department VI) portion of the program to facilitate planning, programming, budgeting, and managing the activities for which he is responsible. The DDR&E has divided the R&D program into six categories as shown in Figure 4.

Research (6.1)

Exploratory Development (6.2)

Advanced Development (6.3)

Engineering Development (6.4)

Operational Systems Development (6.7)

Management and
Support (6.5)

Figure 4. -- Structure of the RDT&E Program

All categories except operational systems development are divisions of Program VI, (Figure 3), R&D, in the DoD programming system. Operational system developments are included in Program I, Strategic Forces; in Program II, General Purpose Forces; in Program III, Intelligence and Communications; or in Program IV, Airlift and Sealift. R&D is not conducted under the other programs shown in Figure 3. The categories of Program VI are subdivided into elements 6.1, 6.2, 6.3, etc. Each element can consist of RDT&E projects; each may be one project, or it may be a number of related projects in a particular field of R&D.

Within the boundaries of the DoD budget and programming system the DSARC monitors the defense systems acquisition process. Service involvement in the management process consists primarily of the responsibility of the military services to procure defense systems as approved by the SECDEF. To do this, the services are organized with specific commands assigned exact functions. The Army and Navy both use a materiel command for systems acquisition. The Air Force assigns the research and acquisition function to the Air Forces Systems Command and the logistical

function to the Air Force's Logistics Command. The primary purpose of the services' materiel acquisition commands is to develop, procure, and support defense systems.¹²

¹²National Security Management -- Procurement. ICAF, Washington D.C., 1975. pp. 45-48

III. THE DSARC: FUNCTIONS AND PROCESS ¹³

Introduction

Initiation of the DSARC process usually begins when a service informs OSD that it is ready for a DSARC on a particular program; however, a DSARC may be called whenever OSD deems it necessary.

There are certain specified decision considerations which the services must address in some detail. These items are obtained through analysis of DoD Directive 5000.1, by meeting with the DSARC principals, staffs, and from formal and informal memoranda. In practice, and as interpreted from DoD Directive 5000.1, all services attempt to speak to the issues of interest to the DSARC.

Establishing Directives and Instructions

DoD Directive 5000.1 establishes the DoD policy on acquisition management of major defense systems which forms the basis for the associated decision-making process. One of its principal points is that the services are responsible for the conduct and management of major systems programs with review by OSD for adherence to policies. The SECDEF reserves the right to make the key decisions that initiate programs or increase program commitments. Accordingly, two key elements emerge as primary to this management plan and decision-making process. The key elements of the DoD weapon systems acquisition management are the DCP

¹³ This section is essentially constructed around the command briefing utilized by the ODDR&E.

and the DSARC. This combination forms the apex of the management of major weapon systems acquisition programs. Detailed considerations of this process are contained in DoD Instruction 5000.2, the DCP and the DSARC -- Appendix E. The DCP and the DSARC are used in support of the SECDEF decision-making process in accordance with DoD Directive 5000.1.

Supporting DoD Directive 5000.1 with respect to the DCP/DSARC is DoD Directive 5000.26, the DSARC charter -- Appendix F. Also supporting this directive, particularly with respect to the DCP/DSARC process, is DoD Directive 5000.3, Test and Evaluation -- Appendix G --, and DoD Directive 5000.4, OSD Ccst Analysis Improvement Group (CAIG) -- Appendix H. Briefly, 5000.3 requires that the DDR&E(T&E) report to the SECDEF and to DSARC his evaluation of program test results and proposed test plans at each DSARC decision review. Because of intimate alignment with DSARC and the influence on fiscal aspects of procurement, 5000.4(CAIG) is addressed separately in the next section.

Decision Coordination Paper

The DCP is a summary document that provides DoD management officials with the essential information about a major system program. The DCP in each major system is periodically updated as the program advances through the critical decision points in its life cycle. The purpose of the DCP is to assist the DSARC as it supports the review and decision-making process of the SECDEF throughout a program life cycle. The DCP, when signed by the SECDEF, becomes a contract between him and the Secretary of the military service.

The Decision Coordination Paper becomes a very complete summary of the planned program. It is prepared, or revised, at the start of each new phase of the acquisition and will therefore focus on the next immediate step. Accordingly, a DCP prepared to initiate a program will place heavy emphasis on the nature of the program and program description addressing cost estimates related to project budget limitations. As the program progresses the content of the DCP will change with brief revalidation and more emphasis on such aspects as contract procurement, reliability and maintainability, logistic support, etc. While the DCP is revised at the start of each phase of the acquisition, it must also be revised at any time there is a significant program change or reorientation. There is a DCP for each major program. The content of the DCP is shown in Figure 5.

Nature of Program	Management (DoD/Contractor)
- Need/Threat	Reliability and Maintainability
Program Description	Test and Evaluation
- Cost, Schedule, Performance	Logistic Support Plan
- Risks	Environmental Effects
Alternative Programs	International Aspects
- Pros and Cons	Security Guidance
Cost Effectiveness	Thresholds
- Trade-offs	Recommendations by Signatories
Contract/Procurement Plan	Summary of SECDEF Decisions Over Program Life
- Achievement Milestones	Resource Annex
- Acquisition Strategy	
- Contract Plan	
- Production	

DSARC Membership

The DSARC membership, Figure 6, consists of the DDR&E, Assistant Secretaries of Defense, (ASD), Comptroller (C); Installations and Logistics, ASD (I&L); Program Analysis and evaluation, ASD (PA&E); Intelligence, ASD (I); and the Director of Telecommunications and Command and Control Systems (DTACCS).

MEMBERS

DDR&E	ASD(PA&E)
ASD(C)	ASD(I)
ASD(I&L)	DIR(TACCS)

OTHER KEY PARTICIPANTS

Service Secretary
Chairman Joint Chiefs of Staff
Service Military Chief
Deputy DDR&E for Test and Evaluation
Chairman, DoD Cost Analysis Improvement Group

CHAIRMANSHIP

DDR&E	For Development Decisions
I&L	For Production Decisions
ASD(I) or DIR(TACCS)	
Co-Chair with DDR&E or ASD(I&L)	For (I)/(TACCS) Programs

Figure 6. -- DSARC make-up

The DDR&E serves as chairman for development decision meetings. The ASD(I) and DTACCS assume chairmanship for the DSARC reviews of programs for which they have primary responsibility. The Secretary of the sponsoring services, the Chairman of the Joint Chiefs of Staff (JCS), or his representative, the Deputy DDR&E (Test and

Evaluation), and the Chairman of the Cost Analysis Improvement Group (CAIG) are also key participants in DSARC reviews.

DSARC Decision Points

Figure 7 illustrates the scheduled critical decision points and acquisition phases normal to the acquisition of a major defense system that is projected for inclusion in the force structure. At each decision point or milestone, the DSARC will review the program readiness to start the next phase and provide recommendations for the SECDEF decisions:

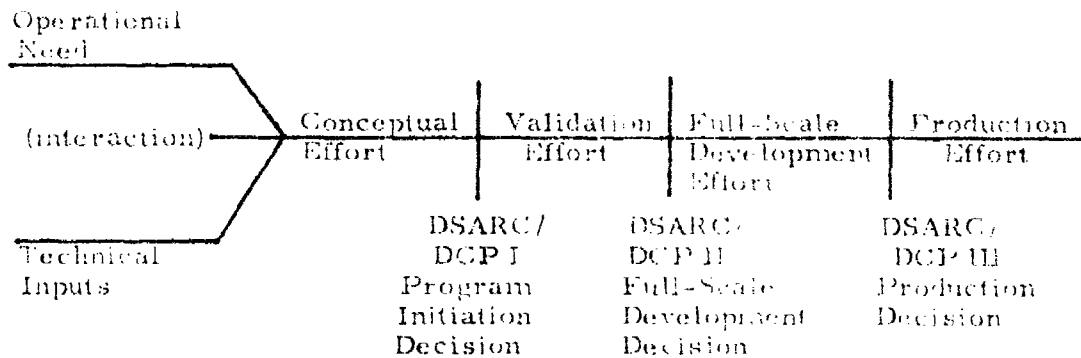


Figure 7. -- The acquisition process for a major system

The three decision points are:

Milestone I -- Program Initiation Decision. At this decision point the SECDEF considers approval to commit resources to advanced development during the validation phase. Primary concerns at this point are that the identified need has been substantiated, the proposed range of system major performance parameters matches the need, the plan for evaluating system alternatives has given consideration to all approaches that appear to be technologically feasible, the acquisition strategy is consistent

with program characteristics including risks, and the preferred program is within allowable costs considering fiscal year phasing of funds and funding constraints in the planned projected total budget. In general, the program initiation decision point should occur before any substantial expenditure of the program development funds and before any feasible program alternatives have been foreclosed.

Milestone II -- Full Scale Development Decision. At this point the SECDEF will consider the commitment of resources to do full scale engineering development or to detailed design of the system. Primary concerns at this decision point are with reaffirming the operational need for the system in the light of its cost and projected budgetary constraints, the adequacy of the evaluation of alternative approaches, the readiness of the system to enter full scale engineering development, the adequacy of the test and evaluation results, and the acquisition strategy consistent with program characteristics, including risks.

Milestone III -- Production Decision. At this point the SECDEF will consider the commitment of substantial resources to the production and deployment of the system. Primary concerns at this point are with reaffirming the operational need for the system in light of its cost and projected budgetary constraints, ensuring the proposed quantity is consistent with the operational needs and available resources, assessing the readiness of the system to enter the production process, evaluating the readiness of the production process to build the system, reviewing the adequacy of the logistics support plan, and obtaining reassurances that

the acquisition strategy and contract plan are consistent with the program characteristics and risks.

The basic DCP/DSARC process functions in terms of the three critical decision points. In actual operation the situation may well require several DSARC reviews for each transition point. For example, in addition to a Milestone II review to start full scale development, it may become necessary to procure additional development models to continue testing; a DSARC IIA will be held to consider the need for additional models. At the production decision point the first DSARC III review may consider only the release of long lead funds. The second review may address approval of limited production where later DSARCs may consider annual buys. The system is flexible to provide for these program variations.

While full preparation for DSARC is essential to the success of this management system, the other essential part of the process is the post-DSARC effort. The DSARC makes recommendations to the SECDEF for final decision. The decision is forwarded to the Service Secretary by signature of the revised DCP or initially by an action memorandum which then must be reflected into the SECDEF/Service Contract, the DCP. Figure 8 illustrates the DCP/DSARC process.

To close off the process, there is one additional follow-on action. This is to assure that the requirements of the approved DCP are properly reflected in the Request for Proposals (RFP) and subsequent contracts the services make with industry. This is done by review of the RFP or the proposed contracts on a selected basis.

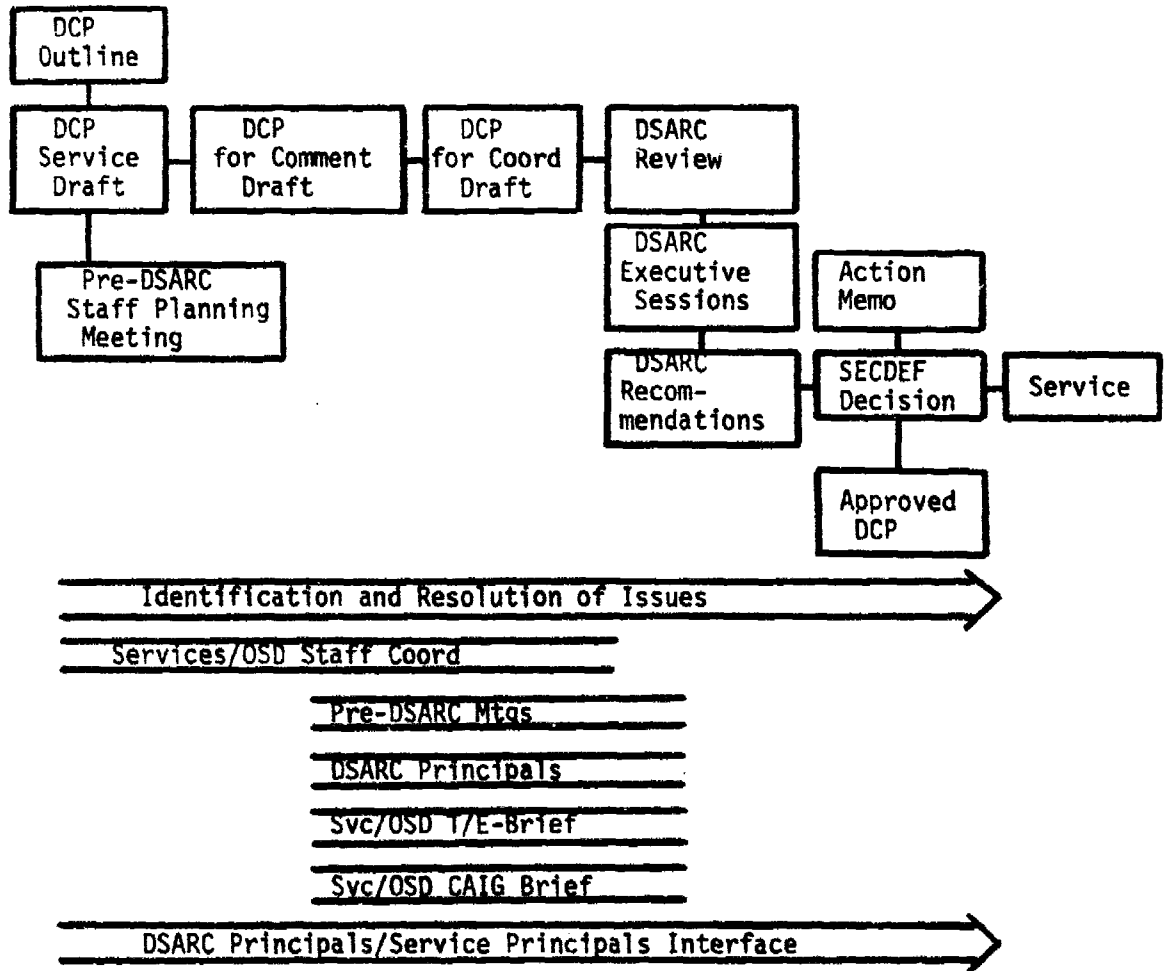


Figure 8 -- DCP/DSARC process

IV. The OSD Cost Analysis Improvement Group (CAIG)

Weapons systems acquisition cost growth two or three times the original baseline estimates was a factor leading to the creation of the OSD Cost Analysis Improvement Group (CAIG). The CAIG function is to review and interpret for presentation to DSARC principals, project managers, and military services independent cost estimates employing techniques different from those used by the program manager in making his estimate of weapon systems costs.

The CAIG has published a comprehensive Operating and Support Cost Development Guide for Aircraft Systems. Similar guides for other weapons are in preparation. In addition, the CAIG currently is active in two major areas to improve the quality of DoD's cost data base and its rapid accessibility to analysts throughout the military services and OSD.

The first major area involved coordinating the review with the issuance of DoD Instruction 7000.11, Contractor Cost Data Reporting (CCDR). The CCOR reporting system expands the data collection to ships, tracked vehicles, and other classes of weapons and identifies specific fixed and variable elements of indirect cost. The second major area involves improving the efficiency of the DoD cost analysis who assess and utilizes historical data -- such improvement was not possible when this data was kept in hard copy at a few scattered locations.

Each DSARC member is represented on the CAIG. Also represented are the

military departments cost analysis organizations. The CAIG has made progress toward its primary goal of improving cost estimating and analysis within DoD. Perhaps one of its material accomplishments is that the independent estimate and CAIG review have contributed to discourses on cost within DoD and are leading to a better understanding of the need for realism of estimates.¹⁴

¹⁴Defense Management Journal, the CAIG. Margolis, January 1975, p.24.

V. THE ARMY SYSTEM

One of the significant problems in preparing for a DSARC review is determining how to address the issues in a manner acceptable to the DSARC. Within the Army system, this approach is proposed during a pre-DSARC review called the "ASARC" (Army Systems Acquisition and Review Council), chaired by the Vice Chief of Staff of the Army. These reviews reflect the initial effort, or "tip of the iceberg" view of the complexity involved in moving through the DSARC process.

Program levels of decision for systems during the materiel acquisition phase are established by regulation.¹⁵ Those major Army systems subject to special management procedures and review by ASARC/DSARC at specified decision points are shown in Figure 9. Consolidated, unclassified listings of these systems are published quarterly by Headquarters, Department of the Army.

The driving influence on the combat development process is derived primarily from three sources: the Army family of plans, the Army Master study Program, and the Army Long-Range Technological Forecast. A combination of these documents influence identification of major weapon systems to be developed for the force structure.¹⁶

¹⁵AR 1000-1, Basic Policies for Systems Acquisition DA, 5 November 1974; AR 71-9, Materiel Objectives and Requirements, 7 February 1975. AR 1000-1 is the policy statement for Army materiel acquisition on which all other regulation and objective is based. A copy of AR 1000-1 is attached at Appendix I.

¹⁶ AR 1-1, Plans, Army; 31 Oct 73. The family of plans includes: (Cont'd)

Title	Short Title	Decision Level	
		ASARC	DSARC
1. Advanced Attack Helicopter	AAH	X	X
2. Advanced Scout Helicopter	ASH	X	X
3. Artillery Locating Radar	AN/TPS-37	X	X
4. Automatic Communications Central Office	AN/TTC-39	X	X
5. Cannon Launched Guided Projectiles	CLGP	X	X
6. CH47 Modernization	CH47 Mod	X	X
7. HAWK Improvement Program (HIP)	Improved HAWK	X	X
8. Heliborne Fire and Forget Missile	HELLFIRE	X	X
9. Howitzer, Towed, 155 MM	XM198	X	X
10. Man Portable Air Defense System	STINGER	X	X
11. Mechanized Infantry Combat Vehicle	MICV	X	X
12. MGM-52C LANCE Missile System (Non-Nuc Whd LANCE)	LANCE	X	X
13. NAVSTAR - Global Positioning System/Army User Equip- ment	NAVSTAR- GPS/AUE	X	X
14. Main Battle Tank	XMI	X	X
15. Pershing II	PERSHING II	X	X
16. Surface to Air Missile Development	SAM-D	X	X
17. Tactical Fire Direction System	TACFIRE	X	
18. Tactical Operations System	TOS	X	X
19. Utility Tactical Transport Aircraft System	UTTAS	X	X
20. U.S. ROLAND	ROLAND	X	X
21. Vehicle Rapid Fire Weapons System Successor	VRFWS-S	X	X
22. VHF/FM Portion of the Single Channel Tactical Radio Communications Subsystem	SINGARS	X	X
23. General Support Rocket System (Expected to be designated a major system. New entry)	GSRS	X	X

Figure 9.--Major systems

The Army process for developing and fielding new items of equipment is formalized into a management model called the Army Life Cycle System Management Model (LCSMM), Figure 10.

The LCSMM is a management tool used as a guide in the acquisition of new equipment -- major or non-major.¹⁷ The model outlines the procedures for acquisition of Army systems through the ultimate phaseout and disposal of the system from inventory. Note that the model has four phases; conceptual, validation, full-scale development, and production and deployment. It contains 119 events with the ASARC/DSARC reviews occurring at events 14, 42, 71 and 98. The LCSMM is a doctrine model, or guide, and all systems therefore do not follow the outline exactly.

16 (Cont'd)

The Army Strategic Appraisal (ASA) the basic document for threat analysis; the Army Force Guidance (AFG) for developing the objective force levels and resources and requirements; the Army Force Program (AFP) details the Army Force structure for the current and budget year; and the Army Strategic Capabilities Plan (ASCP) for the employment and/or support of Army Forces in the short-range period. The Army Master Study Program identifies current and approved studies originating in the Army. The Long-Range Technological Forecast cites advances in knowledge, capability, and materiel that technology can be expected to produce if supported by R&D resources during the next 20 years.

¹⁷ Department of the Army Pamphlet No. 11-25, Life Cycle System Management Model for Army Systems, May 1975. A major weapons system is distinguished from a non-major system by virtue of its requirement for DSARC review or that it is critically important, complicated, expensive, controversial, or for some reason should involve the top management of the Army.

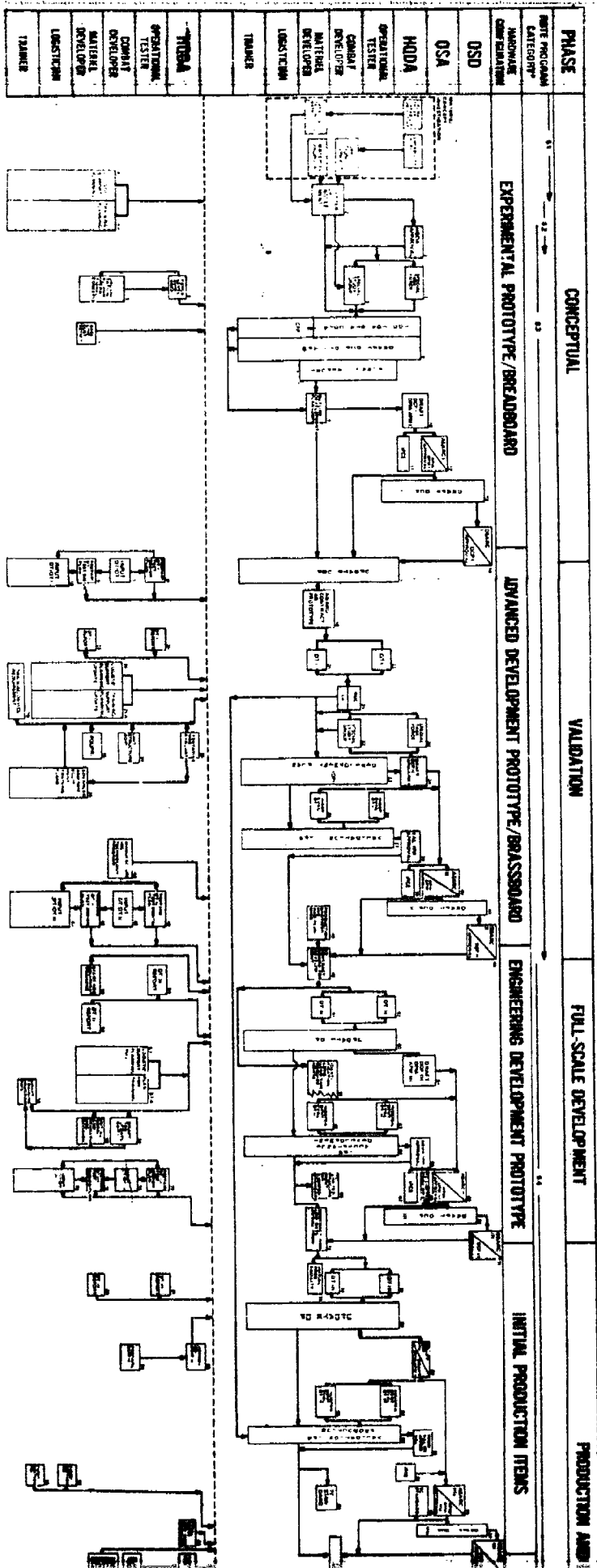


Figure 10.---Life cycle system manager

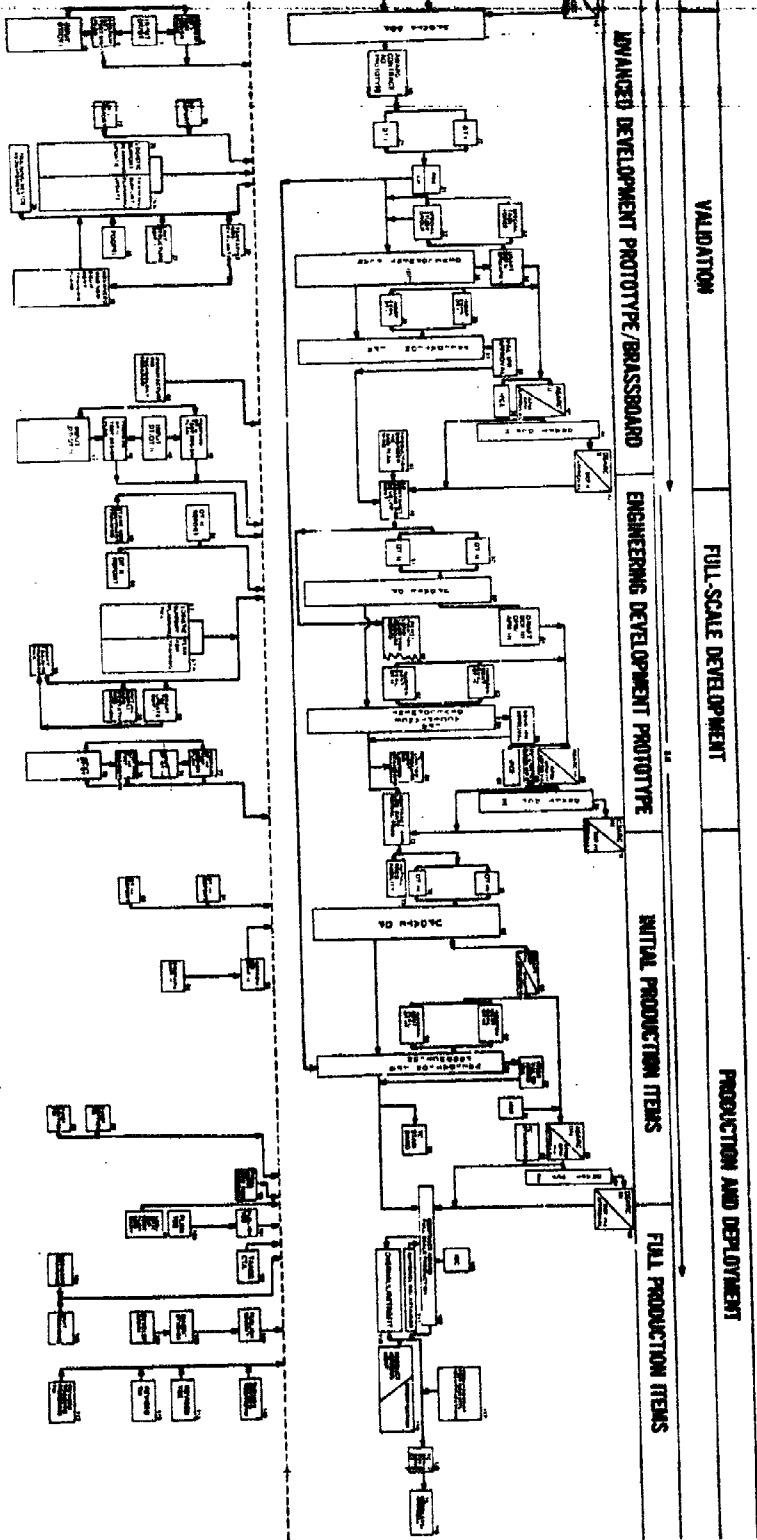


Figure 10.--Life cycle system management model

2

Each system is unique in some respect. Management procedures will vary; some activities will be bypassed or performed concurrently, some systems may enter the model at some point in the middle, and every major system may not continue on to the production and development phase.

Note that in the validation, full-scale development, and production and deployment phases, there is both Operational Testing (OT) and Development Testing (DT) prescribed. In each of these phases there is a repetitive sequence of design, prototype construction, test, evaluation, and decision. With each iteration of this sequence, design comes closer to a production version and risks should hopefully become significantly less.

All RDT&E and acquisition programs are guided by the overall policies and procedures of AR 1000-1, (Basic Policies for Systems Acquisition, DA), AR 15-14 (ASARC Procedures), and AR 70-1 (Army Research, Development, and Acquisition). This includes developmental and nondevelopmental programs directed toward satisfying materiel and non-materiel requirements. Major management decisions during the acquisition cycle are made at milestones appropriate to a particular program and constitute the Materiel Acquisition Decision Process (MADP). The MADP reviews are a vital part of the decision process. These reviews serve as a forum to surface critical issues that must be resolved before decisions can be made. The system acquisition cycle is shown in Figure 11. It represents the applied process of the LCSMM.

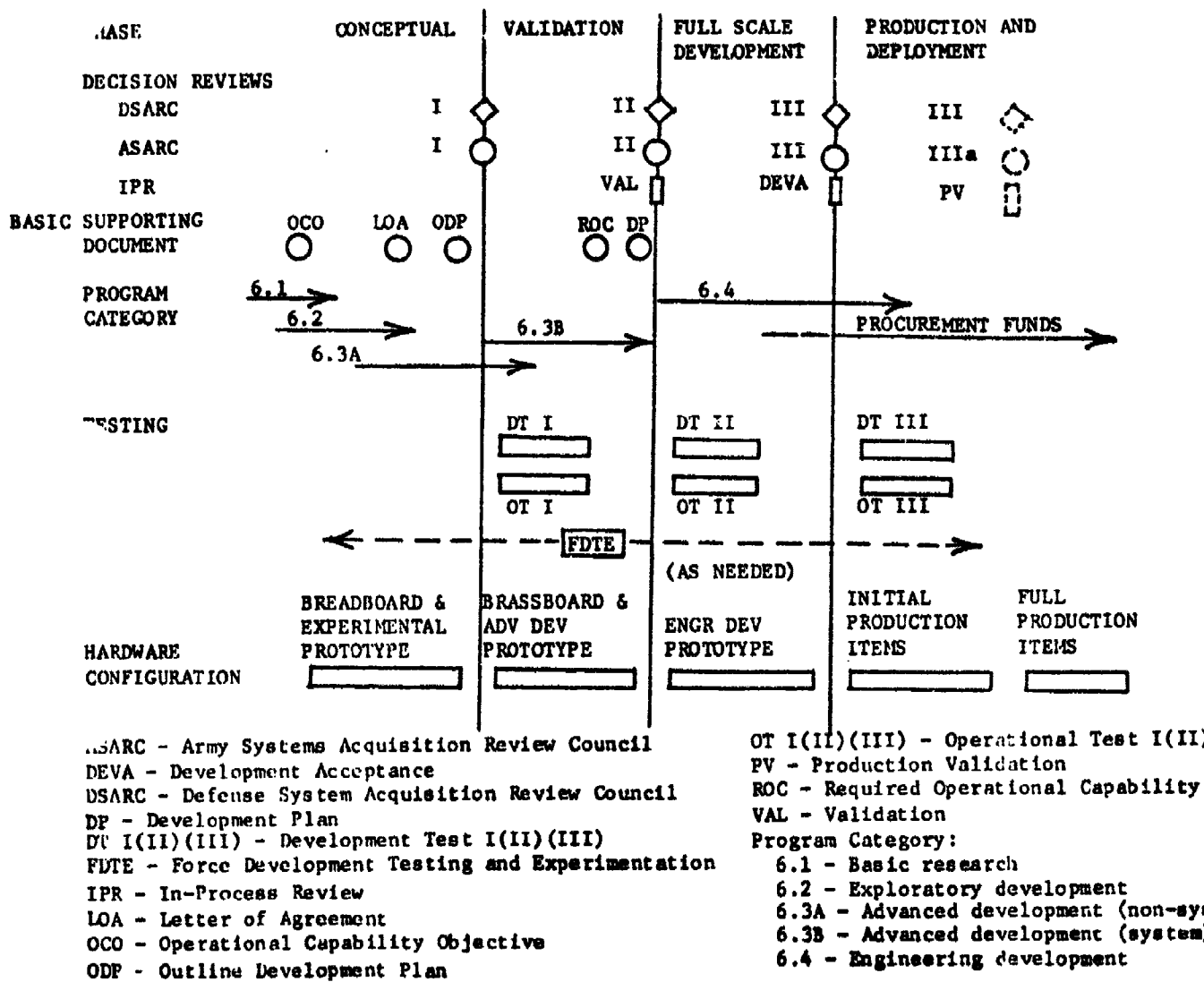


Figure 11. --System acquisition cycle

A new AR 1000-1, dated this year, will address the subject of evolutionary development of current standard equipment versus the initiation of totally new developmental programs. The AR will state, "The preferred method to correct inadequacies in already developed systems is to exploit the performance growth potential inherent in the system."

The Army position is that complexity can be reduced by placing design emphasis on reliability, availability, maintainability, and reduction of total life cycle costs.¹⁸

¹⁸ AR 702-3, Army Materiel Reliability, Availability, and Maintainability (RAM), 22 March 1973

VI. CASE STUDIES

In recent years Army weapon systems have continued to grow both in terms of sophistication and costs. As an example, the M60A2 tank acquisition costs rose approximately 500 percent over the earlier M60 version. In the current environment the image of materiel acquisition procedures is one of overly complex systems, excessive concurrency of programs with duplicative missions, and changing requirements. Whether this image is deserved or not, the need for change was recognized by DoD and the services and the process has recently undergone significant changes to improve and simplify procedures.

To illustrate the foregoing, this section will refer to four Army systems. Two had their beginning before inception of the DSARC process and two generally followed the DoD and Army acquisition cycle as we visualize it today. The Advanced Attack Helicopter (AAH) and the Mechanized Infantry Combat Vehicle (MICV) are generally following the prescribed cycle; the Armored Reconnaissance Scout Vehicle (ARSV) and the 3/4, 1-1/4 ton truck acquisition preceded DSARC.

The Advanced Attack Helicopter¹⁹

The AAH has been designed as a highly mobile aerial anti-tank weapon

¹⁹ Army Research and Development, Army Readiness Posture; Requirements to Meet Foreseeable Threat. Hoffman, March/April 1976. p. 23.

system capable of fighting and surviving in a mid-intensity environment and to provide, for the first time, a night and adverse weather capability. Thus far two contractor prototypes cumulatively have over 100 flight-test hours.

Both aircraft have generally performed well; some technical problems have been encountered and solved. The solutions to these problems and associated program adjustments directed by DSARC principles based on other DSARC subsystems -- specifically, substituting the Hellfire Missile for the TOW Missile in the Target Acquisition Detecting System -- materially increased original estimates and necessitated an Army re-programming request for \$14.6 million for FY 1976.

With these funds it is estimated that the prototypes can be brought to sufficient maturity for the conduct of the government competitive tests. Total program costs, including inflation are estimated to be at \$551 million for R&D and \$2,330 million for procurement.

The system is currently in the validation phase and is pending a DSARC Milestone II review this calendar year.

The Mechanized Infantry Combat Vehicle (MICV)²⁰

The MICV has been designated to provide significantly improved mobility, firepower, and armor protection. This vehicle will permit infantry to fight while mounted and protected. Total program costs,

²⁰ Ibid, p.13.

including inflation, are estimated at \$93 million for R&D and \$644 million for procurement.

A low-rate initial production contract is planned to be awarded in October 1977, with deliveries starting in January 1979. Developmental testing commenced in September 1975 and has been progressing satisfactorily except for technical difficulties with the transmission.

A backup transmission program has been initiated and, to insure the fielding of a vehicle meeting all of the requirements, additional time has been added to the test program. Total time lost in the program is estimated to be eight months.

The Armored Reconnaissance Scout Vehicle (ARSV)²¹

After spending more than \$30 million on R&D and requesting \$25 million for procurement of 35 vehicles in the FY 1975 budget, the Army terminated its ARSV program.

ARSV began as an international project in 1965 but the multinational program foundered. At about the same time, the Army embarked on its own program to replace the M114 armored personnel carrier; however, within the Army there were divergent views on what an ARSV should be. Nevertheless, the program began in December 1966 when a parametric design cost-effectiveness study was approved by the SECDEF.

²¹Armed Forces Journal International, Scout Bites the Dust. Hayes, October 1974. pp. 29,30.

Innumerable reviews and assessments were made on the proposed program at all levels within DoD. Finally, the request for proposal was issued in October 1971, six years after the establishment of a program manager to direct the project. From that point, the program progressed and design, prototype fabrication, and initial testing ensued. In January 1974, the Army, unanimously repeated previous convictions that the ASRV as currently envisioned was unacceptable and should be stopped. Contracts expired in 1974.

Ever changing technical requirements and divergence of opinion clouded determination of the need for an ARSV, possibly, a solid requirement for the system was never demonstrated. This system, of course, was ongoing before refinements in the acquisition process and monitorship by DSARC. Currently, the Army has a program to evaluate a Scout vehicle; however, the earliest production models may not arrive in the system before 1980.

The 3/4, 1-1/4 ton Vehicle Acquisition²²

The story of the Army's acquisition of trucks in the 3/4 ton and 1-1/4 ton size is interesting, because events "have gone full circle" from procurement of militarized commercial vehicles' to highly specialized Army developed designs and back to procurement of commercial vehicles. This situation began in World War II when the Armed Forces were equipped

²² U.S. Army Command and General Staff College, the Materiel Acquisition Process: Case Study, the TRADUCK. 1975-1976

with thousands of 3/4 ton weapons carriers manufactured by Chrysler, the sole source.

Two subsequent events significantly affected the future of truck procurement in the Army. One was the MOVER study, and the second was strong Congressional pressure to cease sole source procurement.

The MOVER study (1961) attempted to determine Army tactical vehicle needs for the 1970 time frame. The study concluded that the 3/4 ton series should be replaced with 1-1/4 ton trucks and that the 1-1/4 ton mission could be satisfied by two vehicles: a highly mobile truck for use in the combat brigade area and a less expensive, less complex vehicle to operate in the rear areas. Top priority was given to a high mobility truck, the Gama Goat. Release for Troop evaluation of the Gama Goat met with DSARC approval in May 1971.

The other vehicle: Congress finally forced the Army to stop buying the 3/4 ton sole source vehicle from Chrysler, but not before a successor vehicle was designed and developed. Unfortunately, at this time, there was a rapid build up in Southeast Asia. In order to fill high-priority requirements for 3/4 ton vehicles, it was necessary to buy a commercial item to replace military vehicles in CONUS and Europe, which were then issued to units in Vietnam.

A study called WHEELS was completed in 1972. WHEELS decreed that there was a place in tactical units for commercial vehicles and that procurement of a 1-1/4 ton vehicle should be undertaken. The concept in

this acquisition was that there would be no capability testing, no design development effort; this shortened procedure would allow the Army to save a considerable amount of RDT&E funds. The new truck will be called the M861 and will be a Dodge pickup truck, militarized -- back to Chrysler. The demonstrated marketability of the trucks will be accepted as proof of suitability. The vehicle, is expected to have a life in the inventory of seven years and then will be "traded-in". The winning Chrysler bid was \$3885 per vehicle. Unlike the Gama Goat, neither the RDT&E nor the production costs qualify this acquisition item as a major system for DSARC review.

The Army has not fared too well in its attempt to procure 1-1/4 ton trucks to replace the 3/4 ton. Why has the Army had problems with such a simple item as a truck? Like the ARSV, and unlike the AAH and the MICV, the answer, in general, is probably the determination of a military need.

VII. PERSPECTIVES AND POSTSCRIPT

Laird-Packard Era

DEPSECDEF David Packard was the orchestrator of the DoD acquisition review for major weapon systems as we know the process today. His initial intent in changing policies and modifying the systems review process was not to manage programs, but was to ... make sure the improved procedures were in fact being applied to each major project at all stages and to assure that programs were ready to move into production in the next stage of development.²³

Before the Laird/Packard team assumed management of the OSD in 1969, there was no doubt about the need for improvement. During remarks at the Defense Systems Management School at Ft Belvoir, 3 August 1971, DEPSECDEF Packard commented on the assessments he had made as he sought ways to improve the management of DoD development and procurement programs:

"...As we reviewed program after program..., it was almost impossible to find a major program that was not in trouble. All were behind schedule, although in most cases this was because impossible schedules had been set at the beginning of the program. All showed large cost growths and again, in many cases, this was because unrealistic cost targets had been set or because the services had accepted "buy-ins" by the contractors.²⁴ This was a

²³"Farewell", Report of Former DEPSECDEF David Packard on Defense Management Problems, 7 August 1972.

²⁴A "buy-in" is an undesirable technique occasionally attempted by bidders whereby the price quoted is intentionally much lower than the fair market price. The bidder expects to be awarded the contract and to recoup the losses that would result from the low price he bids by later obtaining changes to the contract and/or trim profits on a second contract award.

shocking experience for me -- case after case of just plain poor management by the largest department of the government and by well known and large firms in the industry. The Congress and the public were critical of this gross mismanagement of this country's resources and talent. And well they should have been. As we sought to discover reasons for this dismal performance and to find ways for improvement, several conclusions came to the surface. One conclusion was that if we wanted better management of these important programs, we must have better managers in charge. The so-called 'system' -- the attitudes and practices that had been developed and were condoned over the years -- had a great deal to do with the situation. But, given that all of the other factors could be corrected, it was clear to me that putting better managers in charge would do more to bring about improvement than anything else."

Cost escalation in military procurement is not a new problem. It becomes a special problem when costs escalate in the magnitude of millions or billions of dollars. A General Accounting Office (GAO) report,²⁵ cites increased costs of \$31.5 billion in DoD acquisition of 45 major systems, or a 39 per cent increase over planning estimates and a 20 per cent increase over estimates made during the development phase.²⁶

²⁵ U.S. General Accounting Office, Cost Growth in Major Weapon Systems, Washington, 1973, pp 1-29; passim 45-47.

²⁶ Among the systems cited having major cost overruns were the C-5A, F-111 and F-14 aircraft, the M-60 tank, Poseidon submarines, and Minuteman missiles. In a comparison of the current generation of several major systems with the preceding generation, the report showed the successor system cost from two to six times more than its predecessor. Causes of cost changes, according to the GAO report, can be attributed to inflation, 30 percent; estimating errors, 25 percent; and changes in requirements ordered by the military, 45 percent.

This was the situation encountered by the Laird/Packard team which generated ensuing legislation intended to halt the phenomenal rise in costs of weapons. To reduce the problem of cost escalation the GAO report recommended that the DoD determine more precisely what the requirements for each weapon were and how much was to be spent, improve its capabilities to estimate the cost of weapons, continue to upgrade the competence of program managers and specialists, and improve the planning for maintenance of the development and production base.... The report noted indications that improvements in the acquisition process are having some effect. However, greater efforts are required; to apply parametric and other cost estimating techniques, to follow a more competitive approach until system definition has been completed, and to structure programs so that better use can be made of incentive awards for specific phases.

Solutions to Cost Problems

The solution to cost escalation would seem to be in two parts. Defense managers must devise accurate estimating procedures and develop realistic procurement policies. Industry, for its part, must perform within defined costs and schedules. The two areas that appear to surface in the Packard talks and the GAO report are improved management and improved cost control.

Supporting these areas, in part, was the formalization of the OSD CAIG in June 1973 -- discussed in Section IV. To further address and refine these areas of needed improvement, DoD issued three directives; DoD Directive 5000.23, Systems Acquisition Management Careers -- Appendix J--, DoD Directive 5160.55, Defense Systems Management School(DSMS)--

Appendix K--, and DoD Directive 5000.28, Design to Cost -- Appendix L. Briefly, 5000.23 tasks the service with the selection, training, and personnel management of a cadre of military and civilian personnel adequate to meet future needs for leadership in systems acquisition management.

Similarly, 5160.55 prescribes advanced courses of study that will prepare selected military officers and civilian personnel for assignment in program/project management. The DSMS assembles and disseminates information concerning new methods and practices in management, and conducts research in concepts and methods as required to support its primary mission. The DSMS reports to a Policy Guidance Council chaired by DDR&E.

Design to Cost, 5000.28, evolved as a fundamental and flexible approach to programs: It is a central management tool and a communication channel between DoD and industry. It establishes cost as a parameter equal in importance with technical requirements and schedules. The parametric values establish cost elements management goals and are included in the DCP and submitted as part of the normal DSARC review.

Authority of the SECDEF

One basic theme has highlighted the development of the acquisition process since 1947; the clarification and strengthening of the authority of the SECDEF over the entire structure of weapons procurement in order to achieve centralized direction and execution of the decisionmaking process. The process has been evolutionary, and has sought to combine

centralization of authority in the SECDEF with the substantial retention of traditional service responsibilities in support of equipping the force structure with necessary weaponry. The management principle of centralized direction and decentralized operations seems to pervade the system. Figure 12, extracted from a DDR&E command briefing chart, partially illustrates this idea and further shows the increased OSD management functions in the decade of the 1970's.

	1960s	1970	Future
OSD Management	Centralized	- Key Decisions Centralized - Program Mgmt Decentralization within thresholds	Greater Decentralization
Program Management	Tech Dev Plan	- Designated Program Manager DCP/DSARC	
Decision Making	Calendar Milestones	- Achievement Milestones (DCP, DSARC, T&E, CAIG)	

Figure 12.--OSD management functions

Change in Emphasis

These developments relating to improved acquisition are indicative of the direction in which DSARC has been moving. Analysis of needs, study of the environment in which these needs must be met, affordability considerations, and development of policies consistent with force objectives influenced the progression of DSARC emphasis as shown in Figure 13.

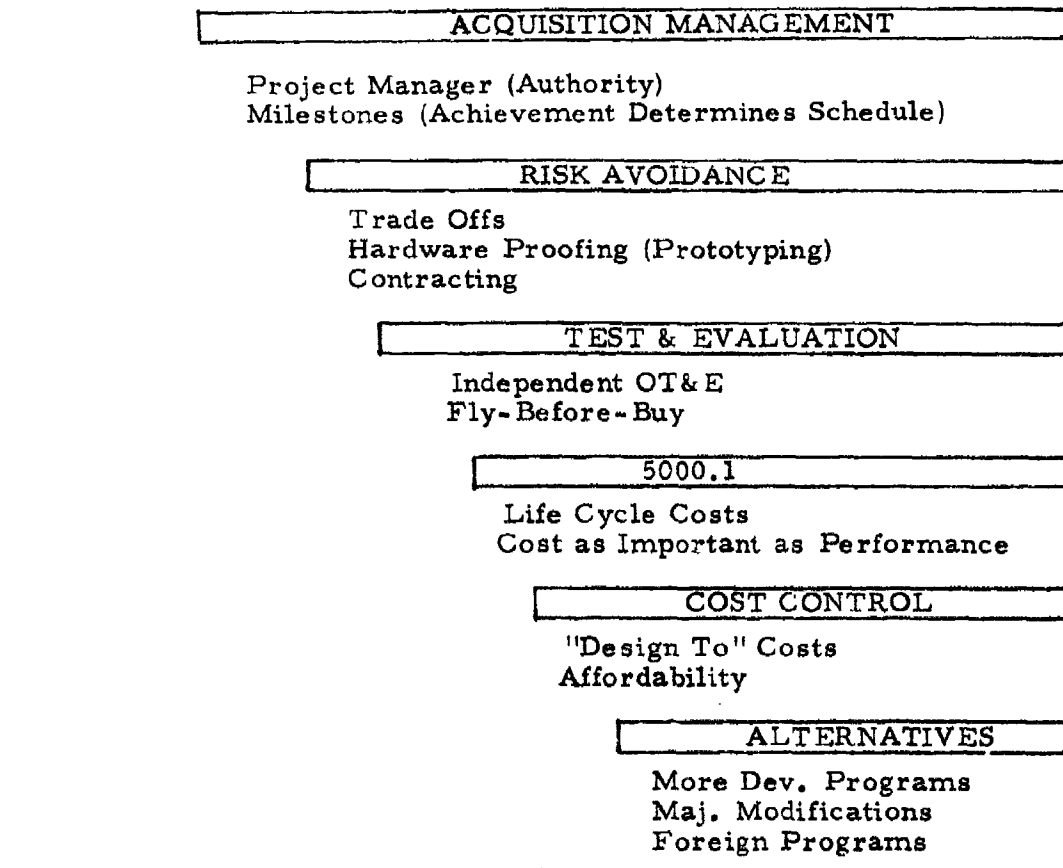


Figure 13.--Progression of DSARC emphasis

History

To date, about 81 DCPs have been approved with an additional 28 in preparation. There have been about 170 formal DSARC reviews and countless other informal encounters between DoD components and OSD staff members essentially for the purpose of resolving pre-DSARC considerations in preparation for the formal review. Figure 14 depicts the DSARC historical trends. Recently, the process has been averaging between 20 to 30 reviews a year.

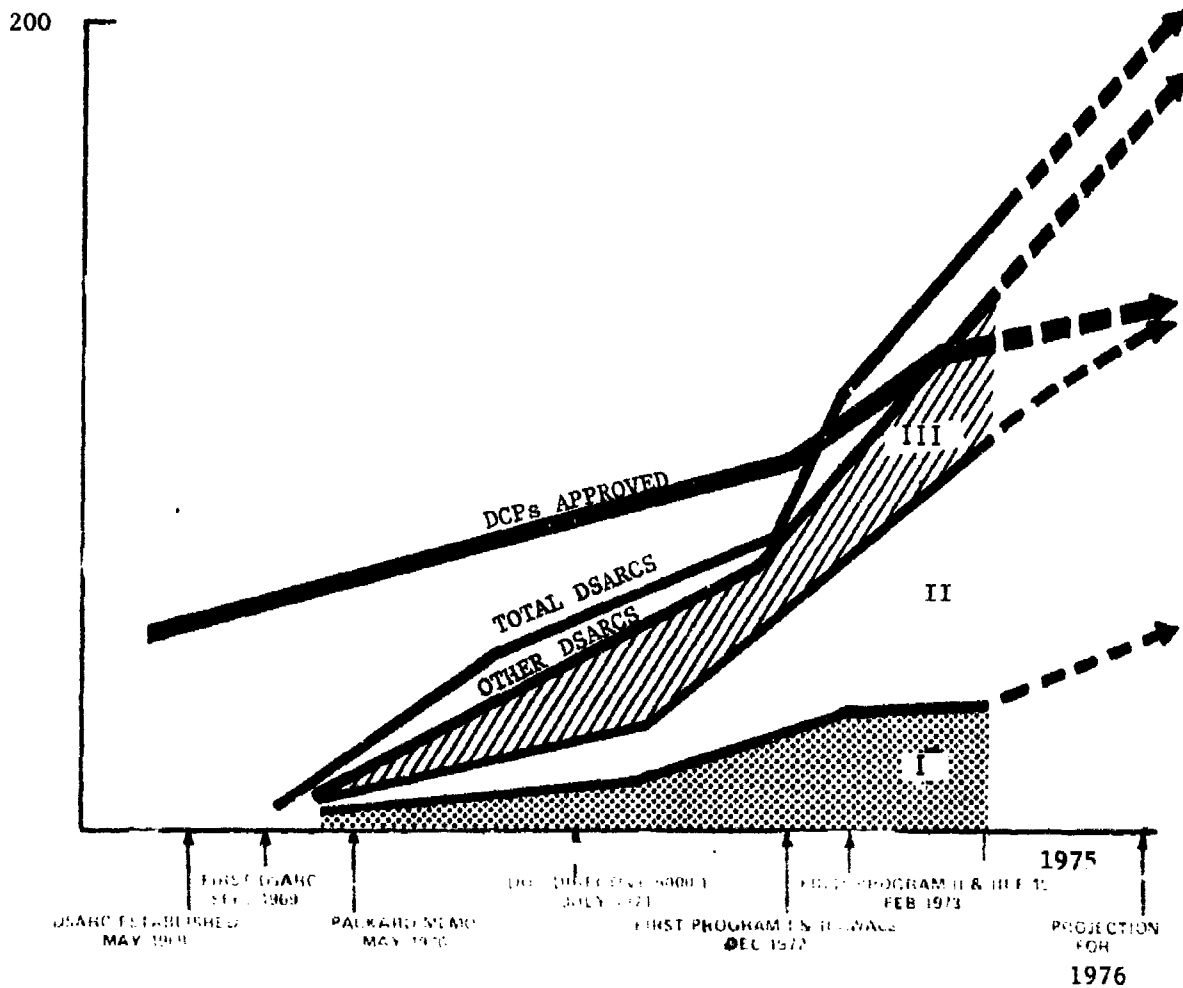


Figure 14 DSARC History

DSARC Goals and Accomplishments

A review of past efforts causes one to wonder how many good conceptual strategies have been discredited because of failure of communications in the initial life cycle juncture of systems. In 1972, Senator J. C. Stennis, Chairman, Senate Armed Services Committee, stated that there was a need to understand underlying problems of the weapons systems acquisition process. A 1972 Report of the Commission on government procurement concluded that too many past attempts to improve systems acquisition mistakenly addressed symptomatic problems on a piecemeal basis. In this light, has DSARC attained its objectives and what good has the DSARC done?

At the least, it is a process well thought out and indeed involves a sound concept; it is a step in the right direction that filled an identifiable void in the acquisition process; in today's budget environment, DSARC has encouraged all organizations involved in weapon systems management to pool their knowledge to reduce costs.

In practice and process, the DSARC implementation of directives and instructions which imply corporate level macro-management has tended toward cyclic dialogue at the micro-management level. Notwithstanding this form of procrastination, how effective would the process be without the DSARC? If one compares military weapons acquisition to civil projects such as the Kennedy Center, National Dam Projects, the Rayburn Building, etc., the civil cost over-runs certainly portray DSARC as effective. Perhaps an in-house measure of effectiveness are the Congressional Selected Acquisition Reports (CSAR) which have been

reflecting a recent downtrend in cost control growth.²⁷

With respect to Congress, one of the salient accomplishments of the DSARC is "it gets it all together" and acts as a buffer for DoD components.

DSARC Future Refinements

What can be done to further improve the DSARC system? The advocacy of more efficient practices has been tradition prior to the inception of DSARC. Efforts have been made to identify and eliminate the causes of inefficiency, but such efforts have ordinarily been directed at refining management procedures and exercising better control over activities. Accordingly, Circular No. A-109, 5 April 1976, Office of Management and Budget, subject: Major Systems Acquisition -- Appendix M -- imposed an additional key decision (Milestone 0) point by the SECDEF in the DSARC review process, Figure 15 . This front end loading of the review process may become an obstacle to the embryonic stage in the life cycle of an essential system.

DoD Directive 5000.30, Acquisition Executive -- Appendix N -- compels change in the management structure by requiring agencies that acquire major systems to appoint permanent acquisition executives to the DSARC with the DEPSECDEF intended to chair the council.

²⁷ Congressional SARs are standard, comprehensive, summary status reports on major defense systems as defined in DoD Directive 5000.1 prepared by DoD components quarterly and submitted to OSD for transmission to the Congress and other governmental agencies. They are usually limited to those defense systems which have DSARC II approval and are estimated in the FYDP. DoD Instruction 7000.3, 23 Sep 73, addresses SARs in detail.

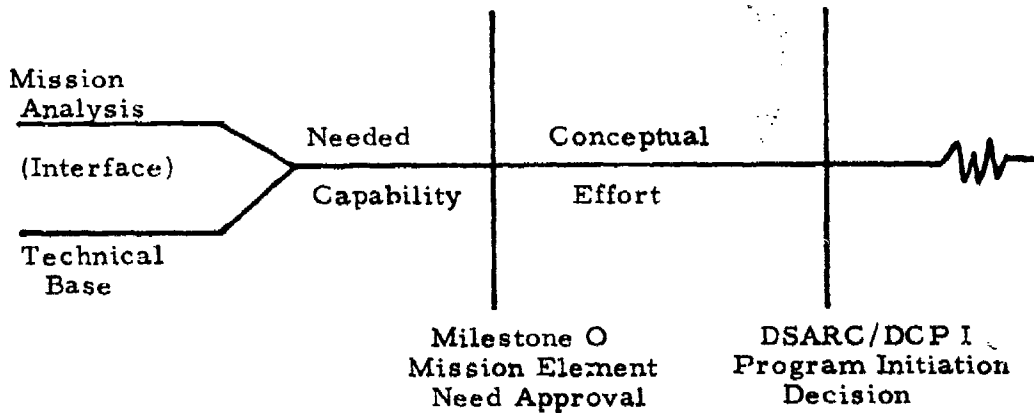


Figure 15.--DSARC process: Front end structure

For many years, DoD has developed expensive weapons systems without fully consulting with the people who must provide logistical support for the service end item. There may be a need for an improved audit trail to provide "feed-back" well into the future for major systems, a view expressed by Mr. George W. Southerland, ODDR&E. He cited, as an example of desirable feedback the C-141 "stretch" program which will involve the DSARC decision process for a prototype major modification probably as a Milestone II juncture. Certainly, performance and cost data from the field should influence a DSARC determination to change or replace an existing system. Perhaps for each major system, some form of DCP should follow the item for 5 to 10 years, requiring feed-back in order to compare intended with historic performance in areas of training, operational performance, cost factors, etc.

To close out this research, it seems appropriate to paraphrase a comment expressed by Mr. Larry Birk.²⁸ He feels that the people who must implement the defense major weapon systems acquisition process are aware of the shortcomings in the system and are willing to correct the systems weaknesses. For our particular type of bureaucratic acquisition process his view is certainly encouraging. The U.S., after all, has produced fine weapons with which to defend the nation.

The future challenge of DSARC viability and the effectiveness of the service acquisition efforts is indeed to be able to develop, improve, and modify weapons systems to meet our changing needs, at acceptable cost.

²⁸Mr Birk is the Project Management Specialist (Army), Director of Executive Management, Defense Systems Management Center, Ft. Belvoir, VA.

VIII. SUMMARY

The system acquisition policies set forth in DoD Directive 5000.1 seem to be sound management principles. The real strength of these policies appears to lie in the DSARC review process. It starts early to identify key issues. The DSARC meeting becomes the culmination of effort, a final review by the principals where the program information at hand provides a full and valid basis for recommendations to the SECDEF.

The DSARC provides the means for a coordinated effort to solve the problems of defense systems acquisition. During the review, the system project manager from the military service brings his analysis of program considerations to the attention of the DSARC principals in a 30-45 minute presentation. A period of discussion follows in which the DSARC principals ask further questions or present their own arguments for consideration by other members of DSARC. The project manager must provide the DSARC with information regarding his program to show that a requirement exists, the best possible procedures have been utilized to evaluate alternative courses of action, and implementation has been carefully planned. Finally, after all information has been presented and analyzed, a recommendation which will significantly affect the services program is submitted by the DSARC to the DEPSEC.²⁹

²⁹ This information obtained in discussion with Mr E. J. Nucci, former Executive Secretary DSARC: foncon 2 June 1976.

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APPENDIX A

THE DEPUTY SECRETARY OF DEFENSE
Washington, D. C. 20301

30 May 1969

(Copy)

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARY OF DEFENSE
(COMPTROLLER)
ASSISTANT SECRETARY OF DEFENSE
(INSTALLATIONS AND LOGISTICS)
ASSISTANT SECRETARY OF DEFENSE
(SYSTEMS ANALYSIS)

SUBJECT: Establishment of a Defense Systems
Acquisition Review Council

I have been reviewing for some time current practices within the Department of Defense for the acquisition of major systems. My review has highlighted the importance of our organization and practices for accomplishing this management job. The primary responsibility for the acquisition and management of our major systems must rest with the individual Services. Within each Service, this responsibility is focused in the Project Manager. Recognizing the Service responsibility, I am, at the same time, most anxious of insuring, before we approve transitioning through the critical milestones of the acquisition of a major system, that all facets of the acquisition process are properly considered.

Toward this end, I am establishing a Defense Systems Acquisition Review Council (DSARC) within the Office, Secretary of Defense, to advise me of the status and readiness of each major system to proceed to the next phase of effort in its life cycle. The Council will serve to complement the Development Concept Paper (DCP) system, which continues as a formal DOD management and decision-making system for the acquisition of major systems. The Council will evaluate the status of each candidate system at three basic milestone points: First, when the sponsoring Service desires to initiate Contract Definition (or equivalent effort); second, when it is desired to go from Contract Definition to full scale development; and third, when it is desired to transition from development to production for Service deployment.

The functions of the Council are separate from and do not encompass the management reviews of major systems which I have previously requested and which are being conducted by

DDR&E with assistance from ASD(I&L) and ASD(Comp). These reviews are focused on the management of the system whereas the DSARC reviews will cover all issues, program thresholds and other matters normally treated in DCP's. Also, the management reviews will normally be held only once on each major system; whereas the DSARC reviews, which are based on program milestones, will be normally conducted three or more times during the acquisition cycle of a particular system.

The membership of the Council will include DDR&E, ASD(I&L), ASD(C), and ASD(SA). For the first two milestone reviews, that is, prior to entry into contract definition and prior to entry into full scale development, the Council will be chaired by the DDR&E. For the third review, related to the transition from development to production, the Council will be chaired by the ASD(I&L).

I am initially defining major systems, which will be subject to Council reviews, to include (1) those for which Development Concept Papers are required; and (2) those specifically designated by me for review and evaluation. A tentative charter for the Council is attached as an enclosure. I desire that the DDR&E and ASD(I&L), within the next 30 days jointly prepare the necessary procedures and take the necessary administrative actions to implement the Council charter.

I believe the Council operation will result in improved management and will augment the decision-making process within the Department of Defense. I cannot over-emphasize the need for complete interface throughout the Department in the system acquisition process.

/s/ DAVID PACKARD

Enclosure
a/s

Charter

Defense Systems Acquisition Review Council

1. Purpose

This charter prescribes the mission, functions, composition, authority and responsibility, and administration of the Defense Systems Acquisition Review Council (DSARC).

2. Mission

The mission of the DSARC is to review major and important Department of Defense system acquisition programs at appropriate milestone points in their life cycle. These reviews are intended to permit coordinated evaluation and deliberation among senior managers, based on the most complete presentation of information available to assure that advice given the Secretary of Defense is as complete and objective as possible prior to a decision to proceed to the next step of the system's life cycle. The DSARC operation and evaluations will serve to complement the DCP system which remains as a formal DOD management and decision-making system concerning the acquisition process of major defense systems.

3. Functions

- a. The DSARC will review and evaluate the status of each appropriate system acquisition program at three basic milestone points:

First: When initiation of Contract Definition (or equivalent effort) is proposed;

Second: When transition from the Contract Definition phase to full-scale development is proposed; and

Third: When transition from the development phase into production for Service deployment is proposed.

- b. The first review will support the basic DCP in that it will provide a forum for discussion and possible resolution of the various viewpoints of the participating principals, including the Secretary of the Military Service sponsoring the program. The later reviews will serve a function of validating the readiness of a system to proceed to the next stage, i.e., normally full-scale development or production.

4. Composition

The DSARC will consist of the DDR&E, the ASD(I&L), the ASD(Comptroller) and the ASD(SA).

5. Authority and Responsibilities

- a. For consideration of entry into Contract Definition (Contract Definition Phase) and entry into full-scale development (the full-scale development phase), the DSARC will be chaired by the DDR&E.
- b. For the transition from development to production (the production phase), the DSARC will be chaired by the ASD(I&L).
- c. For additional reviews, the DSARC will be chaired by DDR&E or the ASD(I&L) as appropriate, depending on whether the action under consideration is concerned with movement within the full-scale development phase or into or within the production phase.
- d. Reviews at points other than program transition points may be requested by a DSARC member by memorandum to the appropriate chairman.
- e. Review of a program at any point in its life cycle may be directed by the Secretary of Defense or the Deputy Secretary of Defense.
- f. Reviews will be limited to major and important programs. These are (1) those for which Development Concept Papers are required; and (2) those specifically designated for review by the Secretary of Defense the Deputy Secretary of Defense or the appropriate DSARC chairman.
- g. Aspects to be considered by the DSARC include, but are not limited to, the following:
 - (1) For items proposed for Contract Definition
 - (a) Justification of military need;
 - (b) Validity of operational concept and objectives;
 - (c) Relative capability compared with present/anticipated and with capabilities of other systems;
 - (d) Technical feasibility;

- (e) Validity of cost estimates and analysis of cost risks involved;
- (f) Validity of proposed scheduling and consideration of alternatives thereto;
- (g) Validity of proposed procurement methodology, including type of contractor structure, kind of contract, timing of Government production commitment, means of assuring competition; and
- (h) Validity of program manager plans, controls and organization.

(2) For items proposed for transition from Contract Definition into full-scale development:

- (a) Continued validity of program objectives and validity of changes thereto since completion of concept formulation;
- (b) Confidence in achieving current program objectives;
- (c) Analysis of current risks;
- (d) Technical feasibility, risks associated therewith and analysis thereof;
- (e) Adequacy of integrated logistics support planning;
- (f) Validity of cost estimates, including analysis of cost differences between competing Contract Definition contractor and Government estimates;
- (g) Options associated with cost trade-offs and analysis thereof;
- (h) Adequate consideration of contract incentives and inducement for competition; and
- (i) Validity of contractor proposals.

(3) For systems proposed for initial production:

- (a) Feasibility of production, including evaluation of milestone achievements, test results and production line producibility;

- (b) Technical feasibility, including specification requirements;
 - (c) Review and evaluate overall requirement;
 - (d) Current validity of cost estimates;
 - (e) Need, as appropriate, for concurrent development and production as well as validity of recommended time phasing of production/deployment aspects;
 - (f) Adequacy of integrated logistic support planning;
 - (g) The existence of adequate project management controls;
 - (h) Adequate planning for Government-furnished equipment and facilities; and
 - (i) Adequate planning as to proprietary rights items.
- h. The Chairman may invite other staff members, such as the ASD(M&RA) and the ASD(ISA) to participate in the reviews when the reviews have significant relevance to their responsibilities.
- i. The Chairman shall advise the Deputy Secretary of Defense of the findings and recommendations of the specific review and concurrently a copy of the findings and recommendations will be forwarded to the appropriate Service Secretary.

6. Administration

The DSARC may establish necessary Working Groups to assist the Council members in their reviews.

APPENDIX B



THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

MAY 28 1970

MEMORANDUM FOR Secretaries of the Military Departments
Director of Defense Research & Engineering
Assistant Secretaries of Defense
The General Counsel
Assistants to the Secretary of Defense
Directors of Defense Agencies

SUBJECT: Policy Guidance on Major Weapon System Acquisition

We have been considering within the Department, for over a year, ways by which we can improve acquisition programs for major weapon systems. Some steps have been taken which I believe are in the right direction (reference my July 31, 1969 memorandum), and it is now appropriate to move ahead in a concerted effort to firmly establish additional new policies and to implement them.

The prime objective of the new policy guidance is to enable the Services to improve their management of programs. Improvement in the execution of these programs will be made to the extent the Services are willing and able to improve their management practices. The Services have the responsibility to get the job done. It is imperative that they do the job better in the future than it has been done in the past.

It is the responsibility of the OSD to approve the policies which the Services are to follow, to evaluate the performance of the Services in implementing the approved policies and to make decisions on proceeding into the next phase in each major acquisition program.

The purpose of this memorandum is to issue broad policy guidance which is to be translated into appropriate action by all Services and Agencies in new major weapon system acquisitions.

Management

Management in the Services will be improved only to the extent that capable people with the right kind of experience and training are designated to manage these major programs -- in fact all programs. In order to be effective, program managers must be given adequate authority to make decisions on major questions relating to the program both in the conceptual development stage and in the full-scale development stage. If capable people are going to be willing to undertake these important program management assignments, ways must be found to give them some incentive to do so. Program managers must be given more recognition toward career advancement in all of the Services, and good managers must be rewarded just as good operational people are rewarded.

If our people are to develop the experience necessary for program management and are to utilize their experience, they must be assigned to a given program long enough to be effective.

The overall structure of the program management function in all Services needs to be considered. Changes must be made to minimize the numerous layers of authority between the program manager and the Service Secretary.

The entire management problem needs to be addressed under these simple guidelines: put more capable people into program management, give them the responsibility and the authority and keep them there long enough to get the job done right.

Development

The cost of developing and acquiring new weapon systems is more dependent upon making practical trade-offs between the stated operating requirements and engineering design than upon any other factor. This must be the key consideration at every step in development from the conceptual stage until the new weapon goes into the force.

The program schedule (structure) is another very key consideration. It must make sense. It must allow time for accomplishing important task objectives without unnecessary overlapping or concurrency. The ideal schedule is sequential with enough slack time for resolution of those problems which inevitably arise in any development program.

Conceptual Development

It is crucial that the right decisions be made during the conceptual stage. If wrong decisions are made during this period the problems that are generated cannot easily be overcome later in the program.

Any new program will contain some risk that the technology involved cannot, within reasonable time and cost constraints, be converted into practical engineering design which meets the desired operating requirements. There are three ways in which this technical risk can be minimized:

1. Risk Assessment. The first is to make a careful assessment of the technical problems involved and a judgment as to how much effort is likely to be necessary in finding a solution that is practical. A careful look at the consequence of failure, even of "low risk" program elements, is also critical.
2. System and Hardware Proofing. The second and only sure way to minimize the technical risk is to do enough actual engineering design and component testing in the conceptual development stage to demonstrate that the technical risks have been eliminated or reduced to a reasonable level. Component or complete system prototyping, or backup development, are examples of this.
3. Trade-offs (risk avoidance). Since program risk and cost are dependent on practical trade-offs between stated operating requirements and engineering design, trade-offs must be considered not only at the beginning of the program but continually throughout the development stage.

Proposals for OSD approval of development programs shall include a description of how the Service or Agency intends to manage the program to include appropriate attention to (1) Risk Assessment; (2) System and Hardware Proofing; (3) Tradeoffs. When a DCP is prepared, it shall reflect these in the management plan.

Small development projects which do not require specific OSD approval shall also be structured to reflect these considerations.

All new programs will be kept in the conceptual development stages until the responsible Service secretary and the OSD can be assured that the program is actually in the proper shape to proceed into full-scale development.

Full-Scale Development

Authorization to proceed into full-scale development will be given by OSD based upon a DCP and the recommendation of the DSARC. In making this recommendation, the DSARC shall consider in particular whether adequate risk reduction has been accomplished.

Even though risk has been adequately addressed during the conceptual development stages, full-scale development will uncover technical and engineering problems that need to be solved. Procedures shall be established in the development program by which these problems will be continually addressed in view of possible trade-offs with stated operating requirements, cost, and operational readiness date.

Furthermore, it is essential to have assurance that those problems encountered during the earlier development stages have in fact been solved. This requires that milestones be established to demonstrate achievement of objectives at appropriate points in the development program. These milestones shall include such things as completion of appropriate stages in the overall system design and testing of critical items of hardware, e.g., subsystems and components.

Consideration must be given in development to all matters necessary in a full operating system. This will include such things as maintenance, logistic support, training, etc. However, where these matters are dependent on the final production design, as much of this work as possible should be delayed until the production stage. In general, RFPs for the development stage should be carefully reviewed to eliminate demands for reports, documentation and work tasks which are not absolutely necessary for the efficient accomplishment of the actual development work. These considerations and demands must be limited to those which directly contribute to the design of the system itself.

Production

The most important consideration before moving into full-scale production on a new weapon system is to have assurance that the engineering design is completed, that all major problems have been resolved, and this has been demonstrated to the extent practical by actual performance testing.

At the DSARC review when the decision is made as to whether to proceed into full production, I want the responsible Service to certify that the following actions have been taken:

1. All of the milestones which demonstrate the achievement of a practical engineering design have been met.

2. All important engineering problems encountered during the development have been resolved with appropriate trade-offs with stated operating requirements so that the production, maintenance and operating costs are optimized.

The start up of production must be scheduled to minimize financial commitments until it has been demonstrated that all major development problems have been resolved. In most cases production engineering and production tooling are necessary to demonstrate that the engineering has been satisfactorily accomplished. It may also be necessary to develop and demonstrate new production processes, methods and procedures. Thus, some limited expenditure on production may have to overlap development.

Contracts

In all our contracting, the type of contract must be tailored to the risks involved. Cost plus incentive contracts are preferred for both advanced development and full scale development contracts for major systems. When the assessment of technical risk permits, such contracts should include provisions for competitive fixed price subcontracts for subsystems, components and materials. In many cases this will enable a major portion of the program to benefit from competition. When risks have been reduced to the extent that realistic pricing can take place fixed-price type contracts should be used. But the contracting officer should have the flexibility to consider the technical capability of the contractor and other factors in selection of contract type. When fixed-price type contracts are used for development programs, the contractor's financial ability to absorb losses that might be incurred must be a factor in making the award.

It is, of course, desirable to award a fixed-price contract in a competitive environment. It has been proven to be difficult or impossible to achieve effective competition in a fixed-price contract for production for a major weapon system before full-scale development has been undertaken. Consideration should therefore be given to the use of a negotiated fixed-price contract after the development has progressed to the point that the production design can be realistically specified. To the extent possible, a contract negotiated under these circumstances should encourage competition for subsystems, components and materials. In this way a substantial part of the cost can be established in a competitive environment.

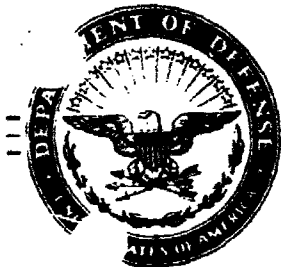
The use of letter contracts should be minimized. Change orders should not be authorized until they have been contractually priced, or until contractual ceilings have been established.

This guidance is provided to the Services with the understanding that it is to be implemented within the established DCP and DSARC policies. Other reports and reviews are to be kept to a minimum, but the lines of communication between OSD offices and Service components must be kept open to insure actual programs are being implemented under this guidance.

To the extent that the above guidance conflicts with existing DoD Directives and Instructions, the policies stated herein will govern. Since these policies should be applied immediately, I would appreciate your distributing this memorandum to key personnel, including all program managers, involved in the acquisition of major weapon systems.

I want the appropriate regulations of OSD and the Services and Agencies to be changed or cancelled to reflect these policies. I have asked the DDR&E to take the leadership in accomplishing this and have suggested 1 September 1970 as the date for recommending changes to me.

David Packard



APPENDIX C

December 22, 1975
NUMBER 5000.1

DDR&E

Department of Defense Directive

SUBJECT Acquisition of Major Defense Systems

Reference: (a) DoD Directive 5000.1, "subject as above," July 13, 1971 (hereby cancelled)

I. REISSUANCE AND PURPOSE

This Directive reissues reference (a) which establishes policy for major Defense system acquisition in the Military Departments and Defense Agencies (referred to as "DoD Components"). Reference (a) is hereby superseded and cancelled.

II. APPLICABILITY

The provisions of this Directive apply to major programs, so designated by the Secretary of Defense/Deputy Secretary of Defense (referred to as "SecDef"). This designation shall consider (a) dollar value (programs which have an estimated RDT&E cost in excess of 50 million dollars, or an estimated production cost in excess of 200 million dollars, all in FY 72 dollars); (b) national urgency; and (c) recommendations by DoD Component Heads or Office of Secretary of Defense (OSD) officials. In addition, the management principles in this Directive are applicable to all programs.

III. POLICY

A. Mode of Operation. Successful development, production and deployment of major Defense systems are primarily dependent upon competent people, rational priorities and clearly defined responsibilities. Responsibility and authority for the acquisition of major

Defense systems shall be decentralized to the maximum practicable extent consistent with the urgency and importance of each program. The development and production of a major Defense system shall be managed by a single individual (program manager) who shall have a charter which provides sufficient authority to accomplish recognized program objectives. Layers of authority between the program manager and his Component Head shall be minimum. For programs involving two or more Components, the Component having dominant interest shall designate the program manager, and his charter shall be approved by the cognizant official within OSD. The assignment and tenure of program managers shall be a matter of concern to DoD Component Heads and shall reflect career incentives designed to attract, retain, and reward competent personnel.

1. The DoD Components are responsible for identifying needs and defining, developing and producing systems to satisfy those needs. Component Heads are also responsible for contractor source selection unless otherwise specified by the SecDef on a specific program.
2. The OSD is responsible for (a) establishing acquisition policy, (b) assuring that major Defense system programs are pursued in response to valid needs, and (c) evaluating policy implementation on each approved program.
3. The OSD and DoD Components are responsible for program monitoring, but will place minimum demands for formal reporting on the program manager. Non-recurring needs for information will be kept to a minimum and handled informally.
4. The SecDef will make the decisions which initiate program commitments or increase those commitments. He may redirect a program because of an actual or threatened breach of a program threshold in an approved Decision Coordinating Paper (DCP). The DCP and the Defense Systems Acquisition Review Council (DSARC) will support the SecDef decision-making. These decisions will be reflected in the next submission of the Program Objective Memorandum (POM) by the DoD Component.

B. Conduct of Program. Because every program is different, successful program conduct requires that sound judgment be applied in using the management principles of this Directive. Underlying specific Defense system developments is the need for a strong and usable

technology base. This base will be maintained by conducting research and advanced technology effort independent of specific Defense systems development. Advanced technology effort includes prototyping, preferably using small, efficient design teams and a minimum amount of documentation. The objective is to obtain significant advances in technology at minimum cost.

1. Program Initiation

- a. Early conceptual effort is normally conducted at the discretion of the DoD Component until such time as the DoD Component determines that a major Defense system program should be pursued. It is crucial that the right decisions be made during this conceptual effort; wrong decisions create problems not easily overcome later in the program. Therefore, each DoD Component will designate a single individual, such as the Assistant Secretary for Research and Development, to be responsible for conceptual efforts on new major programs.
- b. The considerations which support the determination of the need for a system program, together with a plan for that program, will be documented in the DCP. The DCP will define program issues, including special logistics problems, program objectives, potential benefits in context with overall DoD strategy and fiscal guidance, program plans, performance parameters, areas of major risk, system alternatives and acquisition strategy. The DCP will be prepared by the DoD Component, following an agreement between OSD and that Component on a DCP outline. The Chairman of the DSARC has the basic responsibility for coordination of inputs for the DCP and its submittal to the DSARC for consideration and to the SecDef for subsequent decision. If approved, the program will be conducted within the DCP thresholds.

2. Full-Scale Engineering Development. When the DoD Component is sufficiently confident that program worth and readiness warrant commitment of resources to full-scale engineering development, it will request a SecDef decision to proceed. At that time, the DCP will be updated and the DSARC will normally review program progress and suitability to enter this phase and will forward its recommendations to the SecDef for final decision. Such review will confirm (a) the

need for the selected Defense system in consideration of threat, system alternatives, special logistics needs, estimates of development costs, preliminary estimates of life cycle costs and potential benefits in context with overall DoD strategy and fiscal guidance; (b) that development risks have been identified and solutions are in hand; and (c) realism of the plan for full-scale engineering development.

3. Production/Deployment. When the DoD Component is sufficiently confident that engineering is complete and that commitment of substantial resources to production and deployment is warranted, it will request a SecDef decision to proceed. At that time, the DCP will be updated and the DSARC will again review program progress and suitability to enter substantial production/deployment and forward its recommendations to the SecDef for final decision. Such review will confirm (a) the need for producing the Defense system in consideration of threat, estimated acquisition and ownership costs and potential benefits in context with overall DoD strategy and fiscal guidance; (b) that a practical engineering design, with adequate consideration of production and logistics problems is complete; (c) that all previously identified technical uncertainties have been resolved and that operational suitability has been determined by test and evaluation; and (d) the realism of the plan for the remainder of the program. Some production funding for long lead material or production planning effort may be required prior to the production decision. In such cases, the SecDef will decide whether a DSARC review and revised DCP are required. In any event, full production go-ahead will be authorized by approval of the DCP.

C. Program Considerations

1. System need shall be clearly stated in operational terms, with appropriate limits, and shall be challenged throughout the acquisition process. Statements of need/performance requirements shall be matched where possible with existing technology. Wherever feasible, operational needs shall be satisfied through use of existing military or commercial hardware. When need can be satisfied only through new development, the equivalent needs of the other DoD Components shall be considered to guard against unnecessary proliferation.

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2. Cost parameters shall be established which consider the cost of acquisition and ownership; discrete cost elements (e.g, unit production cost, operating and support cost) shall be translated into "design to" requirements. System development shall be continuously evaluated against these requirements with the same rigor as that applied to technical requirements. Practical tradeoffs shall be made between system capability, cost and schedule. Traceability of estimates and costing factors, including those for economic escalation, shall be maintained.
3. Logistic support shall also be considered as a principal design parameter with the magnitude, scope and level of this effort in keeping with the program phase. Early development effort will consider only those parameters that are truly necessary to basic Defense system design, e.g., those logistic problems that have significant impact on system readiness, capability or cost. Premature introduction of detailed operational support considerations is to be avoided.
4. Programs shall be structured and resources allocated to ensure that the demonstration of actual achievement of program objectives is the pacing function. Meaningful relationships between need, urgency, risk and worth shall be thereby established. Schedules shall be subject to trade-off as much as any other program constraint. Schedules and funding profiles shall be structured to accommodate unforeseen problems and permit task accomplishment without unnecessary overlapping or concurrency.
5. Technical uncertainty shall be continually assessed. Progressive commitments of resources which incur program risk will be made only when confidence in program outcome is sufficiently high to warrant going ahead. Models, mock-ups and system hardware will be used to the greatest possible extent to increase confidence level.
6. Test and evaluation shall commence as early as possible. A determination of operational suitability, including logistic support requirements, will be made prior to large-scale production commitments, making use of the most realistic test environment possible and the best representation of the future operational system available. The results of this operational testing will be evaluated and presented to the DSARC at the time of the production decision.

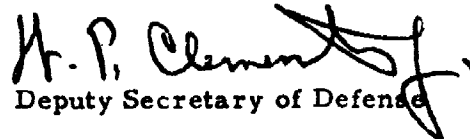
7. Contract type shall be consistent with all program characteristics including risk to the contractor and the government. Normally, the precise production cost of a new complex Defense system cannot be determined prior to development and this creates a situation of risk such that:
 - a. The total package procurement concept will not be used.
 - b. Firm or ceiling priced production options shall not be used in development contracts. However, when development of major systems has proceeded to a point that technical and performance uncertainties have been minimized and realistic estimates of their cost identified, firm or ceiling priced production options for limited quantities may be included in the development contract. Such options may be appropriate, for instance, when prototyping or other forms of technical and cost verification of concepts has occurred.
 - c. Cost type prime and subcontracts are preferred where substantial development effort is involved.
 - d. When risk is reduced to the extent that realistic pricing can occur, fixed price type contracts should be issued.
 - e. Letter contracts shall be minimized.
 - f. Changes shall be limited to those that are necessary or offer significant benefit to the DoD. When change orders are necessary, they shall be contractually priced or subject to an established ceiling before authorization, except where this is impractical.
8. The source selection decision shall take into account the contractor's capability to develop a necessary Defense system on a timely and cost-effective basis. The DoD Component shall have the option of deciding whether or not the contract will be completely negotiated before a program decision is made. Solicitation documents shall require contractor identification of uncertainties and specific proposals for their resolution. Solicitation and evaluation of proposals should be planned to minimize contractor expense. Proposals for cost-type or incentive contracts may be penalized during evaluation to the degree that the proposed cost is unrealistically low.

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9. Management information/program control requirements shall provide information which is essential to effective management control. Such information should be generated from data actually utilized by contractor operating personnel and provided in summarized form for successively higher level management and monitoring requirements. A single, realistic work breakdown structure (WBS) shall be developed for each program to provide a consistent framework for (a) planning and assignment of responsibilities, (b) control and reporting of progress, and (c) establishing a data base for estimating the future cost of Defense systems. Contractor management information/program control systems, and reports emanating therefrom, shall be utilized to the maximum extent practicable. Government-imposed changes to contractor systems shall consist of only those necessary to satisfy established DoD-wide standards. Documentation shall be generated in the minimum amount to satisfy necessary and specific management needs.

IV. EFFECTIVE DATE AND IMPLEMENTATION

- A. This Directive is effective immediately. Two copies of implementing regulations shall be forwarded to the Secretary of Defense within 90 days.
- B. The number of implementing documents shall be minimized and necessary procedural guidance consolidated to the greatest extent possible. Selected subjects to be covered by DoD Directives/Instructions or Joint Service/Agency documents in support of this Directive are listed in enclosure 1. Each DoD Component shall forward the Joint Service/Agency documents for which it is responsible to the Secretary of Defense for approval prior to issuance.


Deputy Secretary of Defense

Enclosure - 1
Related Policy

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RELATED POLICY

Responsibility for the following policy documents is assigned to the Cognizant Office indicated. In each case, the Cognizant Office shall (a) generate the policy, or (b) delegate authority to a lead DoD Component for preparation and subsequent issue of a joint Service/Agency regulation, agreement or guide after approval by OSD.

<u>Policy Subject</u>	<u>Cognizant Office</u>	<u>Document</u>
Cost Analysis Improvement Group	ASD(PA&E)	DoD Directive 5000.4
Cost/Schedule Control Systems	ASD(C)	DoD Instruction 7000.2
Design to Cost	DDR&E	DoD Directive 5000.28
Data, Acquisition of	ASD(I&L)	DoD Instruction 5010.12 DoD Instruction 5010.29
The DCP and the DSARC Process	DDR&E	DoD Instruction 5000.2
DSARC Charter	DDR&E	DoD Directive 5000.26
Industrial Preparedness Production Planning Procedures	ASD(I&L)	DoD Instruction 4005.3
Industrial Preparedness Planning Manual	ASD(I&L)	DoD 4005.3M
Logistic Support	ASD(I&L)	DoD Directive 4100.35
Management Careers, Systems Acquisition	ASD(PA&E)	DoD Directive 5000.23
Management Systems Control	ASD(C)	DoD Instruction 7000.6
Manufacturing Technology	ASD(I&L)	DoD Instruction 4200.15
Priorities and Allocations	ASD(I&L)	DoD Instruction 4400.1
Quality Assurance	ASD(I&L)	DoD Directive 4155.1
Standardization	ASD(I&L)	DoD Directive 4120.3
Test and Evaluation	DDR&E	DoD Directive 5000.3
Value Engineering	ASD(I&L)	DoD Instruction 5010.8
Proposal Evaluation and Source Selection	ASD(I&L)/ DDR&E	DoD Directive 4105.62



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APPENDIX D

ASD(A)

Department of Defense Directive

SUBJECT Director of Defense Research and Engineering

Reference: (a) DoD Directive 5129.1, subject as above,
February 10, 1959 (hereby canceled)

I. GENERAL

Pursuant to the authority vested in the Secretary of Defense and the provisions of Title 10, USC, Section 135(b), the Director of Defense Research and Engineering shall have responsibilities, functions and authorities as prescribed herein.

II. RESPONSIBILITIES

The Director of Defense Research and Engineering is the principal adviser and staff assistant to the Secretary of Defense in the following functional fields:

- A. Scientific and technical matters
- B. Basic and applied research
- C. Research, development, test and evaluation of weapons, weapons systems and Defense materiel
- D. Design and engineering for suitability, producibility, reliability, maintainability, and materials conservation
- E. Environmental services, which include the various combinations of scientific, technical, and advisory activities required to produce and supply information on the past, present, and future states of space, atmospheric,

oceanographic, and terrestrial environments for use in military decision-making processes.

III. FUNCTIONS

Under the direction, authority and control of the Secretary of Defense, the Director of Defense Research and Engineering shall supervise all research and engineering activities in the Department of Defense and shall perform the following functions in his assigned fields of responsibility:

- A. Recommend policies and guidance governing Department of Defense planning and program development.
- B. Plan and recommend an optimum integrated program of research and development to meet the requirements of national military objectives and initiate projects to fill important gaps which may exist.
- C. Review projects, programs and objectives of programs of the military departments and of Department of Defense research and development agencies.
- D. Develop systems and standards for the administration and management of approved plans and programs.
- E. Evaluate the administration and management of approved policies, programs and projects.
- F. Recommend the assignment or reassignment of research and engineering responsibility for the development of new weapons or weapons systems, giving due consideration to the departmental functions set forth in DoD Directive 5100.1, "Functions of the Department of Defense and its Major Components," dated December 31, 1958.
- G. Direct and control (including their assignment or reassignment) research and engineering activities that the Secretary of Defense deems to require centralized management.

- H. As approved by proper authority, engage in or designate appropriate research and development facilities to engage in basic and applied research projects essential to the responsibilities of the Department of Defense which pertain to weapons systems and other military requirements: (1) by contract with private business entities, educational or research institutions or other agencies of government, (2) through one or more of the military departments, or (3) by utilizing employees and consultants of the Department of Defense.
- I. Recommend appropriate steps (including the transfer, reassignment, abolition and consolidation of functions) which will provide in the Department of Defense for more effective, efficient and economical administration and operation, will eliminate unnecessary duplication, or will contribute to improved military preparedness.
- J. Recommend to the Secretary of Defense appropriate funding for research, development, test and evaluation, including allocations from the Emergency Fund, Department of Defense.
- K. Keep the Department of Defense informed on significant trends in scientific research relating to national security and recommend measures to assure continuing progress.
- L. Exercise administrative direction of the Weapons Systems Evaluation Group and assure its responsiveness to the needs of the Joint Chiefs of Staff and the Office of the Secretary of Defense for operations analysis.
- M. In coordination with the Assistant Secretary of Defense (International Security Affairs), engage in programs for assistance to friendly countries in military research and development and in the interchange of related scientific and technical information.
- N. Coordinate and develop the DoD position for interagency and international affairs concerning environmental services.

- O. Provide for DoD representation on interagency, international, and military treaty organization in environmental services committees treating assigned programs, to ensure that proper consideration be given to DoD interests.
- P. Act for the Secretary of Defense with regards to the assignment of environmental services programs to satisfy emergency requirements of the unified and specified commands.
- Q. Review plans of the military departments to insure adequate assigned environmental services capabilities to support operational requirements and recommend to the Secretary of Defense action as necessary to eliminate unwarranted duplication.
- R. Such other duties as the Secretary of Defense assigns.

IV. RELATIONSHIPS

- A. In the performance of his functions, the Director of Defense Research and Engineering shall:
 - 1. Coordinate actions, as appropriate, with the military departments and other Department of Defense agencies having collateral or related functions in the field of his assigned responsibility.
 - 2. Maintain active liaison for the exchange of information and advice with the military departments and other Department of Defense agencies.
 - 3. Consult with the Joint Chiefs of Staff on the interaction of research and development and strategy.
 - 4. Seek formal statements of military operational requirements from the military departments or the Joint Chiefs of Staff, as appropriate, for research and development projects and equipment areas and for environmental services programs which appear to require such statements.

5. Maintain or arrange for the maintenance of active liaison with appropriate research and development and environmental services agencies outside the Department of Defense, including private business entities, educational or research institutions or other agencies of government.
 6. Make full use of established facilities in the Office of the Secretary of Defense, military departments and other Department of Defense agencies rather than unnecessarily duplicating such facilities.
- B. The Secretaries of the military departments, their civilian assistants, and the military personnel in such departments shall fully cooperate with the Director of Defense Research and Engineering and his staff in a continuous effort to achieve efficient administration of research and engineering activities in the Department of Defense.

V. AUTHORITIES

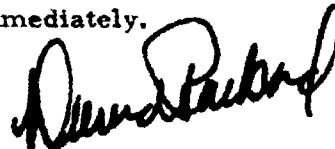
- A. The Director of Defense Research and Engineering, in the course of exercising full staff functions in his assigned fields, including those enumerated in Section III above, is hereby specifically delegated authority to:
1. Issue instructions and one-time directive-type memoranda, in writing, appropriate to carrying out policies approved by the Secretary of Defense for his assigned fields of responsibilities in accordance with DoD Directive 5025.1, subject: DoD Directives System, March 7, 1961. Such instructions and memoranda to the military departments will be issued through the Secretaries of those departments or their designees.
 2. Approve, modify or disapprove programs and projects of the military departments and other Department of Defense agencies in his assigned fields to eliminate unpromising or unnecessarily duplicative programs, and initiate or support promising ones for research and development and environmental services.

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3. Obtain such reports and information and assistance from the military departments and other Department of Defense agencies as may be necessary to the performance of his assigned functions.
- B. Other authorities specifically delegated by the Secretary of Defense to the Director of Defense Research and Engineering in other directives will be referenced in an inclosure to this directive.

VI. EFFECTIVE DATE

This directive is effective immediately.



Deputy Secretary of Defense

Enclosure - 1
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References to Other Authorities Specifically Delegated by the
Secretary of Defense to the Director of Defense Research and
Engineering in Other Directives

1. Authority to act for the Secretary of Defense in matters pursuant to Executive Order 9913 pertaining to the termination of OSRD as contained in DoD Directive 5129.36, dated 9 August 1954.



NUMBER 5000.2
DATE January 21, 1975

APPENDIX E

DDR&E

Department of Defense Instruction

SUBJECT The Decision Coordinating Paper (DCP) and the Defense Systems Acquisition Review Council (DSARC)

- Reference:**
- (a) DoD Directive 5000.1, "Acquisition of Major Defense Systems," July 13, 1971
 - (b) DoD Directive 5000.26, "Defense Systems Acquisition Review Council (DSARC)," January 21, 1975
 - (c) DoD Directive 5000.3, "Test and Evaluation," January 19, 1973
 - (d) DoD Directive 5000.4, "OSD Cost Analysis Improvement Group," June 13, 1973
 - (e) DoD Instruction 7045.7, "The Planning Programming and Budgeting System," October 29, 1969
 - (f) DoD Directive 7250.5, "Reprogramming of Appropriated Funds," January 14, 1975
 - (g) DoD Directive 6050.1, "Environmental Considerations in DoD Actions," March 19, 1974
 - (h) DoD Instruction 7000.3, "Selected Acquisition Reports (SAR)," September 13, 1971
 - (i) DoD 7110-1-M, "DoD Budget Guidance Manual," July 1, 1971 authorized by DoD Instruction 7110-.1, August 23, 1968

I. PURPOSE

This Instruction establishes policy and instruction guidelines governing the use of the Decision Coordinating Paper (DCP), formerly referred to as the Development Concept Paper, and the Defense Systems Acquisition Review Council (DSARC) in the decision-making process at the Secretary or Deputy Secretary of Defense level on major defense system acquisition programs.

II. APPLICABILITY AND SCOPE

The provisions of this Instruction apply to the Office of the Secretary of Defense, the Military Departments, the Organization of the Joint Chiefs of Staff, and the Defense Agencies (hereinafter referred to collectively as "DoD Components") and encompass major defense system acquisition policies and programs (DoD Directive 5000.1, reference (a)).

III. GENERAL

The DCP/DSARC process involves decision-making at the Secretary of Defense level on major defense system acquisition programs and related policies. The DCP documents the current or proposed program and serves as the basis for DSARC reviews. The DSARC, as an

advisory body, makes recommendations to the Secretary of Defense which are considered in the formulation of his decisions. The success of the DCP/DSARC process is vitally dependent upon a clear recognition of the individuality of each major defense system program and the sensible application of the policies of DoD Directive 5000.1 (reference (a)) and those of this Instruction.

IV. POLICY

A. The DCP and the DSARC shall be used in support of the Secretary of Defense decision-making process in accordance with DoD Directive 5000.1 (reference (a)).

1. The Defense System Acquisition Review Council (DSARC)

- a. The DSARC serves as an advisory body to the Secretary of Defense on major defense system acquisition programs and related policies. The DSARC provides information and recommendations to the Secretary of Defense when decisions are necessary on system acquisitions, and related policies.
- b. The mission, composition and operation of the DSARC and the responsibilities of its members and supporting organizations are set forth in its charter (DoD Directive 5000.26, reference (b)).

2. The Decision Coordinating Paper (DCP)

- a. The purpose of the DCP is to support the DSARC review and the Secretary of Defense decision-making process throughout the acquisition phase of the system program. It is the principal document for recording: (1) the essential information on a program; e.g., need/threat, concept, milestones, thresholds, issues and risks, alternatives, management plan, supporting rationale for the decisions, and affordability in terms of projected budget and phasing of out-year funding; and (2) the Secretary of Defense decisions.
- b. A Secretary of Defense decision is consummated when he signs the DCP, or issues a memorandum, authorizing the DoD Component to proceed with the program described in the DCP or directing another course of action. The Secretary of Defense decision set forth in the DCP establishes the limits of authority delegated to the cognizant DoD Component in the conduct of the program.
- c. The DCP shall not be considered a vehicle for force-level decisions, even though it may contain

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force-level information. When such information is present in the DCP, the information shall be consistent with current force-level documents (e.g., the Five Year Defense Program (FYDP)), or specific differences noted.

- d. Programs which represent major modifications to existing deployed systems will be treated as separate programs and accommodated by the DCP in the same manner as major system programs.
- e. The guidelines governing the objectives of DCPs and the responsibilities associated with their preparation, coordination and review are set forth in enclosure 1.

B. Scheduled Program Decision Points

1. Approval (or disapproval) to conduct a phase of a major defense system program will be given by the Secretary of Defense. The decision points shall be scheduled to meet the peculiar needs of each program. Each decision point shall be supported by a "for coordination" draft of a DCP and a recommendation by the DSARC. The number, timing, and nature of the decision points shall be established by the Military Services and the Office of the Secretary of Defense (OSD) jointly and, though not the same for all programs, they will normally include:
 - a. The Program Initiation Decision Point. At this decision point Secretary of Defense considers approval (or disapproval) to commit resources for advanced development during the Validation Phase of a major defense system that is projected for inclusion in the force structure. Early scheduling of the program initiation decision point is essential to timely Secretary of Defense review. Primary concerns at this decision point are:
 - (1) The identified need has been substantiated;
 - (2) The proposed range of system major performance parameters matches the need;
 - (3) In the plan for evaluating system alternatives, consideration has been given to all approaches that appear to be technologically feasible, operationally practicable and economically affordable (i.e., includes modifying existing defense systems, using system (or variants) under development by other DoD components, developing a new system, or employing a foreign developed system);
 - (4) Preliminary costs (DoD Directive 5000.4, reference (d)) and schedule estimates are realistic and acceptable;

- (5) Plans and schedules for test and evaluation required before start of full-scale engineering development are adequate (DoD Directive 5000.3, reference (c));
- (6) The relative estimates of costs to maintain and operate the various alternative systems have been addressed and evaluated; and,
- (7) The acquisition strategy is consistent with program characteristics, including risk and allowable costs, fiscal year phasing and constraints resulting from projected total budget.

In general, the program initiation decision point should occur before any major obligation of development funds on the program and before any feasible program alternatives have been foreclosed.

b. The Full-Scale Engineering Development Decision Point. At this decision point, the Secretary of Defense considers approval (or disapproval) to commit resources to the full-scale engineering development or to the detailed design of a major defense system. Primary concerns at this decision point are:

- (1) Reaffirming the operational need for the system in the light of its estimated acquisition and operating cost and projected budgetary constraints;
- (2) The adequacy of the evaluation of alternative approaches;
- (3) The readiness of the system to enter full-scale engineering development;
- (4) The adequacy of the test and evaluation approach and test results to date (DoD Directive 5000.3, reference (c)), and availability of an integrated test and evaluation plan;
- (5) Assurance that cost estimates are both realistic and acceptable within foreseen budgetary constraints (DoD Directive 5000.4, reference (d)) and schedule estimates remain realistic and acceptable; and,
- (6) The acquisition strategy and contractual plan are consistent with program characteristics, and risks.

c. The Production/Deployment Decision Point. At this decision point, Secretary of Defense considers approval (or disapproval) to commit substantial resources to the production of a major defense system. Primary concerns at this decision point are:

- (1) Reaffirming the operational need for the system in the light of its estimated acquisition and operating cost and projected budgetary constraints;

- (2) Ensuring the proposed quantity is consistent with the operational needs and the available projected resources.
 - (3) The readiness of the system to enter the production process, as demonstrated by the results of tests conducted in accordance with the policy in DoD Directive 5000.3 (reference (c));
 - (4) The readiness of the production process to build the system;
 - (5) Assurance that the system can be acquired, maintained and operated at reasonable cost;
 - (6) Assurance that cost estimates are both realistic and acceptable within foreseen budgetary constraints (DoD Directive 5000.4, reference (d)); and,
 - (7) Reassuring that the acquisition strategy and contractual plan are economically efficient and consistent with program characteristics, and risk.
- d. Additional Decision Points. In addition to the three major decision points, the program situation may require additional decision points (e.g., release of funds for long lead material or effort, pilot production, additional systems for test and evaluation, successive production lot procurements).
- e. Ship Programs. For ship programs the Program Initiation Decision Point equates to start of Preliminary Design and the Full-Scale Engineering Development Decision Point equates to the start of Contract Design. While the Production/Deployment Decision Point relates to the start of Detailed Design (for the first procurement-funded ship), the decision point authorizing follow-ship procurement will occur later after satisfactory progress of test and evaluation related to the ship class (DoD Directive 5000.3, reference (c)).
- C. Unscheduled Program Decisions. Events both internal and external to the program (such as a congressional fund action, Secretary of Defense decision on a Program/Budget Decision, or a change in threat or national strategy), unforeseen technical difficulty or other circumstances--which preclude achievement of a program objective or otherwise causes a breach, or a likely breach, of established cost, performance, or schedule DCP thresholds--may require a DSARC review in addition to those normally scheduled. Such reviews would lead to unscheduled program decisions. (See subsection III.D, enclosure 1.)
- D. Relationships
1. The DCP/DSARC Process and the Planning, Programming and Budgeting System (PPBS)
 - a. Major program decisions are to be made in context with both the PPBS (see DoD Instruction 7045.7, reference (e)) and the DCP/DSARC process.
 - b. In the PPBS, the Secretary of Defense decision-making on individual defense system programs is keyed to the problem

of balancing all programs within the established DoD fiscal limits. The program covered by a DCP must fit into this affordability framework.

- c. The DCP/DSARC process complements the PPBS by addressing issues related to the progress of individual defense system programs and ensures adequate Secretary of Defense reviews related mainly to the individual program milestones, rather than to the PPBS schedule.
 - d. Secretary of Defense decisions made through the DCP/DSARC process must be reflected in the FYDP. This shall be accomplished either (1) during the Program Objective Memorandum (POM) Issue Paper/Program Decision Memorandum (PDM) process, or (2) during the Program/Budget Decision (PBD) process, depending on when the DCP/DSARC-related decision is made.
 - e. In cases where a POM or budget submittal to OSD deviates significantly from a previously approved DCP/DSARC-related decision, this fact and the cost, schedule and performance impact on the program shall be noted in the POM or budget submittal and explained.
 - f. When an OSD-generated PPBS document, such as the Issue Paper or PBD, offers an alternative to the DCP/DSARC-related decision, the document shall be submitted to the cognizant DSARC chairman and other interested DSARC principals, or their designees, for coordination or comment and recommendation, as appropriate. Each DCP affected by an approved decision document shall be updated or amended within 30 working days to reflect that change and to reference the appropriate decision document.
2. The DCP/DSARC Process and the Program Memorandum (PM). The PM is essentially the same as the DCP but is used for programs which though important may not fully meet the criteria of DoD Directive 5000.1 (reference (a)) as a major program warranting a DCP. The use of a PM to support program reviews and decision making shall be the same as the DCP except that (a) signature for approval shall be that of the appropriate Chairman of DSARC or at his discretion forwarded to the Secretary of Defense for signature, (b) the use of the DSARC to review the program shall be at the discretion of the DSARC Chairman, and (c) coordination on a PM may require that of the DSARC Chairman, Head of the DoD Component concerned, and only others having direct interest.

V. WAIVERS

Specific program circumstances may dictate the need for DoD Components to deviate from the procedures outlined herein. When appropriate, the Head of the cognizant DoD Component may request a waiver to particular requirements of this document from the appropriate DSARC Chairman, indicating the circumstances that justify such waiver.

VI. EFFECTIVE DATE AND IMPLEMENTATION

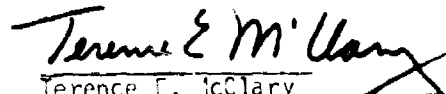
This instruction is effective immediately. The DoD Components which have authority and responsibilities under DoD Directive 5000.1 (reference (a)) shall transmit this Instruction to all organizations and personnel involved in major defense system acquisition programs. No implementing policy documents are necessary.



Malcolm R. Currie
Director Defense Research
and Engineering

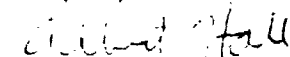
Enclosure - 1
The Decision Coordinating Paper (DCP)

OTHER DSARC MEMBERS APPROVING THIS INSTRUCTION:

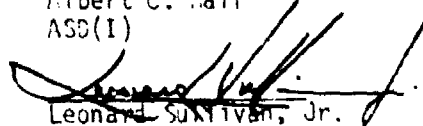


Terence E. McClary
ASD(Comptroller)

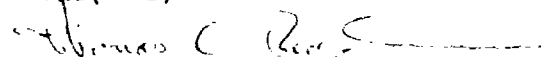
Arthur I. Mendolia
ASD(I&L)



Albert C. Hall
ASD(I)



Leonard S. Sullivan, Jr.
ASD(P&E)



Thomas C. Reed
DTACCS

THE DECISION COORDINATING PAPER (DCP)*
(Guidelines For Preparation And Processing)

I. GENERAL

- A. The DCP is a summary document of not more than 20 standard pages that provides management with the essential information on a major defense system program (DoD Directive 5000.1, reference (a)). There will be a DCP for each major defense system program. The DCP will also be used to accommodate programs which represent major modifications to existing deployed systems.
- B. The form and content of each DCP issued shall focus on the particular phase of the program it is intended to support, related issues, and the specific decision it seeks.
- C. The "initial" draft DCP is a Military Service prepared draft which after preliminary review within the OSD becomes a "for comment" draft. This "for comment" draft is forwarded to all interested groups for review and comments. When revised to reflect these comments it becomes the "for coordination" draft which is used (1) as the basis for DSARC review, (2) for final coordination, and (3) signature by the DSARC Principals; the Deputy DDR&E (T&E); and other appropriate signatories; and the Secretary of Defense (see subsection III.A). The "for coordination" draft will be modified, if necessary to reflect the Secretary of Defense decision prior to signature.
- D. During the DCP coordination, key issues and the substance of disagreements shall be clearly defined. While the coordination process will resolve many major issues, it may not be possible to resolve all issues. However, it is required that the unresolved issues be clearly identified in the DCP. Conflicting viewpoints shall be documented, supported and highlighted in the DCP.
- E. Each DCP will identify any approved Area Coordinating Paper (ACP), or Mission Concept Paper (MCP) encompassing the specific mission area to which it relates.
- F. Each DCP shall contain a Resource Annex. For each program alternative in the DCP, this annex shall specify Cost Data, Production Data, and Inventory/Objectives Data using the same format as that employed in the submission of Congressional Data Sheets, as described in the Budget Guidance manual, DoD 7110-1-M (reference (i)). The Annex will indicate, for each

*Formerly referred to as "Development Concept Paper."

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program alternative, the required changes to previously allocated DoD Component resources and any changes to previous estimates for the program.

- G. The DCP will remain in existence throughout the complete acquisition phase of a program. The DCP shall be reviewed annually and updated as appropriate (see subsection III.E.).
- H. Cost escalation shall be handled in the DCP in the same manner as in the Selected Acquisition Report (SAR), prescribed by DoD Instruction 7000.3 (reference (h)).

II. DCP OBJECTIVES

- A. The basic objectives of each DCP, regardless of which Secretary of Defense decision it supports, are to:
 - 1. Ensure collaboration and essential debate by DSARC Principals, and other key officials as appropriate, before Secretary of Defense decisions.
 - 2. Relate the phasing of the development and acquisition program to force modernization needs in the appropriate mission area, utilizing information on projected budgetary constraints when possible.
 - 3. Identify major issues or differences of opinion that bear on the immediate Secretary of Defense decision.
 - 4. Identify and evaluate feasible program alternatives based on their acquisition and ownership costs and projected performance against the established need. Evaluations shall include consideration of new development, improving existing systems, and foreign developments.
 - 5. Show how the program relates to similar programs in other Military Services and ensure no unnecessary duplication.
 - 6. Identify, and present a plan for the resolution of those issues and risks that are anticipated during the next program phase.
 - 7. Establish the plan, including test and evaluation effort, for the next program phase (DoD Directive 5000.3, reference (c)). Develop a fall-back plan for an alternative program if objectives are not achieved.
 - 8. Define considerations of interoperability with other force elements. This shall include a statement of the plan to address such factors as electromagnetic compatibility and identification needs when applicable.

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9. Summarize the technical readiness of subsystems and the degree of standardization including test and support equipment.
 10. Establish cost, performance and schedule thresholds for the total program and the next program phase, including funding limits for maintaining alternatives. Address the estimated probability of producing and supporting the adequate number of systems within realistic resource and time limitations.
 11. Describe management responsibility, structure and planned management systems.
 12. Establish objectives and limits of authority that are delegated to the cognizant DoD Component(s) for conducting the next phase of the program.
 13. Assure that the acquisition strategy and related contract plan are consistent with program characteristics, including risk. Assure that economic and technical competition to the maximum extent feasible is planned.
 14. Identify the environmental considerations as required by DoD Directive 6050.1 (reference (a)).
 15. Identify impact of the proposed system program on the utilization or expansion of DoD facilities.
 16. Ensure consideration of such international aspects as buying foreign systems, joint development programs, and sales to allied countries.
 17. Identify the elements of the program that require protection by security classification.
 18. Identify any documents(s) that develop the analytical rationale for force-level projections or goals.
- B. Normally, the DCP I, which supports the decision by the Secretary of Defense to enter the Program Validation Phase, will accommodate the basic objectives above and place added emphasis on the following areas:
1. Identify threat factors as analyzed in appropriate documents.
 2. Describe and substantiate the operational need.
 3. Identify broad performance objectives; substantiate that these performance objectives meet the operational need.
 4. Identify the critical questions and areas of risk to be resolved by test and evaluation and provide a summary statement of test objectives, schedules, and milestones.

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5. Identify preliminary cost and schedule estimates, and identify design-to-cost goals or indicate when these will be established.
 6. Identify critical logistics support factors that must be considered during the acquisition.
 7. Identify issues which must be resolved prior to DSARC II and ensure that the program is adequate to resolve them.
- C. Normally, DCP II, which supports the decision by the Secretary of Defense to enter the Full-Scale Engineering Development Phase, will accommodate the basic objectives above and place added emphasis on the following areas:
1. Confirm the operational need, considering changes in policy or threat since the initial Secretary of Defense decision.
 2. Establish and substantiate the specific performance objectives including the reliability and maintainability requirements.
 3. Present results of test and evaluation accomplished to date, an updated statement of critical questions and areas of risk still needing resolution by test, and a detailed statement of test plans and milestones (DoD Directive 5000.3, reference (c)).
 4. Present results of cost, performance, and schedule trade-off analyses, and cost effectiveness studies as required.
 5. Present the design-to-cost goals and rationale.
 6. Identify and evaluate the logistic support alternatives including their impact on design.
 7. Identify issues which must be resolved prior to DSARC III and ensure that the program is adequate to resolve them.
- D. Normally, DCP III, which supports the decision by the Secretary of Defense to enter the Production/Deployment Phase will accommodate the basic objectives above and place added emphasis on the following areas:
1. Confirm the operational need, considering changes in policy or threat since the previous Secretary of Defense decision.
 2. Evaluate the degree of achievement of performance objectives including reliability and maintainability.
 3. Provide an assessment of system producibility, operational suitability, and logistic supportability.

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4. Present (a) an assessment of the development and operational test and evaluation results and the readiness of the system to enter production, and (b) the scope and schedule for any test and evaluation still to be accomplished. (DoD Directive 5000.3, reference (c).)
 5. Present results of cost, performance, and schedule trade-off analyses and cost effectiveness analyses as required. (These analyses shall relate to acquisition, operating and support costs).
 6. Describe the procurement plan, including any options and how it relates to the proposed contract.
 7. Validate that technical risks have been eliminated or are in hand.
 8. Present the integrated logistic support plan and production plan.
- E. Normally, for ship programs, DCP I, II and III will be developed when preparing to start Preliminary Design, Contract Design and Detailed Design (for the first procurement-funded ship) respectively. The DCP III will be updated for the follow-ship procurement DSARC review.

III. RESPONSIBILITIES

- A. Preparation and coordination of the DCP shall be accomplished as follows:
 1. The Head of the DoD Component concerned shall be responsible for the completeness and adequacy of the DCP.
 2. The cognizant DoD Component shall prepare the "initial draft" of each DCP, based upon an OSD-approved outline, and forward it to the responsible DSARC Chairman's staff office (ODDR&E, OASD(I&L), OASD(I) or ODTACCS) for review and coordination with all interested OSD offices.
 3. The responsible OSD staff shall prepare and distribute an acceptable "for comment" draft to the interested offices, including that of the cognizant DoD Component, who will return their comments within 15 working days.
 4. Upon receipt, the DSARC Chairman's staff office will accommodate the comments in a "for coordination" draft, which must be available for review by the DSARC principals and the Head of the cognizant DoD Component at least 10 working days prior to the DSARC review.

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5. Although the signatories on a DCP may vary from program to program, the coordination shall always include the DSARC principals, the Chairman of the Joint Chiefs of Staff, or his designee; the Deputy DDR&E (Test and Evaluation); and the Head of the cognizant DoD Component.
 6. Final DCP coordination shall be accomplished on the "for coordination" draft. Signature by the Secretary of Defense shall consummate the decision and approve the DCP.
- B. The offices mentioned in subsection III.A. are responsible for providing an appropriate representation of the concerns of their functional area to the DSARC Chairman's staff office responsible for the DCP coordination. The OSD staff office responsible for the DCP will ensure that participants' comments are considered and decision alternatives and unresolved issues are clearly represented in the DCP.
 - C. Responsibility for distributing the DCP following a Secretary of Defense decision, or for revising the DCP to reflect the Secretary of Defense decision set forth in a decision memorandum, rests with the appropriate DSARC Chairman's staff office. These actions shall be completed within 30 working days after a Secretary of Defense decision is made.
 - D. Responsibility for notifying the Secretary of Defense and the DSARC Chairman when a program threshold established in the DCP has been breached, or is forecast to be breached, rests with the Head of the cognizant DoD Component.
 - E. Responsibility for annual review of each DCP rests with the Head of the cognizant DoD Component. This review will normally be held after the January FYDP updating.
 1. The Component Head shall forward the results of the review and any proposed revision to the appropriate DSARC chairman for coordination with the DSARC Principals and the Deputy DDR&E (T&E), and other appropriate signatories (see subsection III.A.) The DCP revision shall be completed within 90 days, when necessary, in the simplest and most expeditious manner (by Cover Sheet, if feasible).
 2. In particular, the resource annex to the DCP shall be reviewed and revised as necessary to assure consistency with the previous year's actual funding, current year's anticipated funding, budget year funding per the President's budget, and out-year funding per the FYDP. If only the resource annex to the DCP is being changed, the revised resource annex may be attached to the DCP Cover Sheet indicating that no other change was made to the DCP.

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3. Even when no changes are deemed necessary following the annual review, a Cover Sheet shall be appended to the DCP, indicating the review has been accomplished; this Cover Sheet shall be distributed to the DSARC principals and others as appropriate.
- F. Responsibility for obtaining reprogramming approval, following a Secretary of Defense decision, rests with the Head of the cognizant DoD Component (DoD Directive 7250.5, reference (f)).



APPENDIX F

January 21, 1975
NUMBER 5000.26

DDP&E

Department of Defense Directive

SUBJECT Defense Systems Acquisition Review Council (DSARC)

- References:
- (a) DoD Directive 5000.1, "Acquisition of Major Defense Systems," July 13, 1971
 - (b) DoD Instruction 5000.2, "The Decision Coordinating Paper (DCP) and the Defense Systems Acquisition Review Council (DSARC)," January 21, 1975
 - (c) DoD Directive 5000.3, "Test and Evaluation," January 19, 1973
 - (d) DoD Directive 5000.4, "OSD Cost Analysis Improvement Group," June 13, 1973
 - (e) Deputy Secretary of Defense Multiaddressee Memorandum "Establishment of Defense Systems Acquisition Review Council," May 30, 1969 (hereby cancelled)

I. PURPOSE

This Directive provides a permanent charter for the Defense Systems Acquisition Review Council (DSARC) originally established in reference (e).

II. CANCELLATION

Reference (e) is hereby superseded and cancelled.

III. APPLICABILITY

The provisions of this Directive apply to the Office Secretary of Defense, the Military Departments, the Organization of the Joint Chiefs of Staff, and Defense Agencies (herein after referred to collectively as "DoD Components") having responsibilities related to the acquisition of major defense systems.

IV. FUNCTION

- A. The function of the DSARC is to serve as an advisory body to the Secretary of Defense on the acquisition of major defense system programs and related policies, and to provide him with supporting information and recommendations when decisions are necessary.
- B. The DSARC will serve to complement the Decision Coordinating Paper (DCP), formerly known as the Development Concept Paper, which continues as a formal DoD management and decision-making system for the acquisition of major systems (DoD Directive 5000.1 and DoD Instruction 5000.2, references (a) and (b)).
- C. Reviews by the DSARC are intended to provide open discussion of issues and alternatives by DoD officials, based upon the most complete information available, to ensure that the advice given to the Secretary of Defense is as complete and as objective as possible.

V. COMPOSITION

- A. The DSARC principals shall be the Director of Defense Research and Engineering, Assistant Secretary of Defense (Installations and Logistics), Assistant Secretary of Defense (Comptroller), Assistant Secretary of Defense (Program Analysis and Evaluation) and, for programs within their areas of responsibility, the Assistant Secretary of Defense (Intelligence) and Director Telecommunications and Command and Control Systems. Other Assistant Secretaries of Defense having interest in specific programs (e.g., Assistant Secretary of Defense (International Security Affairs), Assistant Secretary of Defense (Public Affairs), Assistant Secretary of Defense (Manpower and Reserve Affairs), or the General Counsel may be invited to serve as principals, when appropriate.
- B. The Deputy Director of Defense Research and Engineering (Test and Evaluation) will participate in the DSARC reviews and process; he will report to the DSARC and to the Secretary of Defense his evaluation of the program test plans and test results (DoD Directive 5000.3, reference (c)) as to their adequacy to support the decision under consideration.
- C. The Chairman of the Cost Analysis Improvement Group (CAIG) will serve as an advisor to the DSARC reporting the CAIG evaluation of the Military Service cost estimates of the program (DoD Directive 5000.4, reference (d)) at each decision point.

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- D. The Head of the cognizant DoD Component and the Chairman of the Joint Chiefs of Staff, or their representatives, will participate in the DSARC reviews. The JCS representative will serve as an advisor to the DSARC and provide to the DSARC a statement of the JCS position relating to the system program.
- E. Other key officials may be invited to participate in the meetings, or to serve as advisors, by the DSARC Chairman on a case-by-case basis.
- F. An Executive Secretary shall be appointed by the Chairman.
- G. The DSARC shall be chaired by:
 - 1. The DDR&E for the program initiation and full-scale engineering development decisions and for all special reviews when system development is the primary issue.
 - 2. The ASD(I&L) for production decisions and for all special reviews when system production, procurement, maintenance or logistic support is the primary issue.
 - 3. The ASD(I) or the DTACCS will serve as co-chairman with DDR&E or ASD(I&L), as appropriate, for programs of their primary responsibility.

VI. OPERATION

- A. Reviews may be requested by any of the DSARC Principals or by the Head of the cognizant DoD Component. The DSARC Chairman will provide official notice of all meetings.
- B. An informal pre-DSARC staff planning meeting may be initiated and chaired by the DSARC Chairman's cognizant staff assistant. This meeting will be attended by the appropriate staff members from the offices of the DSARC principals and the Deputy DDR&E(T&E), the CAIG Chairman, representative(s) from the cognizant DoD Component, and the DSARC Executive Secretary. The meeting should be held approximately 60 working days prior to the scheduled DSARC meeting depending on the complexity of the issues to be discussed at the DSARC review. The purpose of the meeting shall be to discuss (1) the specific issues and alternatives to be treated at the DSARC review; (2) the information that will be made available to support the DSARC deliberations; (3) the readiness of the program for DSARC review; and (4) the schedule of DSARC related events leading to the DSARC review.
- C. A scheduled DSARC review shall precede the recommendation by the DSARC Principals to the Secretary of Defense to proceed with the Program Initiation (Validation Phase), the

Full-scale Engineering Development Phase and the Production/Deployment Phase of a major Defense system program. The following are guidelines for the conduct of these DSARC reviews.

1. The DSARC I Review (Program Initiation)

- a. At the DSARC I review leading to the program initiation decision, the following will be determined:
 - (1) A potential military need exists for a new Defense system or an improved system.
 - (2) The military requirements properly relate to the mission, the threat, and force obsolescence.
 - (3) Alternative Defense systems that will satisfy the military need including system modernizations and foreign developments have been considered along with anticipated resources for resolving the need.
 - (4) Broad mission/performance requirements/specifications are adequately defined (technically) and are economically plausible.
 - (5) Anticipated quantity, resource and schedule estimates are realistic and acceptable in context with affordability limits. The appropriate acquisition (e. g. , planning estimates) and ownership cost estimates have been validated by independent assessment (DoD Directive 5000. 4, reference (d)).
 - (6) Major problems, issues, and risks are identified and suitable methods for their resolution, such as the use of prototypes, are planned.
 - (7) The statements of questions and issues and of test objectives and schedules are adequate (DoD Directive 5000. 3, reference (c)).
 - (8) Critical logistic support factors and facilities impact have been identified.
 - (9) Future support costs including a comparison with those of current systems, have been considered.
 - (10) The use of currently available subsystems versus development of new subsystems, has been or will be considered.
 - (11) Economic and technical competition to the maximum extent feasible is planned.

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- (12) Program thresholds in the DCP are appropriate, well-defined, and provide the flexibility for accomplishing tradeoffs while ensuring timely identification of significant problems.
 - (13) Practical tradeoffs have been made between performance, risks, cost and schedule.
 - (14) The acquisition strategy including type of contract is consistent with program characteristics and risk.
 - (15) Possible alternative fall-back position(s) are available in the event the proposed approach to the program is unsuccessful.
 - (16) Design-to-cost goals, related reliability and maintainability goals, and associated thresholds are established.
 - (17) Requisites for transition to full-scale engineering development have been established.
 - (18) The program plan for this phase is adequate.
- b. DSARC I reviews are generally conducted to consider the readiness to proceed with the Program Initiation (Validation Phase). Additional DSARC I type reviews may be required to consider major changes in the need/threat, available technology or budget requirements that may take place during the Validation Phase.
2. The DSARC II Review (Full-Scale Engineering Development)
- a. At the DSARC II review leading to the full-scale engineering development decision the following will be determined:
 - (1) The Defense system still satisfies the military need and the requirements properly relate to the mission, the threat, and anticipated resources--considering changes that have occurred since the previous Secretary of Defense decision.
 - (2) System tradeoffs have produced a proper balance between cost, schedule and performance, including reliability and maintainability.
 - (3) Quantity, resource, and schedule estimates are realistic and acceptable. Relative cost estimates of support and operations have been evaluated (e.g., 10-year cost). Cost estimates for both acquisition and support have been validated by independent assessment (DoD Directive 5000.4, reference (d)).
 - (4) Major uncertainties and risks have been reduced to acceptable levels and effective methods are identified to resolve residual uncertainties and risks.
 - (5) The proposed system is cost-effective compared with competing alternative ways of satisfying the military need.

- (6) Valid design-to-cost goals are established.
 - (7) Program thresholds in the DCP are appropriate and well defined.
 - (8) The approach for selection of major subsystems has been clearly identified and the program has considered the use of currently available subsystems versus new development (including test and support equipment).
 - (9) The development and operational test and evaluation already conducted has progressed satisfactorily, and the future test program proposed (e.g., objectives, plans and schedules) is sound (DoD Directive 5000.3, reference (c)).
 - (10) An integrated test and evaluation plan has been prepared which identifies and integrates the effort and schedules of all T&E to be accomplished and ensures that all necessary T&E is accomplished prior to the decision points (DoD Directive 5000.3, reference (c)).
 - (11) The program management structure and plan are sound.
 - (12) Maximum practical use of competition has been incorporated in the acquisition plan.
 - (13) The acquisition strategy including contract type is consistent with program characteristics and risk.
 - (14) The proposed fall-back position(s), if any, has been reassessed and found suitable.
 - (15) Requisites for the production/deployment decision, including logistics support, have been established.
- b. DSARC II reviews are generally conducted to consider major decisions for initiation of full-scale engineering development. Additional reviews may focus on procurement of additional development models to continue testing, or reorientation of the development program.

3. The DSARC III Review (Production/Deployment)

- a. At the DSARC III review leading to the production/deployment decision, the following shall be determined:
 - (1) The defense system still satisfies a military need and its performance properly relates to the mission, the threat, planning and policy guidance, and anticipated resources--considering changes that have occurred since the previous Secretary of Defense decision.

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- (2) Test results, based on development test and initial operational test and evaluation (IOT&E), are adequate to support a decision to proceed with major production, and plans and schedules for remaining testing are adequate as provided in DoD Directive 5000.3 (reference (c)).
 - (3) Quantity, resource and schedule estimates are still realistic and acceptable. Relative cost estimates of support and operation have been evaluated (e.g., 10 year cost) where relevant. The cost estimates for both acquisition and support have been validated by independent assessment (DoD Directive 5000.4, reference (d)).
 - (4) The defense system is cost-effective for both acquisition and support compared with competing alternative ways of satisfying the military need.
 - (5) System tradeoffs have produced a proper balance between cost, schedule and performance, including reliability and maintainability.
 - (6) Program thresholds in the DCP are well defined.
 - (7) Production quantity requirements are valid.
 - (8) Issues concerning production, logistic support, facilities and maintenance are identified and plans for their resolution are sound.
 - (9) The program management structure and plan are sound.
 - (10) All major problems have been revealed and solutions to residual risks have been identified.
 - (11) The acquisition strategy and contract plan are consistent with program characteristics and risks and the approach to contractor selection is sound. The proposed contract type and options, if any, provide DoD flexibility for increasing or decreasing the production rate and total quantity.
 - (12) Requisites for future production decisions have been defined and competition (e.g., second source and/or breakout) has been considered.
 - (13) The plan for transition to production and deployment is adequate including integration with existing operational systems.
- b. DSARC III reviews are conducted, in general, to consider production/deployment decisions. Additional reviews may focus on such

decisions as release of funds for long lead items, release of pilot or limited production, a limited buy or full production.

4. Ship Programs. Normally, for ship programs, the DSARC I and II reviews will occur prior to start of Preliminary Design and Contract Design, respectively. A DSARC III review will be conducted prior to start of Detailed Design (for the first procurement-funded ship). Upon satisfactory progress of the test and evaluation related to the ship class an additional DSARC III review will be conducted prior to approval to procure Follow-Ships (DoD Directive 5000.3, reference (c)).
- D. Special meetings of the DSARC may be required to address special problems that arise in the acquisition of a defense system program that may require a Secretary of Defense decision. These meetings may be requested by the Head of the cognizant DoD Component or by one of the DSARC Principals to review the issues to be resolved and to prepare appropriate recommendations as to the course of action for consideration and approval by the Secretary of Defense.
 1. When there is a breach of DCP threshold, or a threatened breach, the Head of the DoD Component concerned shall notify the DSARC Chairman informally and follow this notification by formal memorandum indicating the circumstances, the seriousness of the breach and alternative courses of action open to the Secretary of Defense. The DSARC Chairman will evaluate the situation to determine whether or not the DSARC will meet to develop a set of recommendations to the Secretary of Defense. Where the situation can be resolved easily, a DSARC review is not needed; the DSARC Chairman shall prepare a memorandum to the Secretary of Defense, with a proposed action memorandum for Secretary of Defense signature; he shall coordinate the position with the DSARC Principals and the Deputy DDR&E (T&E), prior to submission to Secretary of Defense. (Same procedure as subsection VII.E.)
 2. The DSARC may also meet to consider the adequacy of the current system acquisition policies or the desirability of new or revised policies.
 - E. The Chairman of the DSARC may request an Executive Session of the DSARC Principals to develop a set of recommendations that can be forwarded to the Secretary of Defense. The Chairman may invite other key participants in the DSARC review to attend this Executive Session.
 - F. The following prerequisites to DSARC reviews are required in the time frame indicated below or as far in advance as possible in the case of a special meeting of the DSARC.

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1. The "for coordination" draft DCP - 10 days prior to the scheduled date of the DSARC review.
2. The Deputy DDR&E (T&E) report of the test program (DoD Directive 5000.3, reference (c)) - 2 days prior to the scheduled date of the DSARC review.
3. The Chairman Cost Analysis Improvement Group (CAIG) report on the evaluation of the Military Service cost estimates (DoD Directive 5000.4, reference (d)) - 5 days prior to the scheduled date of the DSARC review.

VII. RESPONSIBILITIES

- A. The Head of the cognizant DoD Component shall submit to the staff of the appropriate DSARC Chairman an "initial draft" or a new updated draft DCP in sufficient time, normally a 60 day lead time, to ensure the availability of a "for coordination" draft DCP at least 10 working days prior to the DSARC review.
- B. The following are responsible for assuring availability of the information specified in subsection VI.F. to the DSARC Principals during the 10 working days prior to the scheduled DSARC meeting, or as far in advance as possible for a special DSARC review:
 1. The staff of the DSARC Chairman - the "for coordination" draft DCP.
 2. The Deputy DDR&E (T&E) - his test and evaluation report.
 3. The Chairman Cost Analysis Improvement Group (CAIG) - the CAIG evaluation of the Service cost estimates.
- C. The DSARC principals, after review of the "for coordination" draft, may submit their comments on the issues to be resolved at the meeting to the Head of the cognizant DoD Component and to the DSARC Chairman.
- D. The DSARC Executive Secretary, appointed by the DSARC Chairman, shall be responsible for administration of the DSARC. He shall schedule and announce each meeting, provide the agenda for all participants, and record the proceedings. He shall collaborate with the appropriate DSARC Chairman's staff office in the preparation and coordination of the DSARC recommendations and action memoranda.

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E. The DSARC Chairman will provide to the Secretary of Defense within 15 working days following the DSARC review (1) a clear and objective statement of all issues, and the recommendations of the DSARC; and (2) a proposed action memorandum for the Secretary of Defense signature, reflecting the DSARC recommendations. Such report will be drafted by the DSARC Chairman and be coordinated with the other DSARC Principals and the Deputy DDR&E (T&E); it shall include any dissenting views. A copy of the draft report will be provided to the Head of the cognizant DoD Component for information and comment prior to forwarding to the Secretary of Defense.

* F. For each DSARC review the Deputy DDR&E (T&E) will prepare *
* a report to the Secretary of Defense giving his independent *
* assessment of the results of the Test and Evaluation efforts, *
* and future testing planned (DoD Directive 5000.3, reference *
* (c)). This independent assessment will be forwarded to the *
* Secretary of Defense attached to the DSARC Chairman's report *
* to the Secretary of Defense mentioned in subsection E. above. *

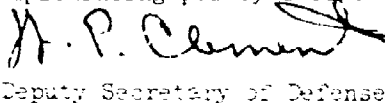
G. The DSARC Chairman will assure that the Secretary of Defense *
decision is promulgated in a revised approved DCP within 30 *
working days after the Secretary of Defense decision is made.

VIII. WAIVERS

Specific program circumstances may dictate the need for DoD Components to deviate from the procedures outlined herein. When appropriate, the Head of the cognizant DoD Component will request waiver to particular requirements of this document from the appropriate DSARC Chairman, indicating the circumstances that justify such waiver.

IX. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. The DoD Components which have authority and responsibilities under DoD Directive 5000.1 (reference (a)) shall transmit this Directive to all organizations and personnel involved in major defense system acquisition programs. No implementing policy documents are necessary.


Deputy Secretary of Defense

(SUPERSEDED with changes through
5000.3 incorporated)



APPENDIX G

January 19, 1973

NUMBER 5000.3

DR&E

Department of Defense Directive

SUBJECT Test and Evaluation

- Refs.:
- (a) DoD Directive 5000.1, "Acquisition of Major Defense Systems," July 13, 1971
 - (b) DepSecDef multi-addressee memorandum, "Conduct of Operational Test and Evaluation," February 11, 1971 (hereby cancelled)
 - (c) DepSecDef multi-addressee memorandum on the subject of the role of DR&E in test and evaluation as related to the ECP System, April 21, 1971 (hereby cancelled)
 - (d) DepSecDef multi-addressee memorandum, "Test and Evaluation in the System Acquisition Process," August 3, 1971 (hereby cancelled)

I. PURPOSE

This Directive establishes policy for the conduct of test and evaluation by the Military Departments and Defense Agencies (hereinafter referred to collectively as "DoD Components") in the acquisition of defense systems (Sections III through VI). In addition, it codifies the responsibilities of the Deputy Director of Defense Research and Engineering, Test and Evaluation (DD(T&E)), which were previously promulgated by references (b), (c), and (d)(Section VII).

II. CANCELLATIONS

References (b), (c), and (d) are hereby superseded and cancelled.

III. SCOPE AND APPLICABILITY

The provisions of this Directive encompass major programs of defense systems acquisition as designated by the Secretary of Defense (described in Section II., of reference (a)) and apply to all DoD Components that are responsible for such programs. In addition, it provides principles to be applied by the DoD Components in their acquisition of Defense Systems that do not fall in the "major acquisition programs" category.

IV. POLICIES AND PRINCIPLES

A. General

1. Test and evaluation shall be commenced as early as possible and conducted throughout the system acquisition process, designed to assist in progressively reducing acquisition risk and in assessing military worth.
2. Acquisition milestones will be tested, inter alia, upon accomplishing test and evaluation milestones prior to the time that key decisions which would permit significant sales contracts are to be made.
3. Before the initiation of development of a new system, test and evaluation using existing systems, modifications thereto, may be appropriate to help define the military need for the proposed new system and to estimate its military utility. Determination of military worth, need, and utility will be accomplished in accordance with other DoI directives.
4. All test and evaluation activities shall consider environmental issues and provide assessment for review as early as possible in the test planning cycle. (See DoI Directive 333.1.)

B. Development Test and Evaluation (DT&E). DT&E is that test and evaluation conducted to: demonstrate that the engineering design and development process is complete; demonstrate that the design risks have been minimized; demonstrate that the system will meet specifications; and estimate the system's military utility when introduced. DT&E is planned, conducted, and monitored, by the developing agency of the DoI Component, and the results thereof are reported by that agency to the responsible Military Service Chief or Defense Agency Director.

1. DT&E shall be started as early in the development cycle as possible and include testing of component(s), subsystem(s), and prototype or preproduction model(s) of the entire system. Compatibility and interoperability with existing or planned equipments and systems shall be tested.
2. During the development phase following the Program Initiation Decision (Milestone I), adequate DT&E shall be accomplished to demonstrate that technical risks have been identified and that solutions are in hand.
3. During the Full-Scale Development phase and prior to the first major production decision, the DT&E accomplished

shall be adequate to insure that engineering is reasonably assured that all identified items or items are being repaired, replaced, modified, or repaired, maintainability, and reliability considerations are being identified; and that all identified items are repaired in time.

- For those items which are repaired in time with equipment of another type, the repair may be by any of the more permanent plans DIRM may require. The DIRM program will include participation and cooperation with affected components as appropriate.

2. Operational Test and Evaluation (OTE). OTE is that test and evaluation conducted to evaluate an aircraft system's military utility, operational capability, and operational suitability (including compatibility, interoperability, reliability, maintainability, and logistic and training requirements), and need for any modifications. In addition, OTE provides information on organization, personnel requirements, structure, and tactics. Also, it may provide data to support or verify material operating instructions, procedures, and manuals. OTE will be accomplished by operational and support personnel of the type and qualifications to be expected to use and maintain the system under development, and will be conducted in an environment as operational as possible. OTE will normally be conducted in phases, and staged as appropriate. During Phase-1 Development OTE will be accomplished to assist in evaluating operational effectiveness and suitability (including compatibility, interoperability, reliability, maintainability, and logistic and training requirements). OTE will be continued as necessary during and after the production period to verify, estimate, or evaluate changes, and to re-evaluate the system to insure that it continues to meet operational needs and to make the necessary adjustments in a new environment or against a new threat.

- 1. In each DoF component there will be one major field agency ~~for a limited number of each major field activity~~ responsible and it shall have the overall planning, providing, and control of the prime contract which will be responsible for OTE and which will:
 - a. Report to, and coordinate with, independent test and evaluation agencies of the Military Service Chief or Defense Agency Director.
 - b. Report through the Military Service Chief or Defense Agency Director to the appropriate OTE.
 - c. Insure that the OTE is properly planned and conducted.

2. In addition, each D-D Component will provide within its immediate headquarters staff a full-time or part-time point person to assist the Independent Test (IT) Test Agency and to keep its Military Service Chief or Defense Agency Director fully informed as to needs and accomplishments.
 3. Operational testing should be separate from development testing. However, development testing and development of operational testing may be combined where separation would cause delay involving unacceptable military risk, or would cause an unacceptable increase in the acquisition cost of the system. When combined testing is conducted, the necessary test conditions and test data required by both the D-D Component Development Agency and Development Agency must be realized. In addition, the D-D Component Test Agency must insure that the combined test is as planned and executed as to provide the necessary operational test information; participate actively in the test; and provide separate evaluation of the resultant operational test information.
 4. Acquisition programs will be so structured that at least an initial phase of operational test and evaluation (OT&E) will be accomplished prior to the first major production decision. OT&E will provide a valid estimate of expected system operational effectiveness and suitability (including compatibility, interoperability, reliability, maintainability, and logistic and training requirements). Preproduction prototypes will be employed for OT&E if they are reasonably representative of the expected production items and provide a valid estimate of expected system operational effectiveness and suitability. Otherwise, special full production items from a pilot production line will be employed for OT&E.
 5. For more complex systems, additional phases of OT&E may be required and performed with pilot or preproduction items such as up to the first major production decision but prior to the availability of first production items. When production items are available in sufficient quantity, follow-up phases of OT&E adequate to meet the full objective outlined above will be accomplished by the appropriate D-D Component Development Agency.
 6. For those systems which have a natural interface with equipment of another Component, or may be acquired by two or more Components, joint OT&E will be conducted where required. Such joint testing will include participation and support by all affected Components as appropriate.
- F. Test and Evaluation for Major Ships or a class. The test design, construction period of a major ship will normally include completion of the ship and accomplishment of test

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thereon prior to decision to proceed with follow ships. In lieu thereof, successive phases of DT&E and OT&E will be accomplished as early as practicable at test installations and on the lead ship so as to rapidly reduce risks and thereby minimize the need for modification to follow ships.

1. When combat system complexity warrants, there will be constructed a combat system test installation wherein the weapon, sensor, and information processing subsystems are integrated through their interfaces in the manner expected in the ship class. Adequate initial DT&E and OT&E of the integration of those subsystems will be accomplished thereon prior to the first major production decision on follow ships. To the degree practicable first generation subsystems will have been approved for service use prior to the initiation of integrated operational testing. Where subsystems cannot be service approved prior to the initial operational testing, their integration will be tested at the test site installation as early as possible in their acquisition cycle.
2. For new ship types incorporating major technical advancements not earlier proven in hull or non-nuclear propulsion design, a prototype incorporating these advancements will be employed. If the major technological advancements are contemplated in only some features of the hull or non-nuclear propulsion design, the test installation need incorporate only the applicable new features. Adequate test and evaluation on such prototype will be completed prior to the first major production decision on follow ships.
3. The prototyping of Navy nuclear propulsion plants will be accomplished in accordance with the methods in use by the Energy Research and Development Administration (ERDA). Construction of the lead and follow ships will be done in the sequence now being used.
4. For all new ship classes, continuing phases of DT&E on the lead ship will be conducted at sea as early in the acquisition process as possible for specified systems or equipments and, if required, full ship operational evaluation to the degree feasible.
5. A description of the subsystems to be included in any test site or test prototype, the schedules to accomplish test and evaluation, and any exceptions to the above policies will be set forth in the initial and any subsequent DCPs and approved by the Secretary of Defense.

E. Test and Evaluation for One-of-a-Kind Systems. For one-of-a-kind systems, or systems involving procurement of only a very few over an extended period, the principles of DT&E of component(s), subsystem(s)

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and prototype or first production model (s) of the entire system will be applied. Compatibility and interoperability with existing or planned equipments will be tested. NVA will be conducted as early as possible by the O&A agency as necessary to provide a valid estimation of operational suitability and effectiveness.

- F. Production Acceptance Test and Evaluation (PAT&E). PAT&E is test and evaluation of production items to verify that the items produced fulfill the requirements and specifications of the producing contract or agreements. It is the responsibility of each DoD Component to accomplish the necessary PAT&E throughout the production phase of the acquisition process.
- G. T&E Master Plan (TEMP). The DoD Component will prepare as early as possible in the acquisition process, and prior to initiation of Full-Scale Development, an overall test and evaluation plan to identify and integrate the T&E and test plans of all T&E to be accomplished and to insure that all necessary T&E is accomplished prior to all key decision points. The TEMP will be kept current by the DoD Component.
- H. Change Plan and Evaluation Plans. The DoD Component will insure that any changes made in test plans for approval will be properly documented, show the reason for change, and the approving authority.
- I. Defense System Acquisition Review Board (DSARB) Decision Terminating Phase (DTP) Procedures for Major Defense Systems.
 1. The DTP prepared for use at the time of the Program Initiation Decision (Milestone 1) for a major Defense System will identify the critical questions and areas of risk to be resolved by test and evaluation. It will also provide a summary statement of test objectives, schedules, and milestones. The DSARB in its review will determine the adequacy of the statement of questions and areas and of test objectives and schedules.
 2. When the DoD Component reports to initiate Full-Scale Development the revised DTP will give the results of T&E accomplished to that date, an updated statement of critical questions and areas of risk still to be resolved, and a detailed statement of test objectives and milestones. The DSARB will assess and report to the Secretary of Defense on the adequacy of T&E progress and of planned T&E to be completed to the first major production decision.
 3. The DSARB in its review prior to the first major production decision will assess and report to the Secretary of Defense on the adequacy of test results to support a production program with sufficient confidence in adequacy of plans and schedules for and resulting results.
 4. In case of failure of an DSARB review subsequent to the initial production decision, an updated assessment of test

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results and plans and schedules for additional test and evaluation will be presented.

V. WAIVERS

- A. In the case of major programs, any waiver of the accomplishment of the T&E as outlined in the approved DCP will be granted only by the Secretary of Defense.
- B. For other than major programs, the DoD Components will designate the minimum threshold for definition of less than major programs. For such programs the waiver of the required T&E will:
 1. Within the Military Departments, be granted only by the Secretary, the Under Secretary, or such Assistant Secretary as the Secretary may designate.
 2. Within the Department of Defense Agencies, be granted only by the Director.

VI. EXCLUSIONS

* Test and evaluation of nuclear weapons subsystems which are governed by other DoD/SRIA agreements are excluded from the foregoing provisions of this directive. *

VII. RESPONSIBILITIES OF THE DEPUTY DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING, TEST AND EVALUATION (DE(T&E))

The DE(T&E) has across-the-board responsibility for OSD in test and evaluation matters. This responsibility includes:

- A. Reviewing test and evaluation policy and procedures applicable to the Department of Defense as a whole and recommending changes he believes appropriate directly to the Secretary of Defense.
- B. Monitoring closely the test and evaluation planned and conducted by the DoD Components for major acquisition programs and for such other programs as he believes necessary.
- C. Assisting in the preparation of, and/or reviewing, the Test and Evaluation Sections of DCPs and Program Memoranda (PMs).
- D. For major programs, reporting to the ESARC and the Worldwide Military Command and Control System Council as appropriate, and directly to the Secretary of Defense for such programs, at each major milestone decision point his assessment as to the adequacy of the identified critical issues and questions to be resolved by test and evaluation, test plans and schedules, and the adequacy of the accomplished T&E to justify the action recommended for that milestone decision.

- E. Monitor and coordinate test activities as required by the DoD Component. This includes the acquisition of test equipment, facilities and coordinating the activities of the test units as is necessary. It includes the DoD Component (or Components) of all practical aspects of the joint test.
- F. Coordinate and reviewing the test and evaluation of foreign systems for possible IED use.
- G. Fulfilling all responsibilities for the national and major Service test facilities.
- H. Monitoring, only to the extent required to determine the applicability of results to weapon system acquisition or modification, that test and evaluation:
 1. Directed by the Joint Chiefs of Staff which relates to the Single Integrated Operational Plan (SIOP) operational factors.
 2. Conducted primarily for development or investigation of organizational or doctrinal concepts.

To accomplish these duties, statements of critical issues for DCPs/PAs, test plans for their resolution, and test results will be made available to LD(T&E) at his request as early as developed.

VIII. REPORTING REQUIREMENTS

The reporting requirements prescribed herein are exempt from formal approval and control in accordance with III.D.3., of DoD Directive 5000.19.

IX. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Each DoD Component which has authority and responsibilities under reference (a) will implement this Directive within 60 days and will forward three copies of each implementing document to the Director of Defense Research and Engineering.


Deputy Secretary of Defense



June 13, 1973
NUMBER 5000. 4

DDPA&E

Department of Defense Directive

SUBJECT OSD Cost Analysis Improvement Group

- Refer: (a) Deputy Secretary of Defense Multi-Addressee Memo, "Establishment of a Defense Systems Acquisition Council," May 30, 1969 (enclosure 1)
- (b) Secretary of Defense Memorandum for Secretaries of Military Departments, "Cost Estimating for Major Defense Systems," January 25, 1972 (enclosure 2)

I. PURPOSE

This Directive provides a permanent charter for the OSD Cost Analysis Improvement Group (CAIG) originally established in enclosure 2.

II. APPLICABILITY

The provisions of this Directive apply throughout the Department of Defense.

III. ORGANIZATION

A. Membership. The OSD Cost Analysis Improvement Group shall be composed of:

1. A Chairman appointed by the principals of the Defense Systems Acquisition Review Council (DSARC) as defined in enclosure 2.
2. One member appointed by each DSARC principal. The Chairman shall be in addition to these members. (In addition, a representative of either ASD(Intelligence) or ASD(Telecommunications) is to be included whenever a defense system or other matter for which they are responsible is reviewed by the CAIG.)
3. One Service member appointed by the Secretary of each Military Department.

4. "Advisory" representatives as appointed by the CAIG Chairman for special purposes.

5. An executive secretary appointed by the Chairman.

B. Responsibilities. The OSD Cost Analysis Improvement Group will act as an advisory body to the DSARC on matters related to cost. Each member to the CAIG shall represent those functional areas which are in accord with the standing organizational role and mission of his office. The specific responsibilities will include:

1. Providing the DSARC with a review and evaluation of independent and program cost estimates prepared by the Military Departments for presentation at each DSARC. These cost reviews shall consider all elements of system costs, including procurement, operations and support as appropriate.
2. Establishing criteria, standards and procedures concerning the preparation and presentation of cost estimates on defense systems to the DSARC and CAIG.
3. Identifying to OSD functional offices and the DoD Components where efforts are needed to improve the technical capability of the DoD to make independent cost estimates of all major equipment classes.
4. Developing useful methods of formulating cost uncertainty/cost risk information and introducing it into the DCP/DSARC process.
5. Working with the DoD Components to determine what costs are relevant for consideration as part of the DCP/DSARC process and developing techniques for identifying and projecting these costs.
6. Developing and implementing policy to provide for the appropriate collection, storage and exchange of information concerning improved cost estimating procedures, methodology and data necessary for cost estimating between OSD staffs, all DoD Components, and outside organizations.
7. Providing an assessment or recommendations to the DSARC of all cost objectives prior to their inclusion in approved DCPs or similar documents giving direction to a DoD Component for the acquisition of a major defense system.
8. Helping to resolve issues which arise over the comparability and completeness of cost data to be reported on new cost data collection systems.
9. Accomplishing other tasks and specific studies as requested by the DSARC principals.

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C. Administration

Members will be assembled for regular and executive meetings which will be held at the call of the Chairman. (OSD members will constitute the executive group.)

2. Minutes will be prepared for each CAIG meeting (executive and regular).
3. For each DSARC a report will be prepared which summarizes the CAIG's review and evaluation of the Service's independent and program cost estimate. OSD CAIG member staffs will assist in the preparation of these reports as required.
4. Special reports will be prepared as necessary to document the results of other CAIG efforts.
5. The CAIG will periodically report to the DSARC principals and the Secretary of Defense on its accomplishments as well as its plans and future objectives.

IV. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Two copies of each implementing document issued by the Military Departments shall be forwarded to the Director of Defense Program Analysis and Evaluation (DDPA&E) within 60 days.


Deputy Secretary of Defense



DEPUTY SECRETARY OF DEFENSE
WASHINGTON, D. C. 20340

5000.4 (Encl 1)
Jul 13, 73

30 MAY 1969

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)
ASSISTANT SECRETARY OF DEFENSE
(INSTALLATIONS AND LOGISTICS)
ASSISTANT SECRETARY OF DEFENSE
(SYSTEMS ANALYSIS)

SUBJECT: Establishment of a Defense Systems Acquisition Review Council

I have been reviewing for some time current practices within the Department of Defense for the acquisition of major systems. My review has highlighted the importance of our organization and practices for accomplishing this management job. The primary responsibility for the acquisition and management of our major systems must rest with the individual Services. Within each Service, this responsibility is focused in the Project Manager. Recognizing the Service responsibility, I am, at the same time, most anxious of insuring, before we approve transitioning through the critical milestones of the acquisition of a major system, that all facets of the acquisition process are properly considered.

Toward this end, I am establishing a Defense Systems Acquisition Review Council (DSARC) within the Office, Secretary of Defense to advise me of the status and readiness of each major system to proceed to the next phase of effort in its life cycle. The Council will serve to complement the Development Concept Paper (DCP) system, which continues as a formal DoD management and decision-making system for the acquisition of major systems. The Council will evaluate the status of each candidate system at three basic milestone points: First, when the sponsoring Service desires to initiate Contract Definition (or equivalent effort); second, when it is desired to go from Contract Definition to full scale development; and third, when it is desired to transition from development to production for Service deployment.

The functions of the Council are separate from and do not encompass the management reviews of major systems which I have previously requested and which are being conducted by DDR&E with assistance from ASD(I&L) and ASD(Comp.). These reviews are focused on the management of the system

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Whereas the DSARC reviews will cover all issues, program thresholds and other matters normally treated in DCP's. Also, the management reviews will normally be held only once on each major system; whereas the DSARC reviews, which are based on program milestones, will be normally conducted three or more times during the acquisition cycle of a particular system.

The membership of the Council will include DDR&E, ASD(I&L), ASD(C), and ASD(SA). For the first two milestone reviews, that is, prior to entry into contract definition and prior to entry into full scale development, the Council will be chaired by the DDR&E. For the third review, related to the transition from development to production, the Council will be chaired by the ASD(I&L).

I am initially defining major systems, which will be subject to Council reviews, to include (1) those for which Development Concept Papers are required; and (2) those specifically designated by me for review and evaluation. A tentative charter for the Council is attached as an enclosure. I desire that the DDR&E and ASD(I&L), within the next 30 days jointly prepare the necessary procedures and take the necessary administrative actions to implement the Council charter.

I believe the Council operation will result in improved management and will augment the decision-making process within the Department of Defense. I cannot over-emphasize the need for complete interface throughout the Department in the system acquisition process.

David Packard

Attachment - 1
a/s

Defense Systems Acquisition Review Council

1. Purpose.

This charter prescribes the mission, functions, composition, authority and responsibility, and administration of the Defense Systems Acquisition Review Council (DSARC).

2. Mission.

The mission of the DSARC is to review major and important Department of Defense system acquisition programs at appropriate milestone points in their life cycle. These reviews are intended to permit coordinated evaluation and deliberation among senior managers, based on the most complete presentation of information available to assure that advice given the Secretary of Defense is as complete and objective as possible prior to a decision to proceed to the next step of the system's life cycle. The DSARC operation and evaluations will serve to complement the DCP system which remains as a formal DoD management and decision-making system concerning the acquisition process of major defense systems.

3. Functions.

- a. The DSARC will review and evaluate the status of each appropriate system acquisition program at three basic milestone points:

First: When initiation of Contract Definition (or equivalent effort) is proposed;

Second: When transition from the Contract Definition phase to full-scale development is proposed, and

Third: When transition from the development phase into production for Service deployment is proposed.

- b. The first review will support the basic DCP in that it will provide a forum for discussion and possible resolution of the various viewpoints of the participating principals, including the Secretary of the Military Service sponsoring the program. The later reviews will serve a function of validating the readiness of a system to proceed to the next stage, i. e., normally full-scale development or production.

4. Composition

The DSARC will consist of the DDR&E, the ASD(IG&I), the ASD(Comptroller) and the ASD(SA).

Authority and Responsibilities.

- a. For consideration of entry into Contract Definition (Contract Definition Phase) and entry into full-scale development (the full-scale development phase), the DSARC will be chaired by the DDR&E.
- b. For the transition from development to production (the production phase), the DSARC will be chaired by the ASD(I&L).
- c. For additional reviews, the DSARC will be chaired by DDR&E or the ASD(I&L) as appropriate, depending on whether the action under consideration is concerned with movement within the full-scale development phase or into or within the production phase.
- d. Reviews at points other than program transition points may be requested by a DSARC member by memorandum to the appropriate chairman.
- e. Review of a program at any point in its life cycle may be directed by the Secretary of Defense or the Deputy Secretary of Defense.
- f. Reviews will be limited to major and important programs. These are (1) those for which Development Concept Papers are required; and (2) those specifically designated for review by the Secretary of Defense, the Deputy Secretary of Defense or the appropriate DSARC chairman.
- g. Aspects to be considered by the DSARC include, but are not limited to, the following:
 - (1) For items proposed for Contract Definition:
 - (a) Justification of military need;
 - (b) Validity of operational concept and objectives;
 - (c) Relative capability compared with present/anticipated capabilities of other systems;
 - (d) Technical feasibility;
 - (e) Validity of cost estimates and analysis of cost risks involved;

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Att 1 to Encl 1,

- (f) Validity of proposed scheduling and consideration of alternatives thereto;
 - (g) Validity of proposed procurement methodology, including type of contractor structure, kind of contract, timing of Government production commitment, means of assuring competition; and,
 - (h) Validity of program manager plans, controls and organization.
- (2) For items proposed for transition from Contract Definition into full-scale development :
- (a) Continued validity of program objectives and validity of changes thereto since completion of concept formulation;
 - (b) Confidence in achieving current program objectives;
 - (c) Analysis of current risks;
 - (d) Technical feasibility, risks associated therewith, and analysis thereof;
 - (e) Adequacy of integrated logistics support planning;
 - (f) Validity of cost estimates, including analysis of cost differences between competing Contract Definition contractors and Government estimates.
 - (g) Options associated with cost trade-offs and analysis thereof;
 - (h) Adequate consideration of contract incentives and -inducement for competition; and,
 - (i) Validity of contractor proposals;
- (3) For systems proposed for initial production;
- (a) Feasibility of production, including evaluation of milestone achievements, test results and production line producibility

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(Att 1 to Encl.1)

- (b) Technical feasibility, including specification requirements;
 - (c) Review and evaluate overall requirement;
 - (d) Current validity of cost estimates;
 - (e) Need, as appropriate, for concurrent development and production as well as validity of recommended time phasing of production/deployment aspects;
 - (f) Adequacy of integrated logistic support planning;
 - (g) The existence of adequate project management controls;
 - (h) Adequate planning for Government-furnished equipment and facilities; and,
 - (i) Adequate planning as to proprietary rights items;
- h. The Chairman may invite other staff members, such as the ASD(M&RA) and the ASD(ISA) to participate in the reviews when the reviews have significant relevance to their responsibilities.
- i. The Chairman shall advise the Deputy Secretary of Defense of the findings and recommendations of the specific review and concurrently a copy of the findings and recommendations will be forwarded to the appropriate Service Secretary.

5. Administration.

The DSARC may establish necessary Working Groups to assist the Council members in their reviews.

5900.4 (Encl 2).
Jan 13, 73

THE SECRETARY OF DEFENSE
WASHINGTON D C 20301

JAN 25 1972

MEMORANDUM FOR The Secretaries of the Military Departments

SUBJECT: Cost Estimating for Major Defense Systems

Deputy Secretary Packard's memorandum of December 7, 1971, "Use of Parametric Cost Estimates," advised that starting with January 1972 an independent parametric cost analysis was to be incorporated in each DSARC presentation. I am keenly aware of the importance of these estimates and have established an OSD Cost Analysis Improvement Group to review the estimates presented and to develop uniform criteria to be used by all DoD units making such cost estimates. This group has representation from DDR&E, ASD (C), ASD (I&L), and ASD (SA). They will be responsive to the DSARC Chairman in assessing the reasonableness of cost estimates and the criteria followed in their development.

Because valid cost estimates are so critical to our successful defense posture, it would appear that each Service Secretary should have a staff component capable of preparing independent parametric cost estimates. This component should be responsible to the Service Secretary and organizationally separate from program proponents. Service groups responsible for independent estimates and the OSD Cost Analysis Improvement Group should work closely in developing uniform criteria for cost estimates. Our goal is to have formalized procedures for DSARC program cost presentations, as well as uniform criteria to which future parametric cost analyses will be expected to conform, developed prior to May 1, 1972.

Your comment with respect to an independent Service capability and how such a group should interface with the OSD Cost Analysis Improvement Group would be most helpful. I would like to have an improved system for top level review of all major cost estimates at the earliest practical date.



ARMY REGULATION

No. 1000-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 5 November 1974

BASIC POLICIES FOR SYSTEMS ACQUISITION BY THE DEPARTMENT OF THE ARMY

Effective January 1975

This complete revision of AR 1000-1 updates the policies of system acquisition for the Department of the Army. Local limited supplementation of this regulation is permitted, but is not required. If supplements are issued, Army Staff agencies and major Army commands will furnish one copy of each to HQDA (DAHQ-PA) WASH, DC 20310; other commands will furnish one copy of each to the next high headquarters.

	Paragraph
Preferential consideration for evolutionary development	1
Demonstration of technical and operational feasibility prior to formalizing the requirement	2
High level decision making	3
Heightened importance of testing	4
Shortened development time	5
Application of integrated logistics	6
Full funding for priority programs	7
Cost versus quantity balance	8
Control of program costs	9

General. This regulation establishes the Army's basic policies for the acquisition of materiel systems. The objective of these policies is to minimize costs in acquiring materiel systems whose performance is adequate to meet operational requirements. To present these policies in the context in which they are applied, the regulation describes the system acquisition process from inception through development into production. No single formula applies to all materiel acquisitions. The integration of a specific system and the extent of development required may vary from system to system, but will be consistent with the principles and policies contained herein. For example, the acquisition of already developed or commercial equipment requires fewer steps and simpler procedures than improving or developing systems. The following basic policies, together with related procedural steps, govern the Department of the Army systems acquisition process.

1. Preferential consideration for evolutionary development. The Army's materiel needs are generally satisfied through three methods--buying equipment already developed (commercial--domestic or foreign; military--other Services or allies), evolutionary development of current stand-

ard equipment, or initiation of a new materiel development program. The preferred method to correct inadequacies in already developed systems is to exploit the performance growth potential inherent in those systems. Materiel system design will emphasize simplicity, austerity, and supportability with planned growth potential to accommodate anticipated future needs when the additional cost for such growth potential can be justified. The Army must plan for evolutionary development over the entire life cycle of a system. Combat and materiel developers will assure the timely, cost-effective exploitation of unrealized growth potential of materiel systems to satisfy the Army's materiel needs.

2. Demonstration of technical and operational feasibility prior to formalizing the requirement. Research and development efforts for systems acquisition should be initiated with modest programs, avoid unsupported promises as to system expectations, and recognize fully the technical risks and uncertainties. A formal *requirement*, with its implicit commitment to an eventual production decision, will not be established until a thorough advanced development program has been conducted to include testing of components

*This regulation supersedes AR 1000-1, 30 June 1972.

and/or prototypes, to adequately demonstrate both the technical and operational feasibility. The development, improvement and/or procurement of materiel systems must result from an active dialogue between the combat developer and the materiel developer. When a requirement cannot be satisfied by existing equipment, the materiel and combat developers shall jointly determine if an improved or new system could be satisfactory. The objective of this dialogue is agreement on the means to satisfy the requirement. Aggressive use will be made of Force Development Test and Experimentation (FDTE) to develop the concept of employment, to determine the operational feasibility, and to estimate the potential operational advantage of a proposed system.

a. Materiel systems originate from one or more of the following—

(1) Proposals from the materiel developers arising from knowledge of technological capabilities and advancements. Operational Capability Objectives (OCO), based on deficiencies identified in the Army Study Program, field tests and evaluations, and experience, provide the guidance for priority judgments in the materiel developers' research, exploratory development and non-system advanced development efforts.

(2) Operational initiatives from the combat developers to attain one or more capability goals established at HQDA, to counter a validated threat, to correct an operational inadequacy in existing materiel, to reduce the consumption of support resources, or to exploit a technological breakthrough.

(3) System proposals and operational concepts submitted to a combat developer as suggestions in any form, from any source, for incorporation into the materiel acquisition process, as appropriate.

b. The system concept will be developed and validated jointly by the materiel developer and combat developer prior to formal commitment by the Army to the need for the system. The Required Operational Capability (ROC) document is the vehicle for securing the Army's commitment to pursue full-scale development and/or procurement of a system. The objective of the Conceptual Validation Phases is to provide a basis for

low-risk full-scale development of new systems or improvement of existing systems and to

insure that the information necessary for the Army to determine the best course of action is developed and reviewed. In these phases, emphasis will be on developing and testing "brass board" or experimental configurations, advanced components, advanced development models, prototypes, commercial items, foreign or other service items in response to anticipated needs, well in advance of the establishment of firm operational requirements.

c. The steps involved in the conceptual development and validation of the system are as follows:

(1) The materiel developer and the combat developer may agree that a materiel concept has sufficient interest, importance, operational and technical potential to warrant the commitment of resources to obtain more information. The further investigations needed to develop and validate the system concept and to define the operational, technical and logistical concepts will be described in a jointly authenticated Letter of Agreement (LOA). The LOA is a document of record supporting the system advanced development program. It may be prepared also to support non-system advanced development if the conceptual application to improved or new systems can be adequately defined. The length of the LOA should be kept to a minimum and need be no more detailed than is warranted by the degree of knowledge available then to the developing concept. The LOA should consider separately the following subjects.

- (a) Need for the system.
- (b) System concept.
- (c) Prospective relative effectiveness.
- (d) Prospective upper limit on unit cost, if available.
- (e) Investigations needed to develop:
 1. Operational employment concepts.
 2. Technical concepts.
 3. Integrated Logistic Support (ILS) concepts.

- (f) Unknowns to be resolved.
- (g) Technical risks.
- (h) Schedules and milestones.
- (i) Critical issues for test.
- (j) Advanced development funds needed and, if practicable, a broad estimate of anticipated engineering development funds needed in the event the advanced development efforts are

successful and result in a decision to continue the program.

(2) LOA in which projected advanced development costs exceed \$10 million will be forwarded by the combat developer to HQDA (DAMO) for decision; all other LOA will be forwarded to HQDA (DAMO) for information. LOA for systems whose advanced development cost projections are later revised to exceed the \$10 million threshold will be immediately updated and forwarded by the combat developer to HQDA (DAMO) for decision. In unusual circumstances, an LOA involving systems below the threshold may be specifically selected for decision at HQDA. HQDA approval will include—

(a) Determination of program potential as a candidate for review by the Army Systems Acquisition Review Council (ASARC) (described later) or for other HQDA management procedures.

(b) Funding guidance by the Chief of Research, Development, and Acquisition (CRDA) for the conceptual development and validation effort.

(c) Initial determination of need for a Special Task Force (STF), Special Study Group (SSG), Steering Group or Study Advisory Group (SAG).

(d) Determination of need to appoint a Project Manager designee.

(3) Based upon agreements specified in the LOA, and after advanced development has progressed to the point where operational and technical feasibility have been demonstrated, and in some areas possibly even confirmed by performance test data, the combat developer and the materiel developer will prepare a Concept Formulation Package (CFP). The CFP will consist of the Trade-Off Determination (TOD), Trade-Off Analysis (TOA), Best Technical Approach (BTA) and Cost and Operational Effectiveness Analysis (COEA). Concurrent with the development of the CFP, HQDA (CRDA) will examine the proposed system for affordability within priorities established by DCSOPS, in view of the resources available or projected to be available to the Department of the Army.

(4) When there is need for an unusual breadth of expertise for a short duration, technical risk is high, analytic techniques are evolving rapidly, alternatives involve other Services, high level of interest is anticipated, or where resource

impact is significant, a STF under HQDA (DCS OPS) direction, or a SSG chaired by TRADOC, may be convened to conduct analyses, insure inclusion of all alternatives, monitor experimentation, or undertake such other tasks as may be directed. A Steering Group or SAG, convened under the General Staff responsibility of the DCSOPS may be used in conjunction with the SSG. The STF or SSG may include representatives of HQDA, combat developer, operational tester, materiel developer, logistician, and the project manager designee. STF/SSG charters will be individually tailored to the missions assigned and the time phasing of the STF/SSG in the materiel acquisition cycle. Examples of tasks which may be required are—

(a) Prepare the Concept Formulation Package.

(b) Prepare the draft Decision Coordinating Paper (DCP).

(c) Conduct alternative system design investigations.

(d) Prepare portions of the Development Plan.

(5) An outline development plan will be prepared by the materiel developer in coordination with the combat developer, as a document of record to support entry into the Validation Phase. Since projection of \$25 million for advanced development costs will usually signal that an ASARC I decision (described in para 3) is required, the outline development plan should be forwarded to HQDA (DAMA) for information. However, other considerations such as total resource impact, congressional interest, technological breakthrough, high risk, or critical threat, may warrant ASARC decisions on programs which have not exceeded the \$25 million threshold. In cases where an ASARC I review is not required, but program considerations make appropriate an explicit HQDA management decision to enter the Validation Phase, the CRDA has General Staff responsibility to coordinate the necessary management review and approval of entry into validation.

(6) Throughout the validation process, the combat developer will serve as the user representative and articulate the user's viewpoint. The validation process must include logistic—*reliability, availability, and maintainability (RAM)*—and training assessments of the equipment and a pro-

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jection of the capability of the logistics system to support the materiel system deployment.

(7) The basic document to support entry into full-scale development is the ROC. The ROC will be prepared by the combat developer, coordinated with the materiel developer, and submitted to HQDA (DAMO) for decision. An executive summary of the supporting COEA will be submitted with the ROC. The ROC will also be the document proposing the procurement of materiel already developed. The length of the ROC should be kept to a minimum. Four pages seem to be a reasonable goal for most systems. The ROC will contain the following:

- (a) Statement of need.
- (b) Time frame.
- (c) Threat/operational deficiency.
- (d) Operational/organizational concept.
- (e) Essential characteristics.
- (f) Technical assessment.
- (g) Logistics assessment.
- (h) Life cycle cost assessment including design-to-cost goals.

(8) DCSOPS has General Staff responsibility for the approval of all ROC. CRDA has General Staff responsibility for the development of the materiel systems described in the ROC.

(9) Upon ROC approval, DCSOPS will designate an operational unit with which the combat and materiel developers are to coordinate the activities necessary to familiarize and prepare that unit to receive the system at the time of Initial Operational Capability (IOC).

(10) Systems designated as Army major materiel systems will be subjected to intensive management reviews at HQDA. DCSOPS has General Staff responsibility to determine which systems are to be considered major. Major systems include those which qualify for Defense Systems Acquisition Review Council (DSARC) decision and the others which are critically important to the Army, complicated, expensive, controversial, or for any reason should involve the top management of the Army.

(11) Separate procedures apply to the acquisition of low unit cost, low-risk development, or commercial items where total RDTE expenditures will not exceed \$1 million, and procurement costs will not exceed \$2 million for any one fiscal year or \$10 million for the 5 year program period. These are categorized as low value items and

justified under a Letter Requirement (LR) which has been jointly authenticated by the combat developer and the materiel developer. An information copy of the LR, as a document of record, will be furnished by the combat developer to HQDA (DAMO). The LR will include the following information:

- (a) Title of the item.
- (b) Statement of the need.
- (c) Justification.
- (d) Basis of issue.
- (e) Principal characteristics describing the item.
- (f) Tests to be conducted and test objectives to be addressed.
- (g) Logistic support implications.
- (h) Cost assessment to include R&D, testing, acquisition and support costs.

3. High-level decision-making. The top managers of the Army will participate personally in making life-of-force decisions on major acquisition programs. The Army Systems Acquisition Review Council (ASARC) is the forum for such decisions. (AR 10-14).

Milestone	ASARC role	DSARC role
Enter Validation	ASARC I	DSARC I
Enter Full Scale Development	ASARC II	DSARC II
Enter Production	ASARC III	DSARC III
Low Rate Initial Production	ASARC I/II	
Full Scale Production	ASARC I/II	

a. The ASARC process complements the DSARC process. The CRDA exercises General Staff responsibility for coordinating all ASARC reviews. Full membership is divided into two categories as described below:

Regular members (will attend all ASARC meetings):

Vice Chief of Staff (Chair)

- Commander, US Army Materiel Command
- Commander, US Army Training and Doctrine Command
- Assistant Secretary of Army (R&D)
- Assistant Secretary of Army (I&L)
- Deputy Chief of Staff for Operations and Plans
- Chief of Research, Development, and Acquisition
- Deputy Under Secretary of Army (OR)

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Special members (will attend on call of chairman):

Assistant Secretary of Army (FM)
Assistant Secretary of Army (M&RA)
Deputy Chief of Staff for Logistics
Comptroller of the Army
General Counsel
Commander, Operational Test and Evaluation Agency
Commander, Concepts Analysis Agency
Others, as may be required (e.g., Assistant Chief of Staff for Intelligence, Commander, US Army Security Agency).

b. The ASARC agenda will focus on major issues and program alternatives. Attendance at the ASARC will be kept to an essential minimum consistent with the program and issues being addressed.

c. The CRDA will chair a preliminary review normally held approximately 1 month prior to convening the ASARC. The full membership will be invited. The purpose of preliminary reviews is to assure adequate and timely ASARC preparation, to resolve minor issues which need not be considered by the ASARC, and to clearly define major issues which should be addressed by the ASARC.

(1) The agenda for preliminary reviews will normally include discussion of development status, COEA results, test results, requirements, DCP alternatives, schedules, risks, design-to-cost goals, life cycle costs, management options, integrated logistic support capabilities, and related issues.

(2) To save time and yet not sacrifice thoroughness of review, agencies represented on the ASARC will have access to analyses through parallel distribution of reports (e.g., test results, COEA, Independent Parametric Cost Estimates (IPCE), and Risk Analysis) at least 2 weeks in advance of a preliminary ASARC review.

(3) All agencies and commands will support preliminary review preparation as required.

d. At ASARC II and succeeding ASARC reviews, the materiel system will be measured against the requirement of record (ROC) to insure the acquisition program is evaluated against HQDA objectives. A determination that the materiel system does not conform to the essential characteristics as stated in the ROC, but is better than what the Army is currently using, is not sufficient justification for continuation of the

acquisition program. Also, Initial Operational Capability (IOC) will not be necessarily a fixed factor in system acquisition; rather, it may be a trade-off to be considered among other factors.

e. Between scheduled ASARC reviews, any challenge to the system under development will be specially considered only if it is supported by solid evidence of a significant problem; e.g., causing a major change in the COEA. Evidence of a major change in threat, cost, schedule, performance, or support capability could result in the convening of a STP/SSG, SAG or, if the challenge is of sufficient magnitude, the convening of the ASARC in special session.

4. Heightened importance of testing. Testing is conducted to demonstrate how well the materiel system meets its technical and operational requirements; provide data to assess developmental and operational risk for decision-making; verify that the technical, operational and support problems identified in previous testing have been corrected; and to insure all critical issues to be resolved by testing have been adequately considered. All testing is of interest: contractor bench testing through controlled tactical exercises. For the purpose of this policy, testing is considered to be grouped into two basic test categories: Development Testing (DT) and Operational Testing (OT). (See DODD 5000.2, AR 70-10 and AR 71-2).

a. *Development Testing.* DT is that test and evaluation conducted to demonstrate that the engineering design and development process is complete; demonstrate that the design risks have been minimized; demonstrate that the system will meet specifications, and estimate the system's military utility when introduced. DT is planned, conducted, and monitored by the materiel developer and the results thereof are reported by that agency to the ASARC or IPR approval authority. DT is accomplished in factory, laboratory and proving ground environments and includes engineering design tests and human factors testing to demonstrate a satisfactory technical man-machine interface using qualified and experienced operators and crews and support/maintenance personnel. During the full-scale development phase and prior to the first major production decision, the DT accomplished shall be adequate to insure that engineer-

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ing is reasonably complete; that all significant design problems (including compatibility, interoperability, reliability, availability, maintainability (RAM), and supportability considerations) have been identified; and that solutions to the above problems are in hand.

b. Operational Testing. OT is that test and evaluation conducted to estimate the prospective system's military utility, operational effectiveness, and operational suitability (including compatibility; interoperability; reliability, availability, and maintainability (RAM), and logistical and training requirements), and need for any modifications. In addition, OT provides information on organization, personnel requirements, doctrine, and tactics. Also, it may provide data to support or verify operating instructions, publications, and handbooks. OT will be accomplished by operational and support personnel of the type and qualifications of those expected to use and maintain the system when deployed, and will be conducted in as realistic an operational environment as possible. OT must examine the operational man-machine interface. All OT is the responsibility of and is managed by OTFA. OT is normally conducted by OTEA for major and selected nonmajor systems, and by TRADOC, ASA, or other designated operational testers for other nonmajor systems. Independent evaluations of OT will be presented directly to the ASARL or IPR. OT will be accomplished within controlled field exercises and to the maximum extent possible using TOE troop units and support/maintenance personnel in tactical scenarios. Acquisition programs will be so structured that at least an initial phase of OT will be accomplished prior to the first major production decision adequate to provide a valid estimate of expected system operational effectiveness and suitability (including compatibility, interoperability, reliability, availability, maintainability (RAM), and supportability and training requirements).

c. Planning for DT and OT will ensure that the DT and OT test designs are prepared and that test results are evaluated independently. DT and OT may be combined where separation causes delay involving unacceptable military risk or an unacceptable increase in acquisition costs. In all cases, DT and OT designed plans will be coordinated so that each test cycle require

minimum resources and yield the maximum data to satisfy the common needs of the materiel developer and the operational tester. The Coordinated Test Program (CTP) will provide the development and operational testers and evaluators common ground with their tests will be designed and conducted as a cycle.

d. During the full-scale development phase of the acquisition cycle the larger, more sophisticated systems will be subjected to only two test cycles. The contractor and AMC developmental testing should be integrated into one cycle with the operational test constituting the other test cycle. For the smaller, less sophisticated systems, sufficient prototype hardware and configuration be provided that would permit totally independent AMC development to the same point of coordinating and planning with the objective of minimizing the number of test cycles to all systems.

5. Shortened development time. The Army will ensure the acquisition of materiel systems within the shortest practicable time. Not more than 5 years is the goal to achieve IOC after approval of a RQC when this can be done without inordinate risks and within the cost goals established. However, the pacing factor will be work completed, rather than calendar-oriented milestones. Adequate progress must be demonstrated, generally confirmed by testing, to justify scheduling a decision milestone. Although decision milestones must be event-oriented, acquisition strategy should consider the timing of the Planning, Programming, and Budgeting System (PPBS) cycle. Fiscal planning and programming may require that funds be programmed and budgeted in advance of the event-oriented decision milestone with the understanding that actual obligation of those funds will depend on decision by the appropriate authority.

e. As a goal, contractor response, evaluation, selection, approval, and contract award should be accomplished within 6 months after approval of the program, and release of supporting funds to the materiel developer to complete procurement actions for advanced development prototypes, unless the requirements of this regulation and DODD 5000.3 governing entry into production cannot be met under such a schedule. The validation phase should include fabrication and testing

of competitive prototypes to reduce risks in subsequent phases. At the conclusion of the validation phase, and after approval of the ROC, the desirability of entering the full-scale development phase will be determined explicitly by the appropriate review authority (e.g., ASARC III or Validation IPR). Such approval may result in the selection of a single contractor determined to be the most capable to undertake and complete engineering development and low rate initial production (LRIP). Engineering development contracts should be competitive whenever economically feasible as a means for achieving production unit cost, which result in lower total life cycle costs. For programs which preclude contractor competition during development, consideration should be given early in development to the establishment of a second source for full production.

b. Producibility Engineering and Planning (PEP) will be conducted to assure producibility of designs before designs are fixed. While producibility engineering is properly an integrated and continuous part of the design process, a formal PEP should be initiated no later than the beginning of DTOT II. However, DTOT results should provide input to the PEP process. In addition, Requests for Proposals (RFP) for advanced and engineering development program efforts should provide for contractor evaluation of producibility considerations. It is recognized that PEP expenditures during this time are at risk and may be lost if the decision is not to proceed with production.

c. Subsequent to ASARC III, final production engineering, the procurement of long lead time items, and hard tooling will be initiated with procurement funds, except that procurement of the full complement of rate tooling for full scale production should be deferred until completion and analysis of the results from DTOT III. In these instances, production will be initiated at a low rate with tooling and/or processes which can support full scale production either directly or by duplication.

d. For economy, the Army must assure contractor competition as early as possible in the full scale production phase. Generally, complex systems demand a small first production (LRIP) to provide hard tooling items for final development and operational test prior to a decision on full-scale

production. Competition should be based on a technical data package.

6. Application of integrated logistic support (ILS). The Army must be able to provide logistic support for materiel and equipment at minimum costs in funding and disruptive effort. This requires the development of materiel systems which are supportable and the preparation of the logistic system to furnish the necessary support. The application of the Integrated Logistic Support concept is the means to achieve these goals. The elements of ILS will be applied in appropriate detail throughout the materiel acquisition process beginning early in the conceptual phase or gestation period. Logistic support will be integrated into the entire design and development process and the elements of ILS combined into a total logistic support system for the materiel system being developed.

7. Full funding for priority programs. Within the RDTE appropriation, the Army must fully fund its top priority projects so that development time is not lengthened for reasons of meager or marginal funding. This requires that lower priority demands on RDTE funds must be regarded as potential trade-off for full funding support of the Army's designated high priority systems. The highest priority for exploratory and advanced development should be for development of product improvements, components, and subsystems which appear to be cost and operationally effective and concurrently show a high probability of demonstrating technical feasibility or improving operational capability in a defined area.

8. Cost versus quantity balance. Equipment needed to provide a measure of superiority on the battlefield is expensive. Therefore, the Army must, from the outset, explain the costs of materiel systems in terms of required operational effectiveness for all or part of the forces in terms of realistic contingency missions. Where warranted, the Army must be prepared to make small buys of critical systems for only part of the total force, accept the high unit cost, and explain it well in advance to OSD and then to the Congress.

9. Control of program costs. The success of a materiel program is in part a function of the Army's ability to acquire and operate the resulting system within planned budgets. Throughout the acquisition cycle, extreme care is necessary to insure that cost estimates present realistic total

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program costs and that meaningful cost control is maintained over the system life cycle. Thus, program cost estimates must present all resources necessary to develop, produce, operate, and maintain the system. Realistic cost estimates meaningfully presented, are essential to confident and proper program decisions.

a. Initial cost estimates are based on rather broad outlines of the conceptual system and historic cost data obtained from similar programs. Cost effectiveness studies and trade-off analyses during concept formulation can only be based on the best estimate, then current, of the ultimate system cost. Subsequent cost and operational effectiveness and trade-off analyses will be more exacting as costs become better known and technical and operational performance are demonstrated by testing. TRADOC is responsible for cost and operational effectiveness analyses. Project Managers are responsible for the conduct of engineering trade-off analyses.

b. Design trade-offs and engineering changes to reduce acquisition costs must not impact

adversely on the life cycle cost of ownership. Life cycle cost is the overriding cost determinant; design-to-cost is an aid in the process.

c. Control of development costs must include an understanding of the full cost effect of technical changes. Proper consideration of production costs during development will require that "Design-to-Unit-Flyaway Cost" (as defined in the OSD Budget Guidance Manual) goals be established in the validation phase prior to entry into full-scale development. "Design-to-Unit-Flyaway Cost" goals are not appropriate for contractual purposes; therefore, contractual design-to-cost (DTC) goals for design sensitive hardware should be set in terms of recurring hardware unit costs. In establishing DTC goals, consideration should be given to capability growth if the potential need for such growth can be forecasted. A DTC goal established by the Army for a materiel program will be stated in the draft DCP or Program Memorandum which, when approved, is considered a contract between OSD and the Army.

The proponent agency of this regulation is the Office of the Chief of Research, Development, and Acquisition. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to HQDA (DAMA-RA) WASH DC 20310.

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

FRED C. WEYAND
General, United States Army
Chief of Staff

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ASD(P&E)

Department of Defense Directive

SUBJECT System Acquisition Management Careers

- Reference:
- (a) DoD Directive 5000.1, "Acquisition of Major Defense Systems," July 13, 1971
 - (b) DoD Instruction 1430.1C, "DoD-Wide Civilian Career Programs," June 2, 1966
 - (c) DoD-Wide Training Agreement for Rotational Assignments for Development of Key Personnel of the Department of Defense, October 19, 1973
 - (d) DoD Instruction 1430.5, "Civilian Employee Training Policies and Standards," September 28, 1971
 - (e) DoD Directive 5160.55, "Defense Systems Management School," July 19, 1973

I. PURPOSE

This Directive establishes policy for the selection, training and career development of DoD personnel who are required for the management of major defense systems acquisition. It is intended that this directive be subordinate to and supportive of the policies defined in reference (a).

II. APPLICABILITY

The provisions of this Directive apply to the Military Departments and the Defense Agencies (hereinafter referred to collectively as "DoD Components") involved in the acquisition management of major defense systems as defined in reference (a).

III. POLICY

- A. As outlined in reference (a), successful management of major defense systems during the development, production, and deployment phases is primarily dependent upon experienced and competent

individuals who have authority commensurate with their responsibility and accountability for a given program.

- B. Each major program is to be managed by a single individual (Program Manager) who is supported by a team of persons qualified in systems acquisition management. He shall have ready access to senior management and be kept informed about decisions relating to his program.
- C. In order to achieve this end, career fields must be developed and maintained to provide line and staff careers within the field of system acquisition management. Career opportunities shall be established to attract, develop, retain and reward outstanding military officers and civilian employees required as Program Managers, or as their principal deputies/assistants. Civilian career programs will be developed under the guidelines contained in reference (b).

CAPEER CONSIDERATIONS

In establishing these civilian/military career fields, the JCS Components must identify, as a minimum, the following standards and criteria:

- A. Define qualifications for selection to include performance, experience, level of training, and formal education, applicable to each entry grade. Selection of an individual not having proven performance in acquisition management should be made conditional until such performance becomes a matter of record.
- B. Determine the approximate number of personnel at each rank/grade required to man the career fields. Insure that grade levels are commensurate with the responsibility, authority, program accountability, and broad supervision which is exercised over functional and contractor activities. The grade structure in program offices should recognize the great importance of systems acquisition.
- C. Develop a career progression plan including: Training and professional education requirements; Identification of types of experience considered beneficial for assuming higher level program manager positions; Administrative control; and Promotion and advancement based on demonstrated performance.
- D. Institute a method that centralizes systems acquisition program activity and opportunity information and makes it available to interested individuals.

- E. Establish maximum assignment flexibility for civil servants within existing Civil Service Regulations, including mobility agreements. Intercomponent rotational assignments should be considered for developmental training as outlined in reference (c). Permanent civilian employees may be placed in project management positions on a permanent type of reassignment/ promotion, but with the understanding that they may later be placed in a position of equivalent grade and pay in a functional organization of the DoD Component.
- F. Provide for release from the career fields, both on a voluntary basis and on the basis of management initiative if the results of periodic reviews of performance indicate that such action is appropriate.

V. TRAINING

- A. Each DoD Component is responsible for training personnel to establish a cadre of military and civilian personnel adequate to meet its future needs for leadership in systems acquisition management.
- B. Professional education and training programs should provide for progressive growth at the entry, intermediate, and senior levels to meet standards determined and set by each component respectively. Selection for professional education at the Defense Systems Management School, Program Managers Course, should follow procedures established for other intermediate level military colleges. Civilian employees will be trained in accordance with the provision of DoD Instruction 1400.5 (reference (d)). All major system Program Manager candidates should have professional education at the Defense Systems Management School's Program Management Course (PMC) or Executive Refresher Course (ERC), either before or shortly following assignment to a major program office.

VI. PERSONNEL MANAGEMENT

- A. Performance measurements shall be developed and emphasized in order to insure that only the most competent individuals are retained and rewarded in the Systems Acquisition Management career field.
- B. The Program Manager will be held accountable for performance within his assigned responsibility and that performance will be evaluated taking into consideration program peculiar conditions.
- C. Tenure of assignments must be sufficient to ensure not only effective management and evaluation, but also continuity of

management. Changes of Program Managers, if necessary, should normally occur near major program milestones, and only with the approval of the Chartering Authority to whom the Program Manager is responsible as specified in the Program Charter. There should be a period of overlap between the outgoing Program Manager and his replacement. Similarly, the rotation or reassignment of key assistants should be controlled by the needs of the Program Manager to insure a proper balance between effectiveness and continuity of management.

- D. Opportunities for advancement should be equivalent with those of contemporaries in operational, line and command positions. Where boards are established for the purpose of selecting individuals for advancement, they should include experienced system acquisition management representation to insure that only the best qualified, based on demonstrated performance, are selected for promotion.
- E. A performance monitoring system for all persons who are involved or aspire to be involved in the management of major defense systems will be maintained by each DoD Component. Selection of personnel for key positions in management of major defense systems will normally be made only from among those so tracked, and heavy reliance will be placed on performance records for determination of those best qualified.
- F. General or flag rank officers or civilian equivalents (GS-16 to 18, PL-313) normally should be considered for assignment as Program Managers only if they have had substantial prior experience in program management or system acquisition, to include demonstrated performance as a military O-5, O-6, or equivalent civilian program management experience.
- G. Colonels/Captains or civilian equivalents should not be considered for assignment as Program Managers unless they have had program management or system acquisition experience, to include one or more assignments to a program office.
- H. Personnel should be selected on the basis of skills and experience needed to prosecute successfully a program or program phase regardless of military or civilian status.

VII. IMPLEMENTATION AND EFFECTIVE DATE

- A. The members of Defense Systems Management School Policy Guidance Council (reference (e)) will monitor DoD Component implementation of this directive and will make recommendations for changes in DoD Component implementation.

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- B. This Directive is effective immediately. Two copies of implementing documents shall be forwarded to the Director of Defense Research and Engineering within 90 days.

H. P. Clement
Deputy Secretary of Defense



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APPENDIX K

March 4, 1975
NUMBER 5160.55

DDR&E

Department of Defense Directive

SUBJECT Defense Systems Management School

- Refs: (a) DoD Directive 5010.16, "Defense Management Education and Training Program", July 28, 1972
(b) DoD Directive 5160.55, "Defense Systems Management School", June 20, 1974 (hereby cancelled)
(c) Public Law 92-463
(d) Executive Order 11686

I. REISSUANCE AND PURPOSE

This Directive (a) reissues the charters for the Defense Systems Management School (DSMS) Policy Guidance Council and the DSMS Board of Visitors; (b) establishes and authorizes the operation of a DSMS, with a DSMS Policy Guidance Council and a DSMS Board of Visitors; and (c) provides guidance and criteria for DSMS mission, supervision, and administration. Reference (b) is hereby superseded and cancelled.

II. APPLICABILITY AND SCOPE

The provisions of this Directive apply to the Military Departments; the Director, Defense Research and Engineering; the Assistant Secretaries of Defense (Comptroller/Installations and Logistics/Program Analysis and Evaluation/Manpower and Reserve Affairs); and those Defense Agencies concerned with defense system acquisition (hereinafter referred to collectively as "DoD Components").

III. ROLE AND MISSION

A. The DSMS is a joint Military Service/Office of the Secretary of Defense professional military institution operating under the direction of a Policy Guidance Council chaired by the Director, Defense Research and Engineering. It serves as the capstone for the professional education of DoD Component personnel

Continuation of III.

in program/project management and defense system acquisition management.

P. The mission of the DSMS is to:

1. Conduct advanced courses of study that will prepare selected military officers and civilian personnel for (a) assignments in program/project management career fields, and (b) coping with various facets of defense system acquisition management. This is the primary mission of the school.
2. Conduct research or special studies in defense program/project management and defense system acquisition management concepts and methods.
3. Assemble and disseminate information concerning new policies, methods, and practices in program/project management and defense system acquisition management.

IV. RESPONSIBILITIES

A. The mission, composition, and operation of the DSMS Policy Guidance Council are described in its charter (enclosure 1).

F. The mission, composition, and operation of the DSMS Board of Visitors are described in its charter (enclosure 2).

C. The Commandant of the DSMS will:

1. Operate the DSMS as a centralized activity for the professional education of selected military officers and civilian personnel in all facets of program/project management with emphasis on managing the acquisition of defense systems.
2. Implement the policy guidance provided by the DSMS Policy Guidance Council.
3. Provide the courses identified in enclosure 3 and, as resources permit, extension courses, on-site courses, seminars, and symposia in response to specific needs of the the DoD Components or in response to specific direction from the DSMS Policy Guidance Council.
4. Allocate student quotas for each course, based upon needs of each DoD Component, and receive nominations for each class.

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Continuation of IV.

5. Develop admissions policy, educational practices and standards, curricula, and other functional material necessary for the efficient functioning of the DSMS, with coordination as appropriate with DoD Components, the Defense Management Education and Training Board (reference (a), DoD Directive 5010.16), civilian academic institutions, and defense industry and general business organizations.
 6. Conduct research or special studies directed toward improving the curricula and increasing the body of knowledge in program/project management and defense system acquisition management.
 7. Disseminate current management information assembled or developed at DSMS to the Government and the defense industry community.
 8. Have approval authority for and obtain the equipment and items required by, and in accordance with, the mission of the DSMS. Equipment and items requiring special authorization by Public Law, Executive Order, or DoD Directive/Instruction will be obtained in accordance with the pertinent directions.
 9. Submit his nomination for the Deputy Commandant to the DSMS Policy Guidance Council, through the Executive Secretary, for approval.
 10. Nominate and, upon receipt of necessary approval by the DSMS Policy Guidance Council (see Charter of the DSMS Board of Visitors, enclosure 2), appoint new members to the nine-member Board of Visitors; appoint a Secretary to the Board of Visitors from the DSMS staff; schedule all meetings of the Board of Visitors; report recommendations of the Board of Visitors to the DSMS Policy Guidance Council and obtain DSMS Policy Guidance Council concurrence on the actions planned to be taken on the recommendations.
- D. The Secretaries of the Military Departments and Directors of the concerned Defense Agencies (or their designees) will provide the Commandant, DSMS, with the following:
1. Current policies and procedures, which relate to all phases of a defense system's life cycle, on a continuing basis.
 2. Annual requirements and five-year projections for the education to be provided by the DSMS in accordance with DoD Directive 5010.16 (reference (a)).

Continuation of IV.

3. Student nominees who, by virtue of outstanding performance of duty and demonstrated academic ability, have the potential to hold, or have been selected to hold, senior positions in program/project management.
 4. Information regarding utilization of former DSMS students for five years subsequent to their graduation.
- E. The Secretary of the Army, or his designee, will:
1. Provide and maintain facilities essential to the operation of the DSMS in a manner commensurate with the importance of its mission to all DoD Components.
 2. Assure that administrative and resource support is timely and fully adequate for the accomplishment of the mission assigned to the DSMS.
 3. Review the DSMS annual budget and include it in the Department of the Army overall budget and financial plan.

V. ADMINISTRATION

- A. The position of Commandant, DSMS, will rotate among the Army, Navy, and Air Force. The normal tour of duty will be three years. The Commandant will report to the DSMS Policy Guidance Council chaired by the Director of Defense Research and Engineering. Military Department nominees will be approved by the DSMS Policy Guidance Council.
 1. The Commandant assigned will hold the rank of General or Flag Officer.
 2. Experience in the management of a major defense system acquisition program is essential.
- B. To provide continuity and assure that all three Military Departments are represented at the management level of the DSMS, each Department will nominate a Colonel/Captain to assist the Commandant in the operation of the school. The tour of duty will be three years. Military Department nominees will be approved by the Commandant.
- C. Commissioned officers and enlisted personnel from all DoD Components, augmented by qualified civilian personnel will be assigned to the faculty and staff of the DSMS on a prorated basis. The faculty assignees should have had experience

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in defense systems acquisition management. The tour of duty for military faculty will be three years. All faculty and staff nominees will be approved by the Commandant.

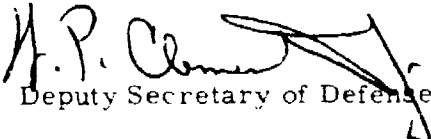
VI. PROGRAMMING, BUDGETING, AND FINANCING

The Department of the Army will be responsible for programming, budgeting and financing all expenses incident to the operation of the DSMS, except as indicated below, and will separately identify all such expenses in its Operation and Maintenance budget and financial plan submission to the Office of the Secretary of Defense.

- A. The pay allowances (including subsistence), Permanent Change of Station travel expenses of military personnel permanently or temporarily assigned to assist in the management or operation of the DSMS, including instructors, will be borne by the Military Service to which such personnel belong. The salaries and expenses, including travel of civilian personnel temporarily assigned, will be borne by the DoD Component by which personnel are employed.
- B. Pay, allowances, and travel costs (not integral to courses of instruction) of military and civilian personnel assigned as students at the DSMS will be borne by the sponsoring DoD Component.
- C. Other Federal agencies and industrial concerns accepting invitational quotas will be required to pay all direct costs such as travel, per diem, and subsistence. Appropriate tuition fees may be assessed non-DoD activities at the discretion of the Secretary of the Army.

VII. EFFECTIVE DATE AND IMPLEMENTATION

This Directive is effective immediately. Two copies of the instructions issued to implement this Directive will be forwarded to the Director of Defense Research and Engineering within 60 days.


Deputy Secretary of Defense

Enclosures - 3

1. Charter of the DSMS Policy Guidance Council
2. Charter of the DSMS Poard of Visitors
3. Courses Provided by the DSMS

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510, 55 (Encl 1)

CHARTER OF THE DEFENSE SYSTEMS MANAGEMENT SCHOOL POLICY GUIDANCE COUNCIL

I. PURPOSE

This charter prescribes the mission, composition, and operation of the Defense Systems Management School (DSMS) Policy Guidance Council (hereinafter referred to as the Council).

II. MISSION

The mission of the Council is to (a) establish policy, provide guidance, and act as prime jurisdictional agent for the operation and administration of the DSMS; (b) approve the admissions policy and the curriculum for each new DSMS course; (c) approve the nomination of the DSMS Commandant and the Deputy Commandant; and (d) approve the nomination of each new member of the DSMS Board of Visitors.

III. COMPOSITION

The members of the Council will be the Director of Defense Research and Engineering, who will serve as Chairman; Assistant Secretaries of Defense (I&L), (PA&E), (C), and (M&RA), a representative of the Secretary of each Military Department; the Commanders of Army Materiel, Naval Material, Air Force Systems and Logistics Commands; and the Assistant Director of Defense Research and Engineering (Engineering Policy), who will serve as its Executive Secretary. The Chairman will appoint a Recording Secretary.

IV. OPERATION

All meetings will be held at the call of the Chairman, normally on a quarterly basis. No less than one meeting of the Council will be held each Government fiscal year with the DSMS Commandant to review operating plans.

The Executive Secretary will meet as necessary with points of contact appointed by each of the Council members, to formulate recommendations and perform other duties as may be directed by the Chairman.

The Recording Secretary will receive items for discussion from Council members; prepare the agenda and minutes of each meeting; and obtain the Chairman's approval of the agenda prior to issuance.

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Continuation

V. DURATION

The Council will automatically terminate upon completion of its mission or not later than two years from the date of its reaffirmation, whichever occurs earlier, unless approval is obtained in advance to continue the Council for another two-year period in accordance with requirements of the DoD Committee Management Program. The activities of the Council will be evaluated annually by the Chairman to determine whether the Council should be continued and, if so, whether its role should be changed.

VI. DATE OF REAFFIRMATION

January 9, 1975

Mar 4, 75
5160.55 (Encl 2)

CHARTER OF THE DEFENSE SYSTEMS MANAGEMENT SCHOOL BOARD OF VISITORS

I. PURPOSE

In accordance with Public Law 92-463 (reference (c)) and Executive Order 11686 (reference (d)), and implementing OMB and DoD regulations for Federal Advisory Committees, this charter prescribes the mission, composition, and operation of the Defense Systems Management School (DSMS) Board of Visitors (hereinafter referred to as the Board).

II. MISSION

The mission of the Board is:

- A. To examine the organization, management, curricula, methods of instruction, facilities, and other aspects of the operation of the DSMS; and
- B. To provide a report, at least once each year, to the DSMS Policy Guidance Council and the Commandant, DSMS, setting forth the results of its examination and recommendations bearing on the accomplishment of the DSMS mission.

III. COMPOSITION

- A. The Board will be composed of three members from the academic community, three members from the defense industry, and three members from the general business community.
- B. The Commandant, DSMS, will nominate to the DSMS Policy Guidance Council new members of the Board based not only upon his own considerations, but upon recommendations received from members of the Council and the Board itself. Upon concurrence of the Council on the nominees, final approval will be obtained by the Council's Executive Secretary through the Deputy Assistant Secretary (Administration) in the Office of the Assistant Secretary of Defense (Comptroller).
- C. The term of a Board member will be two years; however, a one-year extension will be granted upon submittal of the Chairman's recommendations to the Commandant for his concurrence prior to submittal to the DSMS Policy Guidance Council for final approval.

Continuation of III.

- D. The Chairman of the Board will be elected from its membership, subject to appointment by the Commandant, DSMS.
- E. The Secretary to the Board will be appointed from the DSMS staff by the Commandant, DSMS.
- F. The Recording Secretary of the DSMS Policy Guidance Council will attend all meetings of the Board as an observer, and will have authority to adjourn any meeting of the Board which is not considered to be in the public interest.

IV. OPERATION

- A. The Board will meet at least once each fiscal year, but not more than twice, to perform its examination and draft a report containing the results of its examination and recommendations to facilitate accomplishment of the DSMS mission. The report of the Board will be submitted to the Executive Secretary of the DSMS Policy Guidance Council through the Commandant, DSMS, not more than one month after each of its meetings.
- B. Each meeting of the Board will be limited to three days in length.
- C. No less than 30 days prior to each meeting of the Board, the Commandant, DSMS, will provide a packet of information to the Board. This packet will contain, as a minimum, the date and tentative agenda for the next meeting, and a report of the actions taken by the Commandant, DSMS, since the most recent meeting of the Board.
- D. The Secretary to the Board will provide the necessary administrative support to the Board, duplicate the reports of the Board, and provide copies of the reports to the DSMS Policy Guidance Council; the Commandant, DSMS; the Board; and others as appropriate.
- E. Expenses of Board members, including consulting fees, travel and subsistence, will be borne by the DSMS.
- F. The estimated annual cost of operation of the Board is \$3,500 and less than one-quarter man-year of full-time staff support.

Mar 4, 75
5160.55 (Encl 2)

V. DURATION

The Board will terminate upon the completion of its mission, or not later than two years following the filing of the charter, unless prior to that time it is renewed by appropriate action.

VI. DATE CHARTER FILED

January 9, 1975

Mar 4, 75
5100.55 (Encl 3)

COURSES PROVIDED BY THE DSMS

B. PROGRAM PROJECT MANAGEMENT COURSE

- A. Purpose. The course is designed to educate selected military and civilian personnel in effective program/project management in the Department of Defense systems acquisition management environment. The resolution of program/project management issues is developed through a long-term management simulation exercise, which emphasizes the dynamics of synthesis, integration, and interpersonal relationships.
- B. Description. This course of not more than 138 days will be provided to prepare selected intermediate level military officers and civilian personnel for assignments in program/project management. The students will be educated in a broad spectrum of program/project management activities through (1) opportunities to experience the actions necessary in resolving program/project management issues, (2) management simulation exercises, and (3) case studies. A close relationship will be maintained between the problems encountered on current military programs/projects and those provided in the classroom. The course may be substituted for the course at the Armed Forces Staff College in the case of military and civilian personnel aspiring to careers in program/project management; however, this does not preclude the Military Services from selecting and sending graduates of DSMS to intermediate or higher professional military education courses.
- C. Enrollment. The course will be offered to:
 1. Those persons from the DoD Components who are promising candidates to hold senior positions in program/project management later in their careers and who now hold, or are selected to hold, intermediate management positions in:
 - a. Program/project offices; or
 - b. Functional offices supporting program/project offices; or
 - c. Higher echelon offices supervising program/project management.
 2. Selected persons in equivalent positions from other Federal agencies and the defense industry on a space-available basis.

Continuation

II. EXECUTIVE REFRESHER COURSE IN PROGRAM PROJECT MANAGEMENT

- A. Purpose. The course -- for senior level managers -- is designed to review current concepts, methods, and policy dealing with Department of Defense systems acquisition management and to disseminate new management approaches.
- B. Description. This short-term seminar (no longer than three weeks) will be provided primarily to review the most effective concepts and methods of major program project management and to examine new developments that have important implications for program project managers.
- C. Enrollment. The course will be offered to:
1. Those persons from the DoD Components who hold, or are selected to hold:
 - a. A position of program project manager; or
 - b. A deputy or equivalent subordinate position to a program project manager; or
 - c. The rank grade of O-5 (military) or GS-15 (civilian) or higher; and
 - (1) A principal supervisory level position in a program project office or in a functional office supporting a program project office; or
 - (2) A key staff position in a high echelon office responsible for the acquisition of defense systems.
 2. Selected persons in equivalent positions from other Federal agencies and the defense industry on a space-available basis.

III. ORIENTATION IN SYSTEMS ACQUISITION FOR GENERAL FLAG OFFICERS

- A. Purpose. The course -- for selected Generals of the Army and Air Force, Flag Officers of the Navy, and senior civilians in each of the Military Services -- is designed to familiarize attendees with defense systems acquisition management and to acquaint them with the impact and important implications resulting from the actions of interfacing commands staffs of each of the Military Services and the Department of Defense.

Continuation of III.

- B. Description. This seminar will be provided for senior personnel who have not had prior experience with the systems acquisition process of the Department of Defense but whose duties interface with or impact upon the acquisition programs of the Army, Navy, or Air Force. The offering (not to exceed one week) is designed to acquaint key individuals with the functions, responsibilities, and problems of DoD program/project managers and to provide an orientation on defense systems acquisition management.
- C. Enrollment. The course will be offered to:
1. Those persons from the DoD Components who hold, or are selected to hold:
 - a. The rank of General or Flag Officer; or
 - b. A senior civilian grade (GS-16, GS-17, GS-18 and PL 313)
 2. Selected persons in equivalent positions from other Federal agencies on a space-available basis.

IV. SPECIAL SHORT COURSES

Special short courses will be provided, when the need is established and approved, to disseminate new concepts and methods in program/project management and respond to the needs of the DoD Components. These courses will include those aimed at developing generalized skills as well as individual professional skills used in program/project management.



Department of Defense Directive

SUBJECT Design to Cost

- Refs.: (a) DoD Directive 5000.1, "Acquisition of Major Defense Systems," July 13, 1971
- (b) Deputy Secretary of Defense Memorandum for Secretaries of the Military Departments and DSARC Principals, "Design to Cost Objectives on DSARC Programs," June 18, 1973 (hereby cancelled)
- (c) Deputy Secretary of Defense Memorandum for Secretaries of the Military Departments, "Application of Design to Cost Management Principles to Subsystems and Other Than Major Weapon Systems," May 24, 1974 (hereby cancelled)
- (d) DoD 7110-1-M, "Department of Defense Budget Guidance Manual," June 15, 1973
- (e) DoD Instruction 5000.2, "Decision Coordinating Paper (DCP) and the Defense Systems Acquisition Review Council (DSARC)," January 25, 1975
- (f) DoD Directive 5000.26, "Defense Systems Acquisition Review Council (DSARC)," January 21, 1975
- (g) Joint Design to Cost Guide (AMC 700-6, NAVMAT P5242, AFLCP/AFSCP 80C-19) "A Conceptual Approach for Major Weapon System Acquisition," October 3, 1973

I. PURPOSE

This Directive establishes policy and guidance on the application of Design to Cost principles to the acquisition of defense systems, subsystems and components.

II. CANCELLATIONS

References (b) and (c) are hereby superseded and cancelled.

III. APPLICABILITY AND SCOPE

The provisions of the Directive apply to the Office of the Secretary of Defense, the Organization of the Joint Chiefs of Staff, the Military Departments, and the Defense Agencies (hereinafter referred to collectively as "DoD Components").

Design to Cost design and management principles contained herein encompass the requirements of DoD Directive 5000.1 (reference (a)) for major defense systems and shall be applied in the acquisition of defense systems, subsystems, and components.

IV. DEFINITIONS

- A. Design to Cost. A management concept wherein rigorous cost goals are established during development and the control of systems costs (acquisition, operating and support) to these goals is achieved by practical tradeoffs between operational capability, performance, cost, and schedule. Cost, as a key design parameter, is addressed on a continuing basis and as an inherent part of the development and production process.
- B. Design to Cost Goal. A specific cost number, in constant dollars, based upon a specified production quantity and rate, established early during system development as a management objective and design parameter for subsequent phases of the acquisition cycle.
- C. Average Unit Flyaway Cost. The average unit flyaway cost (equates to Rollaway and Sailaway) related to the production of a useable end-item of military hardware. Flyaway cost is defined in DoD Manual 7110.1-M (reference (d)) and includes the cost of procuring the basic unit (airframe, hull, chassis, etc.), a percentage of basic unit for changes allowance, propulsion equipment, electronics, armament, other installed Government-furnished equipment, and nonrecurring production costs.
- D. Life Cycle Cost (LCC). The LCC of a system is the total cost to the Government of acquisition and ownership of that system over its full life. It includes the cost of development, acquisition, operation, support, and where applicable, disposal.

V. OBJECTIVE

The objective of Design to Cost is twofold:

- A. To establish cost as a parameter equal in importance with technical requirements and schedules throughout the design, development, production, and operation of weapon systems, subsystems and components.
- B. To establish cost elements as management goals for acquisition managers and contractors to achieve the best balance between life cycle cost, acceptable performance and schedule.

VI. POLICY

A. Design to Cost Concept

1. The Design to Cost concept establishes cost as a design

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parameter during a system's design and development phase and provides a cost discipline to be used throughout the acquisition and operation of a system.

2. Life cycle cost objectives shall be established for each acquisition and separated into cost elements within the broad categories of development, production, operation, and support. As system definition continues, the cost elements are firming into cost goals to which the system will be designed and its cost controlled.
3. During design and development, cost requirements and the achievement of cost goals will be evaluated with the same rigor as technical requirements and the achievement of performance goals. Practical tradeoffs between system capability, cost and schedules must be continually examined to insure that the system developed will have the lowest life cycle cost consistent with schedule and performance requirements.
4. The cost goals established and "designed to" in the development phase will be extended into subsequent phases of the system's life cycle. Production cost will be rigorously controlled to the production goals.
5. As the system is introduced, operation and support cost goals will be utilized to control initial outfitting cost, personnel, spares, rework, etc. In the operational feedback process, change requests generated by operational usage and fed back to design engineering will reflect the use of Design to Cost principles and tradeoffs necessary to insure the lowest cost is obtained to achieve acceptable performance.

B. Design to Cost Goals

1. Because of the ability to more accurately estimate production costs and the supportive production cost data base available, initial goals for Design to Cost shall be established in the form of Average Unit Flyaway (Rollaway, Sailaway) cost. Programs to strengthen the data base of weapon system operation and support (O&S) cost shall continue. As the ability to translate O&S cost elements into "design to" requirements improves, Design to Cost goals may be extended into this area.
2. Although this initial goal uses a production cost element, the management objective during design and development shall continue to include the control of future operating and support cost. The major operating and support cost factors shall have goals established in the form of measurable numbers (e.g., numbers of O&S personnel, reliability and maintainability factors, etc.) which can be monitored during test and evaluation as well as in operation. These factors shall have emphasis equal to other cost factors in acquisition cost management.

3. Life cycle cost estimates will be used as a basis for cost trade-off analyses when considering acquisition versus O&S costs, comparing competing prototypes or comparing current versus new systems. They will also be used to focus management attention on the O&S cost impact of bringing the new system into the operating inventory.
4. There will be a few exceptions when it may be appropriate to propose goals based on other than flyaway cost, for example, in programs where development cost is a predominant fraction of the acquisition cost and production volume is extremely low. In such cases, weapon system cost, procurement cost, program acquisition cost or other cost categories defined in DoD Manual 7110.1-M (reference (d)) shall be used.

C. Goal Establishment

1. An initial estimate of the resources available for allocation to the program shall be made and cost objectives established during concept formulation. Likewise, the minimum essential performance characteristics shall be quantified to avoid trade-offs below that necessary to satisfy the required operational capability. Each technically feasible alternative will be analyzed and cost/performance tradeoffs made to ensure selection of the lowest life cycle cost solution. As soon as the system is definitized to the extent that cost associated with minimum performance needed can be estimated with confidence, a firm Design to Cost goal shall be recommended for the program.
2. The recommended Design to Cost goal should be a difficult but achievable objective which should challenge designers, engineers, and program managers to their best efforts. Care must be exercised to ensure the goal is properly selected; a goal which is too high in relation to the required performance wastes money and an excessively low goal sets the stage for cost growth, buy-ins, or unacceptable systems.
3. The recommended goal shall be included in the DCP in accordance with DoD Instruction 5000.2 (reference (e)) and submitted as part of the normal DSARC Review as specified by DoD Directive 5000.26 (reference (f)). Applicable rationale to support the goal (e.g., quantities, production rate, cost quantity relationship (learning curve), the applicable escalation indices used, and the O&S cost related factors, etc.) shall be included. The recommended goal will be reviewed by the OSD Cost Analysis Improvement Group (CAIG) and the DSARC advised on its achievability. Recommendations shall be made to the Secretary of Defense who will establish the official Design to Cost goal for the program.
4. The Design to Cost goal shall be established before program initiation (DSARC Milestone I) or at the earliest practical date thereafter, but in no case later than entry into full-scale

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development (DSARC Milestone II). Once established, the goal becomes a highly visible cost goal against which, in large measure, the success of the program and the cost performance of the DoD Component and program manager are measured.

D. Changes to the Goal

1. If at any time during the conduct of a program, subsequent to the establishment of a Design to Cost goal, the program manager determines that the goal cannot be met, the Head of the Cognizant DoD Component shall notify the DSARC Chairman explaining the reasons for the increase and recommended alternative courses of action.
2. Any change to an established Design to Cost goal must be approved by the Secretary of Defense, normally after review and recommendation by the DSARC. However, they will generally be approved only for major changes in program structure or mission requirements, for changes where a significant demonstrable reduction in life cycle costs can be achieved, or for other program changes beyond the control of the program manager or DoD Component.

E. Exemptions

Exemptions could occur for those very few programs which, for reasons of national security, have performance or schedule goals that take priority over cost goals. The DSARC will review DoD Component proposals and recommend the extent to which exemption from Design to Cost should be approved for any major program where the usually applicable unit cost goals are inappropriate. Exemptions shall only be authorized by the Secretary of Defense.

F. Life Cycle Cost

1. A life cycle cost estimate shall be made at the initiation of the validation phase or at the earliest practical date thereafter by using, for example, cost model equations. Example calculations are given in the OSD Cost Analysis Improvement Group O&S Costing Guides. These estimates will be updated prior to the initiation of the full-scale engineering development phase and the production phase of the program.
2. Programs being conducted in accordance with Design to Cost Concepts shall be reviewed periodically (at least each DSARC milestone or equivalent program phase) on a life cycle cost basis. The review, conducted by the DSARC for programs so designated or held at a level above the program manager, should include the effect of specific elements in the life cycle cost management approach such as source selection factors, contract incentives, and use of cost models and warranties. Special emphasis will be placed on their effects in achieving better than the minimum specified reliability, maintainability and operational availability

within the established Design to Cost goal. The review will also include reassessment of the portion of the test and evaluation plan developed to measure specific life cycle cost factors and determine life cycle cost performance.

3. Where significant savings in overall life cycle costs can be achieved for an increase in the flyaway cost goal (or other production oriented goal), a request for review and appropriate cost goal adjustment should be submitted to the proper decision authority.

G. Program Considerations

1. Progress in implementing and attaining Design to Cost goals will be reviewed at each major program milestone and DCP review required by DoD Instruction 5000.2 (reference (e)) and DoD Directive 5000.26 (reference (f)).
2. Within the limits of an individual program:
 - a. The application of Design to Cost shall be tailored to particular program requirements and characteristics in a manner most advantageous to the program.
 - b. Design to Cost shall be implemented into all phases of the acquisition. The Joint Design to Cost Guide (reference (g)) shall be used as a guide for such implementation.
 - c. Changes to subsystem and component goals may be made subject to the constraints of the overall Design to Cost goal. All subordinate goals shall be reconcilable to the overall program goal.
 - d. Provisions for Design to Cost principles and goals including measurable goals for O&S cost related factors shall be included in requests for proposals and contracts in terms which are auditable, contractually enforceable and meaningful to both the contractor and the Government.

H. Systems Below DSARC Thresholds

The Design to Cost principles herein have been illustrated in their application to major system acquisitions, however, the management and procurement principles are equally valuable and shall be applied to the acquisition of systems below the DSARC threshold, subsystems, and components. Design to Cost goals shall be established and controlled within DoD Components for these systems in a similar manner as described herein. Approval authority for cost goals and changes to the goals will be maintained at a management level above the program or subsystem manager.

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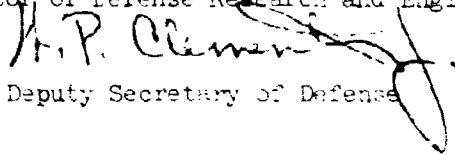
VII. DESIGN TO COST GUIDANCE

DoD Components having authority and responsibility for the acquisition of defense weapon systems, subsystems, and components shall:

- A. Establish policies and procedures for reviewing acquisition programs below the DSARC level and periodically assess the appropriateness of Design to Cost goals and acquisition management effectiveness. (See section VIII.)
- B. Ensure the Joint Design to Cost Guide (reference (g)) is kept current and revisions reflect the current application of Design to Cost as well as the provisions of this Directive. As Design to Cost implementation experience is collected, the lessons learned shall be summarized in future revisions of the guide. The OSD staff will continue to support this effort. (See section VIII.)

VIII. EFFECTIVE DATE AND IMPLEMENTATION

- A. This Directive is effective immediately. DoD Components shall transmit this Directive to all organizations and activities involved in defense development and acquisition; no further implementing documents other than those required in subsection VIII.C. are necessary.
- B. Implementing revisions to the Joint Design to Cost Guide (reference (g)) shall incorporate the provisions of this Directive within 90 days and shall be updated on a periodic basis to reflect Design to Cost management experience.
- C. Two copies of the documents implementing subsection VII.A (review of acquisition programs below DSARC levels) shall be forwarded to the Director of Defense Research and Engineering within 90 days.


Deputy Secretary of Defense



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

APPENDIX M

April 5, 1976

CIRCULAR NO. A-109

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Major System Acquisitions

1. Purpose. This Circular establishes policies, to be followed by executive branch agencies in the acquisition of major systems.

2. Background. The acquisition of major systems by the Federal Government constitutes one of the most crucial and expensive activities performed to meet national needs. Its impact is critical on technology, on the Nation's economic and fiscal policies, and on the accomplishment of Government agency missions in such fields as defense, space, energy and transportation. For a number of years, there has been deep concern over the effectiveness of the management of major system acquisitions. The report of the Commission on Government Procurement recommended basic changes to improve the process of acquiring major systems. This Circular is based on executive branch consideration of the Commission's recommendations.

3. Responsibility. Each agency head has the responsibility to ensure that the provisions of this Circular are followed. This Circular provides administrative direction to heads of agencies and does not establish and shall not be construed to create any substantive or procedural basis for any person to challenge any agency action or inaction on the basis that such action was not in accordance with this Circular.

4. Coverage. This Circular covers and applies to:

a. Management of the acquisition of major systems, including: ° Analysis of agency missions ° Determination of mission needs ° Setting of program objectives ° Determination of system requirements ° System program planning ° Budgeting ° Funding ° Research ° Engineering ° Development ° Testing and evaluation ° Contracting ° Production ° Program and management control ° Introduction

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of the system into use or otherwise successful achievement of program objectives.

b. All programs for the acquisition of major systems even though:

(1) The system is one-of-a-kind.

(2) The agency's involvement in the system is limited to the development of demonstration hardware for optional use by the private sector rather than for the agency's own use.

5. Definitions. As used in this Circular:

a. Executive agency (hereinafter referred to as agency) means an executive department, and an independent establishment within the meaning of sections 101 and 104(1), respectively, of Title 5, United States Code.

b. Agency component means a major organizational subdivision of an agency. For example: The Army, Navy, Air Force, and Defense Supply Agency are agency components of the Department of Defense. The Federal Aviation Administration, Urban Mass Transportation Administration, and the Federal Highway Administration are agency components of the Department of Transportation.

c. Agency missions means those responsibilities for meeting national needs assigned to a specific agency.

d. Mission need means a required capability within an agency's overall purpose, including cost and schedule considerations.

e. Program objectives means the capability, cost and schedule goals being sought by the system acquisition program in response to a mission need.

f. Program means an organized set of activities directed toward a common purpose, objective, or goal undertaken or proposed by an agency in order to carry out responsibilities assigned to it.

g. System design concept means an idea expressed in terms of general performance, capabilities, and characteristics of hardware and software oriented either to

operate or to be operated as an integrated whole in meeting a mission need.

h. Major system means that combination of elements that will function together to produce the capabilities required to fulfill a mission need. The elements may include, for example, hardware, equipment, software, construction, or other improvements or real property. Major system acquisition programs are those programs that (1) are directed at and critical to fulfilling an agency mission, (2) entail the allocation of relatively large resources, and (3) warrant special management attention. Additional criteria and relative dollar thresholds for the determination of agency programs to be considered major systems under the purview of this Circular, may be established at the discretion of the agency head.

i. System acquisition process means the sequence of acquisition activities starting from the agency's reconciliation of its mission needs, with its capabilities, priorities and resources, and extending through the introduction of a system into operational use or the otherwise successful achievement of program objectives.

j. Life cycle cost means the sum total of the direct, indirect, recurring, nonrecurring, and other related costs incurred, or estimated to be incurred, in the design, development, production, operation, maintenance and support of a major system over its anticipated useful life span.

6. General policy. The policies of this Circular are designed to assure the effectiveness and efficiency of the process of acquiring major systems. They are based on the general policy that Federal agencies, when acquiring major systems, will:

a. Express needs and program objectives in mission terms and not equipment terms to encourage innovation and competition in creating, exploring, and developing alternative system design concepts.

b. Place emphasis on the initial activities of the system acquisition process to allow competitive exploration of alternative system design concepts in response to mission needs.

c. Communicate with Congress early in the system acquisition process by relating major system acquisition programs to agency mission needs. This communication should follow the requirements of Office of Management and Budget (OMB) Circular No. A-10 concerning information related to budget estimates and related materials.

d. Establish clear lines of authority, responsibility, and accountability for management of major system acquisition programs. Utilize appropriate managerial levels in decisionmaking, and obtain agency head approval at key decision points in the evolution of each acquisition program.

e. Designate a focal point responsible for integrating and unifying the system acquisition management process and monitoring policy implementation.

f. Rely on private industry in accordance with the policy established by OMB Circular No. A-76.

7. Major system acquisition management objectives. Each agency acquiring major systems should:

a. Ensure that each major system: Fulfills a mission need. Operates effectively in its intended environment. Demonstrates a level of performance and reliability that justifies the allocation of the Nation's limited resources for its acquisition and ownership.

b. Depend on, whenever economically beneficial, competition between similar or differing system design concepts throughout the entire acquisition process.

c. Ensure appropriate trade-off among investment costs, ownership costs, schedules, and performance characteristics.

d. Provide strong checks and balances by ensuring adequate system test and evaluation. Conduct such tests and evaluation independent, where practicable, of developer and user.

e. Accomplish system acquisition planning, built on analysis of agency missions, which implies appropriate resource allocation resulting from clear articulation of agency mission needs.

f. Tailor an acquisition strategy for each program, as soon as the agency decides to solicit alternative system design concepts, that could lead to the acquisition of a new major system and refine the strategy as the program proceeds through the acquisition process. Encompass test and evaluation criteria and business management considerations in the strategy. The strategy could typically include: ° Use of the contracting process as an important tool in the acquisition program ° Scheduling of essential elements of the acquisition process ° Demonstration, test, and evaluation criteria ° Content of solicitations for proposals ° Decisions on whom to solicit ° Methods for obtaining and sustaining competition ° Guidelines for the evaluation and acceptance or rejection of proposals ° Goals for design-to-cost ° Methods for projecting life cycle costs ° Use of data rights ° Use of warranties ° Methods for analyzing and evaluating contractor and Government risks ° Need for developing contractor incentives ° Selection of the type of contract best suited for each stage in the acquisition process ° Administration of contracts.

g. Maintain a capability to: ° Predict, review, assess, negotiate and monitor costs for system development, engineering, design, demonstration, test, production, operation and support (i.e., life cycle costs) ° Assess acquisition cost, schedule and performance experience against predictions, and provide such assessments for consideration by the agency head at key decision points ° Make new assessments where significant costs, schedule or performance variances occur ° Estimate life cycle costs during system design concept evaluation and selection, full-scale development, facility conversion, and production, to ensure appropriate trade-offs among investment costs, ownership costs, schedules, and performance ° Use independent cost estimates, where feasible, for comparison purposes.

8. Management structure.

a. The head of each agency that acquires major systems will designate an acquisition executive to integrate and unify the management process for the agency's major system acquisitions and to monitor implementation of the policies and practices set forth in this Circular.

b. Each agency that acquires--or is responsible for activities leading to the acquisition of--major systems will

establish clear lines of authority, responsibility, and accountability for management of its major system acquisition programs.

c. Each agency should preclude management layering and placing reporting procedures and paperwork requirements on program managers and contractors.

d. A program manager will be designated for each of the agency's major system acquisition programs. This designation should be made when a decision is made to fulfill a mission need by pursuing alternative system design concepts. It is essential that the program manager have an understanding of user needs and constraints, familiarity with development principles, and requisite management skills and experience. Ideally, management skills and experience would include: ° Research and development ° Operations ° Engineering ° Construction ° Testing ° Contracting ° Prototyping and fabrication of complex systems ° Production ° Business ° Budgeting ° Finance. With satisfactory performance, the tenure of the program manager should be long enough to provide continuity and personal accountability.

e. Upon designation, the program manager should be given budget guidance and a written charter of his authority, responsibility, and accountability for accomplishing approved program objectives.

f. Agency technical management and Government laboratories should be considered for participation in agency mission analysis, evaluation of alternative system design concepts, and support of all development, test, and evaluation efforts.

g. Agencies are encouraged to work with each other to foster technology transfer, prevent unwarranted duplication of technological efforts, reduce system costs, promote standardization, and help create and maintain a competitive environment for an acquisition.

9. Key decisions. Technical and program decisions normally will be made at the level of the agency component or operating activity. However, the following four key decision points should be retained and made by the agency head:

a. Identification and definition of a specific mission need to be fulfilled, the relative priority assigned within the agency, and the general magnitude of resources that may be invested.

b. Selection of competitive system design concepts to be advanced to a test/demonstration phase or authorization to proceed with the development of a noncompetitive (single concept) system.

c. Commitment of a system to full-scale development and limited production.

d. Commitment of a system to full production.

10. Determination of mission needs.

a. Determination of mission need should be based on an analysis of an agency's mission reconciled with overall capabilities, priorities and resources. When analysis of an agency's mission shows that a need for a new major system exists, such a need should not be defined in equipment terms, but should be defined in terms of the mission, purpose, capability, agency components involved, schedule and cost objectives, and operating constraints. A mission need may result from a deficiency in existing agency capabilities or the decision to establish new capabilities in response to a technologically feasible opportunity. Mission needs are independent of any particular system or technological solution.

b. Where an agency has more than one component involved, the agency will assign the roles and responsibilities of each component at the time of the first key decision. The agency may permit two or more agency components to sponsor competitive system design concepts in order to foster innovation and competition.

c. Agencies should, as required to satisfy mission responsibilities, contribute to the technology base, effectively utilizing both the private sector and Government laboratories and in-house technical centers, by conducting, supporting, or sponsoring: ° Research ° System design concept studies ° Proof of concept work ° Exploratory subsystem development ° Tests and evaluations. Applied technology efforts oriented to system developments should be performed in response to approved mission needs.

11. Alternative systems.

a. Alternative system design concepts will be explored within the context of the agency's mission need and program objectives--with emphasis on generating innovation and conceptual competition from industry. Benefits to be derived should be optimized by competitive exploration of alternative system design concepts, and trade-offs of capability, schedule, and cost. Care should be exercised during the initial steps of the acquisition process not to conform mission needs or program objectives to any known systems or products that might foreclose consideration of alternatives.

b. Alternative system design concepts will be solicited from a broad base of qualified firms. In order to achieve the most preferred system solution, emphasis will be placed on innovation and competition. To this end, participation of smaller and newer businesses should be encouraged. Concepts will be primarily solicited from private industry; and when beneficial to the Government, foreign technology, and equipment may be considered.

c. Federal laboratories, federally funded research and development centers, educational institutions, and other not-for-profit organizations may also be considered as sources for competitive system design concepts. Ideas, concepts, or technology, developed by Government laboratories or at Government expense, may be made available to private industry through the procurement process or through other established procedures. Industry proposals may be made on the basis of these ideas, concepts, and technology or on the basis of feasible alternatives which the proposer considers superior.

d. Research and development efforts should emphasize early competitive exploration of alternatives, as relatively inexpensive insurance against premature or preordained choice of a system that may prove to be either more costly or less effective.

e. Requests for alternative system design concept proposals will explain the mission need, schedule, cost, capability objectives, and operating constraints. Each offeror will be free to propose his own technical approach, main design features, subsystems, and alternatives to schedule, cost, and capability goals. In the conceptual and

less than full-scale development stages, contractors should not be restricted by detailed Government specifications and standards.

f. Selections from competing system design concept proposals will be based on a review by a team of experts, preferably from inside and outside the responsible component development organization. Such a review will consider: (1) Proposed system functional and performance capabilities to meet mission needs and program objectives, including resources required and benefits to be derived by trade-offs, where feasible, among technical performance, acquisition costs, ownership costs, time to develop and procure; and (2) The relevant accomplishment record of competitors.

g. During the uncertain period of identifying and exploring alternative system design concepts, contracts covering relatively short time periods at planned dollar levels will be used. Timely technical reviews of alternative system design concepts will be made to effect the orderly elimination of those least attractive.

h. Contractors should be provided with operational test conditions, mission performance criteria, and life cycle cost factors that will be used by the agency in the evaluation and selection of the system(s) for full-scale development and production.

i. The participating contractors should be provided with relevant operational and support experience through the program manager, as necessary, in developing performance and other requirements for each alternative system design concept as tests and trade-offs are made.

j. Development of subsystems that are intended to be included in a major system acquisition program will be restricted to less than fully designed hardware (full-scale development) until the subsystem is identified as a part of a system candidate for full-scale development. Exceptions may be authorized by the agency head if the subsystems are long lead time items that fulfill a recognized generic need or if they have a high potential for common use among several existing or future systems.

12. Demonstration.

a. Transition to a competitive test/demonstration phase may be approved when the agency's mission need and program objectives are reaffirmed and when alternative system design concepts are selected.

b. Major system acquisition programs will be structured and resources planned to demonstrate and evaluate competing alternative system design concepts that have been selected. Exceptions may be authorized by the agency head if demonstration is not feasible.

c. Development of a single system design concept that has not been competitively selected should be considered only if justified by factors such as urgency of need, or by the physical and financial impracticality of demonstrating alternatives. Proceeding with the development of a noncompetitive (single concept) system may be authorized by the agency head. Strong agency program management and technical direction should be used for systems that have been neither competitively selected nor demonstrated.

13. Full-scale development and production.

a. Full-scale development, including limited production, may be approved when the agency's mission need and program objectives are reaffirmed and competitive demonstration results verify that the chosen system design concept(s) is sound.

b. Full production may be approved when the agency's mission need and program objectives are reaffirmed and when system performance has been satisfactorily tested, independent of the agency development and user organizations, and evaluated in an environment that assures demonstration in expected operational conditions. Exceptions to independent testing may be authorized by the agency head under such circumstances as physical or financial impracticability or extreme urgency.

c. Selection of a system(s) and contractor(s) for full-scale development and production is to be made on the basis of (1) system performance measured against current mission need and program objectives, (2) an evaluation of estimated acquisition and ownership costs, and (3) such factors as

contractor(s) demonstrated management, financial, and technical capabilities to meet program objectives.

d. The program manager will monitor system tests and contractor progress in fulfilling system performance, cost, and schedule commitments. Significant actual or forecast variances will be brought to the attention of the appropriate management authority for corrective action.

14. Budgeting and financing. Beginning with FY 1979 all agencies will, as part of the budget process, present budgets in terms of agency missions in consonance with Section 201(i) of the Budget and Accounting Act, 1921, as added by Section 601 of the Congressional Budget Act of 1974, and in accordance with OMB Circular A-11. In so doing, the agencies are desired to separately identify research and development funding for: (1) The general technology base in support of the agency's overall missions, (2) The specific development efforts in support of alternative system design concepts to accomplish each mission need, and (3) Full-scale developments. Each agency should ensure that research and development is not undesirably duplicated across its missions.

15. Information to Congress.

a. Procedures for this purpose will be developed in conjunction with the Office of Management and Budget and the various committees of Congress having oversight responsibility for agency activities. Beginning with FY 1979 budget, each agency will inform Congress in the normal budget process about agency missions, capabilities, deficiencies, and needs and objectives related to acquisition programs, in consonance with Section 601(i) of the Congressional Budget Act of 1974.

b. Disclosure of the basis for an agency decision to proceed with a single system design concept without competitive selection and demonstration will be made to the congressional authorization and appropriation committees.

16. Implementation. All agencies will work closely with the Office of Management and Budget in resolving all implementation problems.

17. Submissions to Office of Management and Budget. Agencies will submit the following to OMB:

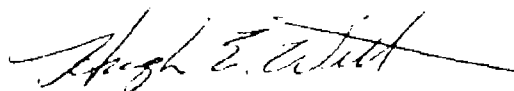
a. Policy directives, regulations, and guidelines as they are issued.

b. Within six months after the date of this Circular, a time-phased action plan for meeting the requirements of this Circular.

c. Periodically, the agency approved exceptions permitted under the provisions of this Circular.

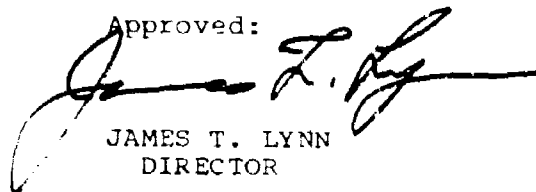
This information will be used by the OMB, in identifying major system acquisition trends and in monitoring implementations of this policy.

18. Inquiries. All questions or inquiries should be submitted to the OMB, Administrator for Federal Procurement Policy. Telephone number, area code, 202-395-4677.



HUGH E. WITT
ADMINISTRATOR FOR
FEDERAL PROCUREMENT POLICY

Approved:



JAMES T. LYNN
DIRECTOR

Draft dated 27 July 1976

APPENDIX N

NUMBER 5000.30

DEPARTMENT OF DEFENSE DIRECTIVE

SUBJECT Defense Acquisition Executive

- Refs.: (a) Office of Management and Budget Circular A-109,
"Major System Acquisition " April 5, 1976
(b) DoD Directive 5000.1, "Acquisition of Major Defense
Systems."

I. GENERAL

Pursuant to the authority vested in the Secretary of Defense and as directed by the provisions of Paragraph 8A of reference (a), the Defense Acquisition Executive shall have the responsibilities, functions and authorities as prescribed herein.

II. RESPONSIBILITIES

- A. The Defense Acquisition Executive is the principal advisor and staff assistant to the Secretary of Defense for the acquisition of defense systems and equipment.
- B. The individual who will serve as the Defense Acquisition Executive during any given time period will be so designated by the Secretary of Defense.

III. FUNCTIONS

Under the direction, authority and control of the Secretary of Defense, and in coordination with the functional Assistant Secretaries of Defense, the Defense Acquisition Executive shall perform the following functions:

- A. Integrate and unify the management process, policies and procedures for major defense system acquisition.
- B. Monitor the implementation of the policies and practices in the Circular A-109, reference (a), and in the system acquisition policies of the Secretary of Defense.

- C. Coordinate the development of integrated investment planning for the DoD to assure the continuity of decisions between the conceptual, development, production and operational phases of the acquisition of defense systems.
- D. Coordinate acquisition investment planning with the Defense Planning and Programming Guidance (DPPG), the Planning and Programming Guidance Memorandum (PPGM), and the Planning, Programming, Budgeting System (PPBS).
- E. Serve as the permanent Chairman of the Defense Systems Acquisition Review Council, (DSARC), reference (b).
- F. Strengthen the basis for the Secretary of Defense's decisions at the four key acquisition milestones by assuring that the requirements and viewpoints of all functional areas involved in system acquisition are full consideration during DSARC deliberations, and are properly integrated in the DSARC recommendations sent to the Secretary.
- G. Approve after consultation with the other DSARC members, exceptions to the policy of completing the Decision Coordinating Paper (DCP) processing, DoD Instruction 5000.2, prior to DSARC/(s) SARC review.
- H. Assure that program managers are assigned when acquisition programs are initiated.
- I. Assure that key acquisition personnel have long-term experience in a variety of Government/Industry system acquisition activities and that career programs have been instituted which enlarge on that experience.
- J. Perform such other duties as the Secretary of Defense may assign.

IV. RELATIONSHIPS

- A. In the performance of his functions, the Defense Acquisition Executive shall:
 - 1. Coordinate the actions of the various OSD offices as they carry out their assigned responsibilities in major Weapon System Acquisition.
 - 2. Coordinate actions, as appropriate, with the military departments and other Department of Defense agencies having collateral or related functions in the field

of his assigned responsibility.

3. Maintain active liaison for the exchange of information and advice with the military departments and other Department of Defense agencies.
 4. Consult with the Joint Chiefs of Staff on the interaction of system acquisition with operational strategy.
 5. Maintain active liaison with the Office of Federal Procurement Policy in matters concerning system acquisition policy.
 6. Encourage the maintenance of active liaison with appropriate research and development, system design, procurement, logistic and environmental services agencies outside the Department of Defense, including private business entities, educational or research institutions or other agencies of government.
 7. Make full use of available resources in the office of the Secretary of Defense, military departments and other Department of Defense agencies rather than unnecessarily duplicating such capabilities.
- B. The Secretaries of the military departments, their civilian assistants, and the military personnel in such departments shall fully cooperate with the Defense Acquisition Executive and the OSD staff in a continuous effort to achieve efficient administration of system acquisition activities in the Department of Defense.

V. AUTHORITIES

The Defense Acquisition Executive, in the course of exercising the staff functions in his assigned field, including those enumerated in Section III above, is hereby specifically delegated authority to:

- A. Issue instructions and one-time directive-type memoranda, in writing, appropriate to carrying out policies approved by the Secretary of Defense for his assigned fields of responsibilities in accordance with DoD Directive 5025.1, subject: DoD Directives Systems, March 7, 1961. Such instructions and memoranda to the military departments will be issued through the Secretaries of those departments or their designees.

B. Obtain such reports and information and assistance from the military departments and other Department of Defense agencies as may be necessary to the performance of his assigned functions.

VI. EFFECTIVE DATE

This Directive is effective immediately.