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FINAL REPORT

USAF PROTOTYPE STUDY (U)

September 1971

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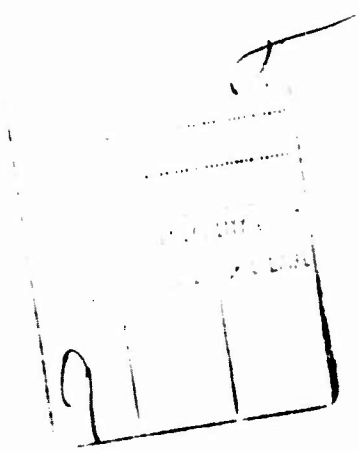

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

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14 March 1972

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Walter E. Seibert
WALTER E. SEIBERT
Manager
AFSC Mission Analysis Facility

1 Atch
Final Rpt USAF Prototype Study(U), Sep 71, 2 cys (C)

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SECTION I

INTRODUCTION

Purpose:

The purpose of the USAF Prototype Study Team, organized at the direction of the Vice Chief of Staff by letter, June 1971, was to recommend to the Secretary of the Air Force a comprehensive prototype program. The objectives of this program are in consonance with a letter of 7 May 1971 from the Secretary of the Air Force to the Deputy Secretary of Defense, i.e., to advance technology, to reduce technical and strategy uncertainties, and to provide a variety of hardware options in anticipation of future military needs. In addition to a near-term program, an overall plan to manage prototyping as a way-of-life within the Air Force development/acquisition process was to be recommended. As an integral part of this study effort, it has been necessary to define what the "USAF Advanced Prototype Program" is to encompass and to determine Air Force areas of interest where such prototyping would be applicable.

Specific Objectives:

Specific objectives of the study were as follows:

To develop the rationale for prototyping.
To determine what to prototype.
To determine how to manage the program.

Additionally, the Study Team was to examine the advisability of, and an approach to, preserving the continuity of industrial design teams.

Study Organization:

Overall guidance and direction for the USAF Prototype Study was provided by a Steering Group chaired by the Assistant Secretary of the Air Force for Research and Development. Brig Gen K. R. Chapman, DCS/Development Plans, AFSC, was appointed Study Director. The Study Team consisted of an Integrating Group and three subordinate Task Groups: Project Selection, Management, and Procurement. A listing of the Study Team's membership is included in Appendix 6 of this report.

Study Approach:

Working under the overall study objectives, detailed tasks were defined for each of the working groups. These tasks were formed and defined by the USAF Steering Group, the Study Director, and the Integrating Group. Interchange of ideas was effected with NASA, RAND, AIA, IAC, plus other Air Force agencies. The opinions and statements on prototyping made by many officials, other studies and reports, and numerous philosophy/rationale expressions were reviewed and incorporated into the work of the Study Team.

SECTION II

CONCEPT AND RATIONALE

Background:

In order to fulfill its military mission, the Air Force must continually improve the aerospace systems which provide its operational capability. In providing for this improvement, the Air Force must employ development strategies which are both responsive to operational urgencies and considerate of national resources. In addition, Air Force development must provide our national leadership with viable alternatives demonstrated in hardware, in design concepts, and in technological applications so that prudent selections can be made for the equipage of military forces in countering enemy strategies and technological advancements.

During the past decade, the DOD has employed the principle of concurrent development/production to satisfy many "major" acquisition requirements, particularly those of some operational urgency. More recently, a serial development-production cycle (fly-before-buy) has been adopted as being more conservative of national resources, particularly in those cases where operational urgency has not been overriding. Both approaches are similar in that a conceptual design is specified a-priori. Subsequent efforts then are directed at achieving the specified design so that hardware may be produced in the quantity desired. However, the specified design normally has resulted from a collection of studies rather than from the results of prototype hardware demonstrations. Since the programs of concurrent development/production normally have been conceived and approved in totality, i.e., development and production, the commitment of national resources has been high and of severe consequences to a limited military budget. As a result, decisions to conduct advanced development have been based largely on the requirement for approval to proceed with a complete system, rather than on the information provided by the development and testing of the prototypes of components and subsystems.

Due to this situation, there recently has been a determined effort to reduce risk factors in the a-priori design to assure successful development and limited variances in expected performance, costs, and schedules. However, this could induce a conservatism in design which may fail to take full advantage of emerging technology and inhibit ingenuity and innovation both in government and industry. Further, such large commitments of resources are involved that a variety of demonstrable options becomes economically infeasible.

Concept and Rationale:

An Air Force Advanced Prototype Program is proposed to bridge this development gap, to fully explore the advantages of emerging technology, to reduce risks and uncertainties in development, and to provide the DOD and our national leaders with a variety of options that, with further engineering development, could be readily available for application to military hardware needs. The objective of this program is to provide prototype hardware for Air Force test and evaluation of design, technology, and military usefulness in support of anticipated military needs. The program will not replace the current development cycle of development/production programs, but could assist in considerably reducing the cost, time, and technical risks of the development phase. It would complement current exploratory and advanced development efforts that are more directly associated with technical solutions for on-going and proposed programs, and would assure an adequate base of demonstrated hardware and an adequate number of alternate approaches based upon some experience with hardware. Within the current R&D spectrum, the program primarily would encompass the advanced development phase and, in some instances, could contribute to pre-production development. Project selections within the Advanced Prototype Program would be based on individual parameters, attributes, and projected advantages of the project as opposed to specific R&D categorization. Prospective utilization of the experience, technical expertise and design capabilities of national defense industries would be a major consideration.

Among the key features or characteristics of the Advanced Prototype Program are new or renewed emphasis on: simplified and streamlined management and procurement approaches; minimal documentation and reporting; design goals rather than specifications; and adaptive performance measurement and evaluation. Award of a contract would imply no commitment to further programs or production. Advocacy, approval, and selection of the projects within this program would be based on anticipated military needs, rather than on formal military requirements. In essence, the Advanced Prototype concept would find application in an unusually wide spectrum of objectives and uses -- all of considerable merit.

Adoption of the Advanced Prototype Program should accrue many benefits to the Air Force, the DOD, and government. In the long term, a favorable overall cost reduction should be realized by demonstration, vis-a-vis concurrent production. Additionally, this program would provide a wide variety of demonstrated hardware items for a given resource investment. This program also could be useful in promoting a level of stability by assisting the aerospace industry in maintaining a

viable design team base, despite the historical large scale cyclic fluctuations in activity.

Imaginative approaches to simplify management and procurement procedures show promise of considerable cost savings by drastically reducing requirements for documentation and reporting. Innovation by both government and industry would be promoted in the environment so established and "more could be expected for less." Increased responsiveness to meet changing strategy or threat by a potential adversary will be realized through the Advanced Prototype Program. The program also would promote flexibility and alternatives for changes in U. S. strategy.

The removal of uncertainties in development, the provision of real data on which to base decisions, the actual demonstration of technology advancement, and the far-reaching benefits of reduced possibilities in cost and schedule overruns -- all features of the Advanced Prototype Program -- should increase confidence in decision-making and enhance the systems acquisition process.

SECTION III

SUMMARY DISCUSSION AND FINDINGS

1. Selection of Prototyping Candidates:

a. Criteria:

Some 220 proposed prototype projects were reviewed by the Study Group. The projects included systems, subsystems/equipment and technology items with start dates divided between FY-72 and FY-73. In order to select candidates, the following screening criteria for an advanced prototype project were developed:

(1) Relate to an anticipated military need
(2) Significantly reduce uncertainty (technological, operational performance, cost, scheduling)
(3) Provide new and feasible operational/technological options
(4) Offer lower cost alternatives or techniques than those currently available or programmed
(5) Have a reasonable chance of meeting technology goals
(6) Have a reasonable cost with respect to potential total program cost
(7) Be achievable in a reasonable time (24-36 months)

In general, the proposals satisfied the critera, but to varying degrees. Therefore, those projects with the potential for highest payoff and which were not being adequately developed under current programs, such as Advanced Development, were selected.

b. Selection:

The Project Selection Group identified systems, subsystem/equipment and technology items as candidates for prototyping. After review, it was determined that the FY 72 and 73 recommendation would be limited to systems. The recommended subsystems, equipment, and technology items were considered as part of the on-going "New Initiatives" effort, and were submitted separately with that program. The systems recommended for prototyping are:

	$ Millions				
	FY-72	FY-73	FY-74	FY-75	Total
Advanced Medium STOL Transport	(3.5)	10-15	10-56	0-15	20-86
Very Low Radar Cross Section (RCS) Vehicle	5	8	7	-	(20)
Large Tanker Aircraft	2	-	-	-	(2)
Lightweight Fighter Aircraft	8	46	16	-	(70)
Quiet Aircraft	4	8	3		(15)
Remotely Piloted Vehicle (RPV)	-	6	6	3	(15)
Total	19	78-83	42-88	3-15	(142-208)

c. Description:

A complete description of the recommended projects and the rationale for selection is provided in Appendix 4.

2. Management:

a. Concept:

The concept of advanced prototyping may be applied to a broad spectrum of candidates that emphasizes systems, but which also can include subsystems, equipment and technology. Therefore, a concept of management is required that establishes a common baseline adjusted to the prototype philosophy, but "adaptive" to the peculiarities of each program.

b. Objectives:

Adaptive Management has as its basic objective the offering of a maximum incentive to industry to work with the Government rather than just for it. It provides for a maximum technical return to the Government with minimum direct costs for management. It encourages and makes provisions for both the Air Force Program Manager and Industry to be imaginative and innovative in establishing the program management structure.

c. Characteristics:

Adaptive Management as applied to advanced prototyping is

characterized by: (1) small Government and industry organizations; (2) use of contractor formulated data, when data is required; (3) minimum controls and program documentation within both Government and industry; (4) deferment of elements, both managerial and technical, not directly related to prototype program objectives; and (5) testing tailored to evaluating attainments of specific program goals.

d. Managing System Prototype Programs:

The chain of events that makes possible the application of the principles of Adaptive Management to Advanced Prototype Programs starts with the delegation from Hq USAF to the Air Force Systems Command and then down to the Program Manager. It assigns to the Program Manager maximum responsibility for program decisions. It authorizes the elimination of policies and procedures unrelated to the particular program objectives and delegates authority to the Program Manager to establish with industry the minimum management methods and program control and reporting procedures to effectively execute the program. There is no requirement for managerial change at higher management levels. The major benefits gained through Adaptive Management are derived from the adjusted role of the Government and its relationship with industry at the program management level. The following paragraphs make specific recommendations:

(1) Organization:

It is not recommended that any one standard organization be established for the management of all prototype programs. There is such a variation in the potential number, scope and type of prototype efforts that organizational flexibility is as important as management adaptability. However, under the concept of Adaptive Management two primary factors limit organizational variations. The first is that the role of the Program Management Office in Advanced Prototype Programs has been adjusted to one of monitoring contractor technical progress, providing liaison and support, coordinating test activities, validating test results and accomplishing financial management. The second is that the management control systems have been simplified with major emphasis being placed on the substitution of on-site assessment by Program Office personnel in lieu of formal contractor prepared data and reports. For a full system demonstration, it is possible that the Air Force Program Management Office might be located at the contractor's facility. It is an effective way to streamline the decision process, simplify the management process, and reduce Government requests for data. It is not recommended that the Advanced Prototype Programs Office report direct to the Commander of a field element of the Command, but be placed within an appropriate Deputy organization.

Prototype Program Management organizations should not be intermingled with full scale development on acquisition programs within the Deputy organization.

(2) Procedures:

Since advanced prototypes will not initially be considered for future operational employment, many of the regulatory documents of the Department of Defense, Hq USAF, and AFSC applicable to acquisition of systems, subsystems, and equipment for the inventory are not applicable and must be waived. Examples are: Production Plan (AFSCM 84-3), Integrated Logistic Support Plan (AFSCR/AFLCR 400-10), AGE and Training Plan (AFSCR/AFLCR 375-10), Military Specification Drawings (AFR 81-10), Technical Orders (AFR 8-2, AFSCR 66-7), Value Engineering (AFR 70-16) and CSCSC (AFR 375-7).

Other requesting documents, however, will be applied during the prototype effort, but only to the extent determined essential or desirable by the prototype contractor. Response to the requirements (and degree of application) does not require preparation of any formal reports or use of structured reviews. However, the Air Force will monitor the contractor's approach to satisfying the intent of requirements. Examples: Reliability (AFR 80-5), Maintainability (MIL STD 470), Survivability/Vulnerability (AFSCR 80-19), Configuration Management (AFR 65-3) and Aircraft Structural Integrity Program (AFR 80-13).

Similarly, there are some procedures used by the Government in full scale development or acquisition which will be applied to Advanced Prototype Programs in a modified form. The modifications are generally made to achieve the flexible, streamlined management approach that is advocated. The following are examples of the modifications which will be made: (a) Verification Reviews, i.e., PDRs, CDRs) will be eliminated and personal surveillance substituted; (b) formal program reporting will be limited to Program Assessment Review (PAR) levels or below; (c) program information will be obtained either on a personal surveillance basis or in the contractor's format rather than a specified Government format; and (d) the classical AFR 80-14 concept of testing will not be followed. The Air Force will participate throughout the flight test program and in all of the progressive steps of testing.

e. Adaptation for Less than System Prototype Programs:

The same principles advocated for systems should be applied to Advanced Prototype Programs of less than system stature. "Less than systems" Advanced Prototype Programs can, with minor exceptions, follow conventional methods of management, as applied to Advanced Development

Programs. It is evident that the need for numbers of dedicated personnel as well as the requirement for collocation diminishes with the scope of the program, but it still requires the positive identification of who is the Air Force Program Manager. It has been concluded that most programs, if they are to be conducted under the concept of Adaptive Management, will require the full attention of the Program Manager. Personal attention as to what is going on must be the accepted substitute for formal data and reports.

In the case of System Advanced Prototype Programs, the need for not imposing program requirements specifically related to full scale development or acquisition was necessary. In the case of "less than systems", such documentation is even less appropriate. Contractors should be encouraged to be attentive to design consideration of reliability, structural integrity, etc., but as in the case of system prototypes not required to fulfill these considerations beyond those that the contractor normally follows as good design or fabrication processes. The modified procedures recommended for "systems" should be accepted and followed in "less than systems" programs, i.e., eliminate formal configuration reviews, eliminate control over contractor preliminary testing; simplify program status reporting to higher authority, and substitute personal observation for formal reports and contractor formated data if data is required.

f. Advanced Prototype System Testing - Aeronautical Systems:

It is recommended that the formal Category I, II and III concept of testing not be applied to Demonstration Prototype Programs. Obviously, a formal Category III OT&E is not appropriate; however, this should not be exclude participation by operational commands when appropriate. The contractor should be permitted (if not required) to demonstrate the airworthiness of the vehicle. However, all phases of the performance evaluation should be a joint undertaking. The contractor should be allowed to participate in the flight testing for he needs his own feedback to his system designers and engineers. The Air Force needs early visibility into the performance of the air vehicle to progressively evaluate performance versus goals.

When competitive testing, based on either similar or dissimilar technologies, is undertaken the goals will be clearly defined to industry at the start of the program and maintained common throughout the program.

3. Procurement:

a. Background:

Title 10 of the United States Code statutorily codifies the

basic ground rules for conduct of military procurement. Under the authority of Title 10 the Secretary of Defense has published the Armed Services Procurement Regulation (ASPR). The ASPR provides policies and procedures in amplification of Title 10. The Comptroller General of the United States has interpreted both Title 10 and ASPR in an extensive series of reviews of military procurement actions. Additionally, the various courts and the Armed Services Board of Contract Appeals have reviewed innumerable procurement cases. Their decisions have added to the broad body of published controls over the entire procurement process.

b. Statutory Requirements:

The Contracting Officer has considerable latitude under the statutes, but he must comply with all established requirements. Among the more prominent statutory requirements are: (a) solicitation of all qualified sources; (b) obtaining appropriate negotiation authority; (c) specifying the Government's requirement; (d) providing in the solicitation the evaluation criteria and its relative order of importance; and (e) conducting negotiations with all competitors within the competitive range, price and other factors considered.

c. Recommended Procurement Approach:

The recommended approach to contracting for prototype work provides a streamlined approach, but remains within the constraints of legislatively establisned rules. The following paragraphs discuss specific recommendations that could be applied generally in prototype procurements. The procedures in each case will have to be tailored to the objectives of the specific procurement.

(1) Negotiation authority has to be granted by the Assistant Secretary of the Air Force, since the effort will be R&D and negotiated under the authority of 10 USC 2304 (a) (11). A procedure is proposed where the D&F is approved at the same time as the program is approved to eliminate the usual lengthy process for D&F approval. For the FY 72 candidates, a model Determinations and Findings (D&F) has been prepared. For FY 73 and subsequent years, a class D&F authorizing negotiation of all prototyping work could be executed prior to the start of the fiscal year. This would avoid delays in release of Requests for Proposals.

(2) The source screening to determine those eligible to compete for a particular project should be accomplished by an ad hoc group reporting to the Source Selection Authority (SSA). The Request for Proposal (RFP) should be sent to only those sources selected by this screening group. The RFP should be severely limited, containing a work

statement, request for the various certifications required by law or executive order (EEO, contingent fee, etc.), and ground rules for the cost proposal. Also, a stringent page limitation will be imposed on proposal data.

(3) The proposals will be evaluated by a small (4-6) committee of recognized authorities reporting directly to the SSA. Several variations of this approach are proposed using both internal Air Force, other government, and outside personnel. Evaluation results would be documented in a brief narrative analysis.

(4) Negotiations would be conducted with all offerors within a competitive range. Once negotiations have been concluded, the narrative analysis for Source Selection would be submitted to the SSA. The contract would be awarded to the selected source(s) with a minimum of review.

(5) The recommended contract type for most of the prototype projects is a combination type with a fixed amount which is the limit of the government's obligation. The contract would recognize that all design goals may not be achieved, but would require that the contractor deliver completed hardware within the maximum amount of the contract.

(6) The proposed procedures greatly reduce the administrative aspects of the procurement process, have retained and conform to the statutory requirements, and provide reasonable assurance of an effective and sound procurement.

SECTION IV

PROGRAMMING AND FUNDING

Programming:

It is recommended that the Commanders of the Air Force Systems Command product Divisions and Centers (ASD, ESD, SAMSO, ADTC) be responsible for the establishment and execution of an aggressive and viable Advanced Prototype Program in support of their primary mission objectives. The program need not be limited only to systems, but, as appropriate, include subsystems, equipment and technology demonstrations. The programs may be based on the results of "in-house" analysis, recommendations from supporting AFSC Laboratories, or proposals from Industry. The proposals from Industry may be solicited or unsolicited. Each year the product Divisions and Centers will submit to Hq AFSC for consideration the prototype programs recommended for initiation in the following fiscal year. Program Guidance may or may not have been given the Commanders by higher headquarters on the structuring of each program response. By March of each year the AFSC Commander will request agreement from Hq USAF on his selection of prototype programs. Between March and 30 June the AFSC product Division and Center Commanders will accomplish the necessary pre-contract work so that the programs may be initiated contractually as soon as funding is available.

The AFSC product Division and Center Commanders, in keeping with their overall Advanced Prototype Program management responsibilities, and in phase with the established budget cycle, will provide AFSC/USAF supporting documentation descriptive of the general intent and approach of their programs for the year following the next fiscal year.

Financial:

Factors concerning the budget cycle are described in detail in Appendix 5. Application to specific program years follows:

1. FY 1972 Options:

In January 1971 Congress received the appropriation request for this cycle. A continuing resolution will provide obligation authority for on-going programs. New starts normally cannot be released until passage of the appropriation act. Special action must be taken to include prototype development in the RDT&E FY 1972 program. The following alternatives are possible:

a. Amend the FY 1972 appropriation request to include a prototype program element (63XXXF) covering selected projects (candidates). This may be processed as a request for supplemental appropriation or appropriation amendment, depending on the status of Congressional evaluation.

b. Select projects now in the FY 1972 budget and reprogram or reorient them for application of the Advanced Prototype approach. This procedure will provide obligation authority for on-going efforts early in FY 1972 and new starts can be funded when Congress finalizes appropriation legislation. This alternative is recommended.

2. FY 1973:

AFSC/USAF program budget reviews soon will be completed for this phase of the RDT&E program. The actions below may provide obligation authority for Advanced Prototypes in FY 1973.

a. Establish a program element (63XXXF) for Advanced Prototypes in the October 1971 submission to OSD, including a projected level of effort for future years. This will provide funds for at least one new start each fiscal year. Funding flexibility should be requested at program element level to facilitate administration of all prototype efforts.

b. Prepare a Program Objectives Data sheet (POD) describing the Advanced Prototype program at program element level.

c. Prepare supporting documentation for inclusion in FY 1973 Descriptive Summaries to be submitted to Congress in January 1972.

3. FY 1974 and Future:

Actions concerning this program should follow normal events in the budget cycle. For example, RDT&E documentation initiated by AFSC in December 1971 should include projections for generalized categories of Advanced Prototypes. During March and April 1972 Hq AFSC will evaluate generalized projections for FY 1974 and submit the Command RDT&E Program to Hq USAF in May. Subsequent to USAF/OSD reviews the FY 1974 budget will be processed through OMB for inclusion in the President's message to Congress in January 1973 requesting funds to be appropriated for FY 1974. Thereafter annual submissions will follow comparable cycles. Reprogramming actions may be considered at any time.

SECTION V

DESIGN TEAM CONTINUITY

A major concern within OSD and the Air Force has been the fact that over the past several years the DOD development/acquisition process has tended to force industry into a stop and go type operation with regard to the continuity and evolutionary nature of advanced design efforts. In the face of a decreasing R&D budget, it has been suggested that some thought be given to reorienting the design and development process to provide some continuity of these efforts, particularly within the field of aerodynamic design and technology. A "design team" can and does have several connotations and refers to rather different organizations, particularly in terms of manpower and tasks over the total cycle of activities from concept to final production. In that it has been concluded that a plan can be suggested which will promote continuity in the efforts and activities of design teams, it is important to thoroughly understand the differences in interpretations of what constitutes a design team.

In some form, design teams exist within all major aerospace contractor organizations. The levels of effort and projects being undertaken by the company to some extent dictate the composition and size of these teams. At the one extreme, the team might consist of only one or two individuals, while at the other extreme the team may consist of a much larger group of individuals representing all related engineering disciplines. The upper level might be a totally self sufficient group, incorporating a limited production capability such as Lockheed's "Skunk Works."

In actual practice a given design team tends to vary in size as the design function of the team changes from conceptual, to preliminary, to production.

Most significant is the fact that to achieve the desired continuity within a particular team, it is not necessary to maintain the team at its maximum size. What is required is to maintain the conceptual and perhaps some of the preliminary design group as a unit. This continuity should foster a higher level of technological innovation and success through the teams working with hardware and profiting from their mistakes. Also, important is the fact that it is not necessary for a design team to be continuously involved with the high manpower phases of production and fabrication design to remain viable as a conceptual unit. In fact, the cycle is such that only about one third of the time should the team be in this posture.

It must be clearly recognized that maintaining a design team active, in the above sense, does very little toward satisfying the industry desire to keep a large production work force actively employed and realizing a profit from the items thus produced. It does, however, provide a method for retaining a minimum level of effort within the aerospace industry working in an evolutionary way toward producing higher performance more capable vehicles. Additionally, this data does show that a reasonable number of teams can be kept active within the precepts of a "free enterprize" if a prototype program is properly structured over a relative long period of time.

SECTION VI

SUMMARY

An Air Force "Advanced Prototype Program" is a feasible and desirable development concept. The program is a further refinement of the "fly-before-buy" philosophy and generally will concentrate on technology advancement in the advanced development area in system-like demonstrations of aerospace hardware applicable to possible or anticipated military needs. The program will emphasize the reduction of technological uncertainty through hardware demonstration, and will feature the concept of "building and testing before production commitment." It also will feature maximum streamlining of management and procurement approaches, minimal documentation and reporting, simplified and low cost development approaches, emphasis on design goals rather than specifications, and attention to performance measurement and evaluation. A formal military "requirement" will not be a prerequisite to program initiation, and possible production or force structure options need not be basic program considerations.

Major payoffs of the program will be the following: the enhancement of technological advancement by providing for system demonstration of new, high risk technology and by encouraging technology applications; the reduction of uncertainties and risk in development; the addition of a highly desired "confidence" factor to decision making; the promotion of evolution in satisfying force needs; the encouragement of streamlined acquisition procedures; and the provision of a wide variety of demonstrated options at relatively low cost that will be readily available for application to military hardware needs. In addition, the Advanced Prototype Program will assist in maintaining continuity in the industrial design team base and has many applications in this area.

Many attractive proposals exist as candidates for the Advanced Prototype Program. Of these the ones recommended as candidates for FY 72 and FY 73 start are the following: Advanced Medium STOL Transport, Very Low Radar Cross Section (RCS) Vehicle, Large Tanker Aircraft, Small Lightweight Fighter Aircraft, Quiet Aircraft, and Remotely Piloted Vehicle (RPV).

As for management and procurement, it is evident that very streamlined management and procurement approaches can be formulated to satisfy program needs. The management concept will feature maximum delegation of authority, small government and industry organizations, program controls tailored to the program, special data limitation, deferment of non-essentials, and a testing program that will emphasize demonstration of design goals. Similarly, the procurement concept features streamlined administrative

procedures, simplified solicitation and selection processes, minimum documentation, and a contract tailored to the project -- all in compliance with the statutes of public law.

Initiation of an Advanced Prototype Program in FY 72, through reprogramming or other appropriate actions, is recommended.

APPENDIX I

Air Force Advanced Prototype Program
"Concept and Rationale" Report

Outline

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Appendix 1

Air Force Prototype Program
"Concept & Rationale" Report

1. Introduction:

It is a basic assumption that the Air Force must continually improve the capabilities of its current weapon systems and that these technological advancements must be achieved at an acceptable resource cost. To this end various management concepts have been developed and used, with varying results, over the past several decades. However, the basic sequence of events that takes place as technology evolves appears unchanging. A need results in an idea that is converted into a working model; the model is tested, changes are made, new tests are conducted and the cycle is repeated until a useful product is developed that fulfills the need, and at some point the model may be put into production. While the AF R&D strategy is generally based on the above cycle, the sequence of design, development, production, testing, and re-design have been handled under several different management schemes. Two of these procedures are referred to as Concurrent Development and Pre-Production Prototype Development. In addition, an "Advanced Prototype" concept is now emerging.

2. R&D Value of Prototype Flight Testing:

History provides visibility into the value of demonstration prototype flight testing in reducing risk when production commitment is made. Some examples of the value of past flight programs reveal (1) the identification of unanticipated problems resulting from the advanced technology used, (2) problems resulting from the penetration of new flight performance regions, and (3) design oversights.

a. The F-100A aircraft was the first truly supersonic fighter design. Although it was an extension of the general F-86 line, its performance permitted the YF-100A to encounter roll coupling and supersonic directional instability at high angles of attack. Both of these problems were new and unanticipated, had not been considered in design, and were sufficiently violent as to cause the loss of aircraft. The combination of flight test and ground research developed to investigate these problems led to significant improvements in design procedures and flight test techniques.

b. The XF92A aircraft was designed and constructed as an experimental prototype of the F-102 series. Flight tests of this aircraft

were very valuable in extending ground facility tests to full scale and evaluating the low speed performance and stability and control characteristics of delta wings. In particular, this flight program permitted the evaluation of the importance of peculiar pitching moment discontinuities on the airplane's longitudinal flight behavior. These tests led to changes to the F-102 design and allowed the B-58 and F-102 programs to be undertaken with greater assurance. It is well to note here that the later problems in the YF-102 development were in transonic drag being higher than projected, a factor which could not be investigated with the XF92A because of limited thrust. This example illustrates the need for the prototype to be reasonably representative of the aircraft designed for a specific mission to realize maximum value from a prototype flight test program.

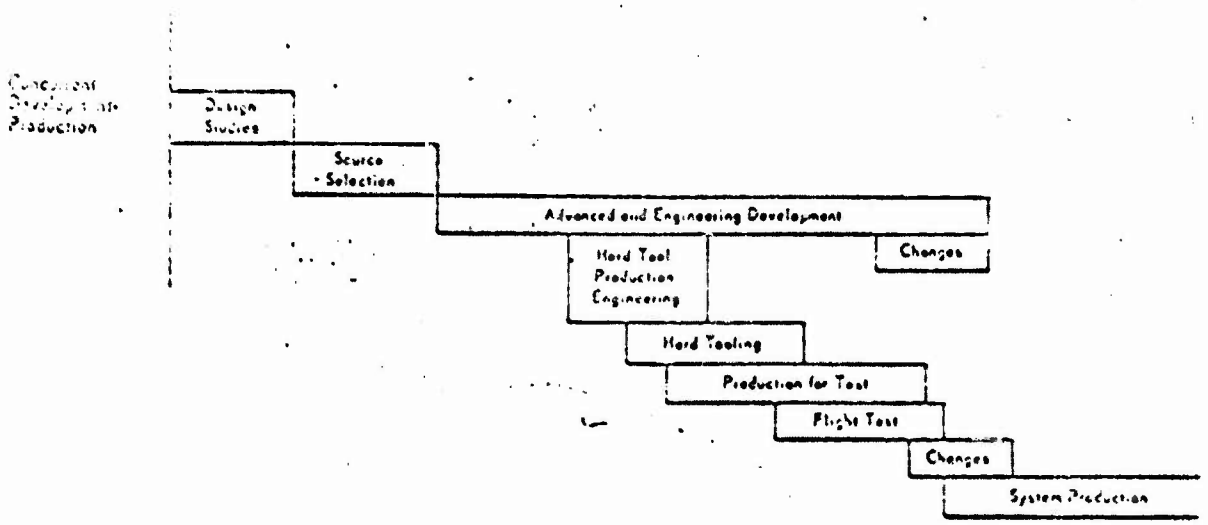
c. The XF10F-1 was the first variable sweep aircraft designed for the Navy as a superiority fighter. As such, the prototype provided additional confidence in the validity and practicality of variable sweep as applied to fighter aircraft. The XF10F-1 itself did not achieve production due to excess weight and low thrust; however, the variable sweep experience was valuable in that it revealed technology that was in part the foundation of future variable sweep aircraft.

d. The XB-70A program brought many advanced technology items in focus and as a result much valuable R&D feedback was obtained from the flight tests. In the flight tests, unanticipated problems were encountered in airframe-propulsion system interactions and aeroelastic effects on performance and stability and control. In one instance, surge in the propulsion system occurred due to the automatic inlet controls resulting in large fluctuations of altitude. Altitude could only be stabilized by manual operation of the inlet controls. All the reasons for this unanticipated phenomena were not established before the B-70 program was terminated and an inlet control system which avoided this problem area was developed through simulation and wind tunnel tests for installation on the YF-12. Also, large discrepancies were found between the flight and predicted values of aileron yaw and elevon trim positions. Additional wind tunnel tests and aeroelastic calculations are still being performed to establish the reasons for the discrepancies.

3. Development Strategies:

a. Concurrent Development Under a concurrent development strategy, a solution is adopted before the prototype has been built, tested, and revised so that this very important phase is not accomplished in parallel with the production. Graphically, this strategy may be pictured as in Figure 1.

Figure 1



b. Pre-Production Prototype Development:

Much of our current R&D strategy is geared to a building block concept prior to reaching a decision to launch the development production cycle described above. The pre-production prototype strategy delays the adoption of any one solution until the prototype has been built and tested, and until the necessary revisions are for the most part complete. This strategy is portrayed in Figure 2.

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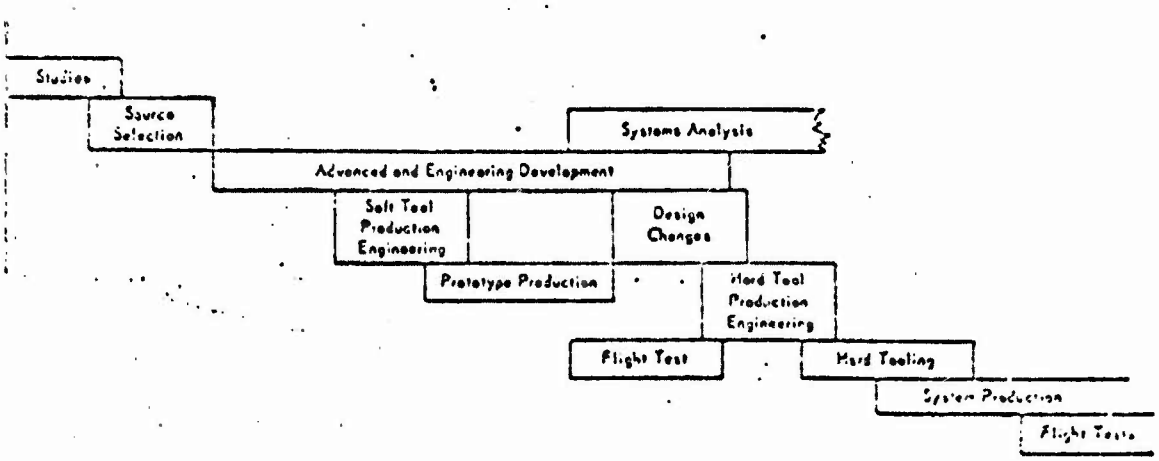
Figure 2



c. Advanced Prototype Development:

Under this development strategy, technical solutions are obtained and technical feasibility is demonstrated without production commitment in mind. The prototypes demonstrate design concepts and new technology relating to anticipated military need, and are generally in the advanced development area as working representations of systems, subsystems and other items of aerospace hardware that could show promise for the future. The program would normally last from 24 to 36 months, and would be structured to be an entity in itself. Other features are described in subsequent paragraphs, with the strategy being portrayed in Figure 3.

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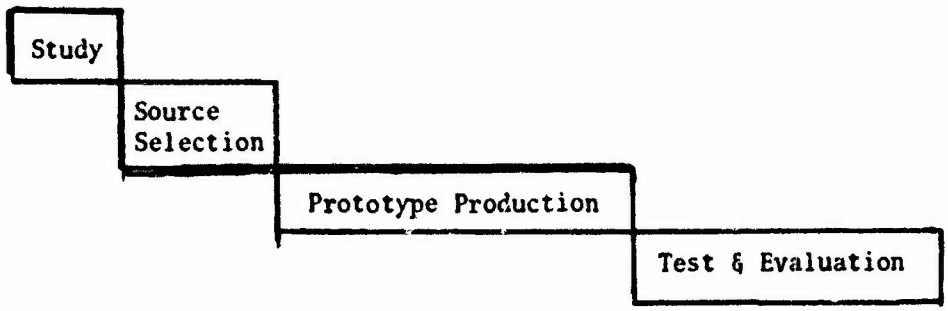
Figure 3



4. Characteristics & Features:

Included among the features of the new approach to prototype development are emphasis on new management and procurement techniques, less documentation, design goals rather than rigid specs, more latitude and innovation by design teams and industry in reaching design objectives, no commitment to follow-on programs or to production, firm price and open specs, and continuity of small design teams. Specific military requirements are not always needed and each potential advanced prototype program will be considered on its own merit.

The advanced prototype program (1) provides more emphasis on technology and on demonstrating design, interfaces, and capability before production, (2) obtains a stable of options, (3) removes uncertainties, (4) includes simplified procedures for initiating and conducting prototype development, (5) promises shorter time to initiate prototype development, (6) provides a reduction in program risks should a production decision be made, and (7) provides the option for negative decisions even after successful demonstrations have been accomplished. High technical risk could be a reason for this type of program.

5. Rationale & Benefits:

a. Reducing Uncertainty and Risk:

The difficulty of deciding whether to adopt a prototype strategy arises from the necessity of deciding a priori how substantial are the strategic, technological, and resource risks. Each risk must be evaluated by the decision-maker before the decision is made to start the production phase of a program. The outstanding advantage of prototype testing is that it provides the decision maker with proven facts upon which to base his decisions, not just hypothetical results of paper studies.

Establishing the detailed configuration of a new system is dependent on the resolution, or avoidance, of uncertainty. The

element substance of R&D is error and uncertainty, and delay in the detection and correction of error or oversight is a principal cause of inefficiency or ineffectiveness of development. The early resolution of uncertainties in objectives, technology, and cost is vital to any program in order to reduce major changes in the performance, cost, or availability. To a large extent, the rationale for employing a prototype approach is based on a forecast advantage in reducing the uncertainties involved--strategy, technological, and resource.

(1) Strategy Uncertainty:

It is difficult to forecast or predict what may constitute the future Soviet or Nth nation's military forces five to ten years from now. One only has to look back and see how well we did in the past to judge the accuracy of our estimation of the future capabilities of potential adversaries. While it is entirely conceivable that the Soviets will continue to expand their conventional land, sea, and air forces, it is also conceivable that they may put a major effort into acquiring a greater military capability in space. They may develop ASW equipments and tactics to such a highly sophisticated degree as to nullify one leg of the TRIAD. We must be prepared for such contingencies.

For a given sum of money, it is possible under an advanced prototype approach to have a number of programs underway at any given time, and hence cover a wider range of strategic contingencies. The initial commitment to a development-production program is usually several times larger than to a prototype program and thus reduces correspondingly the number of different systems which can be investigated. It also reduces the scope of the contingencies which can be faced. We have then, in a variety of prototype developments, a hedge against strategy uncertainty even though it is recognized that advanced prototype programs will need engineering development funding before production.

(2) Technical Uncertainty:

Technological problems have always surfaced during major development programs. The prototype approach reduces this risk by early identification of technology advancement and provides practical application to determine system capability. Should the applied technology used in the prototype be in error or not feasible, an alternative method may be sought to satisfy the required military capability. Prototype testing is a method of seeking technological alternatives, thus avoiding a reduced capability. It is also a way of promoting technological competition and thus reducing uncertainty.

(3) Resource Uncertainty:

Major decisions made at a time when only paper design

studies are available have tended in the past to result in cost overruns. Highly accurate cost estimates are only available when state-of-the-art advances are known and minimal. Retooling, restructuring, and redesigning are expensive additions to any program. Modifications introduced into a development program usually are done at a time after producing not one but several unacceptable models. Prototypes will not eliminate changes in production but the information gathered from several working systems will substantially reduce modification. Prototypes are hedges against unexpected cost increases. The chance for production overruns in both cost and schedule is much less when production begins after advanced prototype testing is completed. Again, it is recognized that a pre-production prototype may also be needed.

b. Benefits:

(1) Technology:

Prototype development will dampen fluctuations in the requirements pull-technology push programs toward improving weapons systems. Large advances in technology in recent years have occurred during the concurrent development of large systems with an attendant increase in costs, technical problems, and schedules. A continual prototype development effort in selected areas would provide a more logical and systematic advancement in technology as well as a reduction of risk in both cost and performance. Thus the task of the defense decision maker, though still formidable, should be considerably reduced.

(2) Meeting the Threat:

Two types of flexibility can thus be introduced into the procurement of weapon systems through prototype testing. One of these is the ability to meet the ever-changing threat and advancing technology by providing a stable of options from which the decision-maker can make his selection. Prototype testing provides a broad base of choice of future weapons. Obviously, it is not feasible to produce weapons to meet all possible technological breakthroughs, contingencies, and types of warfare. A broad prototype program gives promise to avoid "crash" programs and to counteract technological and strategic surprises. Designs will not have to be frozen early and hence future capabilities to meet operational requirements can be determined later and more positively.

(3) Decision Making:

The second type of flexibility involves the decision making process. When the initial investment in a program is relatively modest, it is likely to be somewhat easier to get the program started,

to change the program to take advantage of new technology, or to stop the program. Faced with a choice between multi-billion dollar development commitments and no development commitments at all, choice of the second alternative has usually proved easier to make. With the more modest initial commitments of a prototype program, the decision maker's task is easier. He can forestall his hard procurement decision until many of the uncertainties have been identified and/or resolved.

(4) Source Selection:

Because the prototype approach requires relatively small investments, the correspondingly large number of programs that can be undertaken holds the promise of reintroducing competitive spirit in the aircraft industry. The use of competitive prototype testing could prove to be an important factor in improving the industry's efficiency and stability.

(5) Initial Costs:

The prototype approach promises an efficient and relatively economical method of determining what not to buy. Particularly in times of financial austerity, it provides a vehicle for the resolution of uncertainties in technology, the threat, and final system cost which if undetected could precipitate major changes in the performance, availability, and cost of weapon systems. Prototypes built on "soft" tooling accept change in the development process much more readily than the "hard" tooling associated with the fabrication phase of a development-production program.

The cost of the prototype program itself can be kept low through the use of organizational simplicity, limited intervention by the Air Force, and limited reporting and documentation.

6. Summary:

In summary, the primary basis for selection of an advanced prototyping strategy is the expected advantages afforded by reducing uncertainty and risk in the areas of strategy, technology, and development. The direct and indirect benefits that can accrue from an advanced prototype program include: (1) a continuous (vs sporadic) advance in technological innovation; (2) development of alternative or parallel technical approaches; (3) reduced production cost and schedule overruns since technology and performance are demonstrated before commitment; (4) quicker adaptability to a change in strategy by a potential adversary; (5) assurance of an adequate base of demonstrated technology; (6) assurance of adequate numbers of alternative approaches based on experience with hardware;

(7) simplified management and procurement procedures; (8) readily available options to support anticipated military needs, even with a reduced DOD budget; and (9) assistance with the problem of industrial design team continuity and maintaining the industry base.

Appendix 2

Management Approach Report

Outline

Appendix 2

Management Approach Report

1. Concept of Adaptive Management:

The concept of building and testing prototypes can be, and frequently has been, used to satisfy a variety of needs, and can be applied to a spectrum that extends from a functionally complete system to a less than functionally complete subsystem (or equipment) or technology demonstration. Likewise, the distribution of management responsibility and authority between Government and industry on any given program may vary from major disengagement by the Government to total Government responsibility. No single management method or set of procedures is directly applicable to each situation.

The management system which will be used for advanced prototyping must encourage inventiveness on the part of industry. It must be structured to show contractors that the Government is ready to evaluate and accept new ideas, that we will pursue vigorously ideas with merit, that we will not impose unnecessary constraints on the contractor, and that we are prepared to recognize the degree of risk associated with each specific technological challenge and share the penalties that might be incurred in accepting the challenge. The Government must streamline its decision making process to assure that new ideas have not grown old by the time they are pursued.

The management system which will be used for advanced prototyping must always consider the objective to be achieved. The objective is the demonstration of an idea. The management system must not impose constraints which are applicable to systems under full scale development. It must not dictate rigid management systems for the convenience of the Government. The Government management approach must adjust to the particular circumstances of the program such as confidence in the contractor, degree of risk, and the merit of contractor management control systems. A concept of "Adaptive Management" must be applied.

The following sections discuss the basic objective and characteristics of Adaptive Management and delineate its application to Advanced Prototype Programs both at the systems and the "less than systems" level.

a. Objective of Adaptive Management:

Adaptive Management has as its basic objective, a maximum incentive to industry to work with Government, not just for it. The

present management approach of the defense establishment to development of new equipments and systems is characterized by stylized and formalized procedures and rigid Government control of detail elements of the program. These characteristics are frequently the cause of large organizations (both Government and industry), the generation of large amounts of data, unbending management procedures, limitations on initiative and innovation (both management and technical), high program costs and less than optimum transition of technology. Adaptive Management in its basic form delegates to the Air Force Program Manager maximum authority to establish, in conjunction with the contractor, those management methods and procedures that favor, wherever practical, industry's way of doing business. No incentive, other than profit, can be a greater inducement to industry to work with the Air Force so that we may maintain technical superiority.

b. Characteristics of Adaptive Management:

Adaptive Management as applied to Advanced Prototype Programs is characterized by:

(1) Small Government and Industry Organizations:

It is essential to severely limit the number of Government and industry personnel involved in the project. Since prototype development efforts are, by definition, aimed at acquiring maximum technical knowledge and data at a minimum cost rather than developing a complete weapon system for operational use, it is not only possible, but essential to conduct the projects with a minimum number of highly qualified people, and with well qualified and highly motivated government project managers. With small Government and industry teams, a more personal and less formal relationship will evolve which improves communication, fosters mutual trust, expedites decision making, and eliminates the need for elaborate management information and control techniques.

(2) Minimum Controls and Documentation Within Both Government and Industry:

Normal development efforts have characterized by elaborate Government imposed management control system and quantities of deliverable documentation. Adaptive Management for prototype development is characterized by the absence of Government requirements for specific management control systems, and the elimination of as much deliverable data as possible. Contractors are encouraged to use simple, straight forward management techniques to control their internal efforts. Elaborate and formal documentation is not required; however, significant information must be easily retrievable by the contractor. A simplified drawing and drawing release system is to be maintained by the contractor.

(3) Maximum Use of Contractor Formatted Data:

It has been traditional in past development programs for the Government program manager to contract for specially formatted data to meet not only his own needs, but also the needs of higher level organizations and others not under his direct control. In most cases, the contractors have the required information available in some form, but have had to reformat the data to meet a Government requirement. This cost must be avoided.

(4) Deferment of Elements (Managerial and Technical) not Directly Related to Prototype Program Objectives:

Formal requirements for such "elements" as configuration management, supporting technical data, reprocurement data, the "ilities" etc., are deferred. This is not to say that they should be purposely deleted or ignored, but rather they should be performed to the degree good engineering practice dictates and when the contractor requires them for his own internal use.

(5) Limitations of Involvement:

The interests of the operational command (ultimate user) or supporting commands (AFLC, ATC) may be considered prior to entering into contractual commitment. They may identify needs that can be accommodated in the basic program objectives, but they should not be incorporated if they will jeopardize the basic program objectives. Interested agencies should be kept informed but not involved.

(6) Testing Tailored to Specific Program Objectives:

The testing to be accomplished and the performance thresholds to which tests are conducted should be clearly defined and understood. They should take into account both the contractor's desires and the Air Force's needs. Environmental testing and the so called "shake, rattle and roll" tests are not to be deleted in-toto, but should be limited to the degree needed to establish the integrity of the system/hardware. Realistic tests are of major significance and should be adhered to throughout the program. Testing of competitive systems or concepts must be against a common standard.

2. Adaptive Management and Systems:

a. Introduction:

The chain of events that makes possible the application of the principles of Adaptive Management to Advanced Prototype Programs starts with maximum program management delegation from Hq USAF to the Air Force Systems Command. It is keyed to the acknowledgement of program

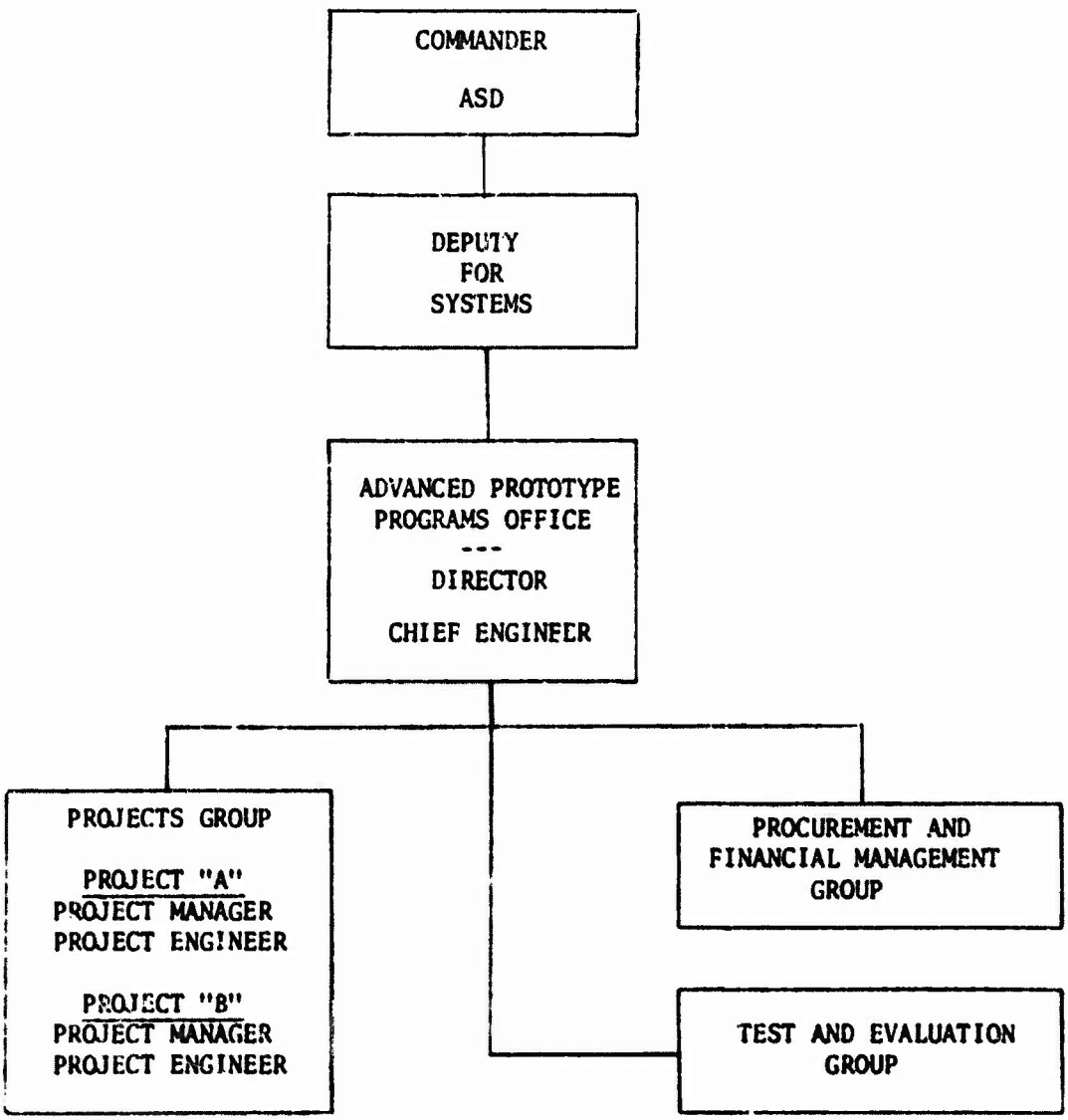
objectives and the establishment of program cost limitations. It authorizes the elimination of policies and procedures unrelated to program objectives and delegates to the Systems Command authority to establish in conjunction with industry (the contractor(s)) those management methods and program control and reporting procedures most applicable to effective execution of the program. Beyond this point there is no need for change above the Program Management level in how the program objectives are achieved. The major benefits from the application of Adaptive Management are derived from the adjusted role of Government and its relationship with industry at the Program Management level. The following paragraphs make specific recommendations. They are keyed to the basic concept of giving industry greater technical freedom in meeting program objectives.

b. Organization:

It is not recommended that any one standard organization, location or structure be established for the management of all prototype programs. There is such a variation in the potential number, scope and type of prototype efforts that organizational flexibility is as important as management adaptability. However, under the concept of Adaptive Management, two primary factors limit organizational variations. The first is that the role of the Program Management Office in Advanced Prototype Programs has been adjusted to one of monitoring contractor technical progress, providing assistance and support, coordinating test activities, validating test results, accomplishing financial management and accounting for schedule variations. The second is that the management control systems have been simplified with major emphasis being placed on the substitution of direct and frequent personal contact by Program Office personnel in lieu of formal contractor prepared data and reports. To facilitate this relationship, placement of the program manager and his Technical Liaison and Evaluation Team and test coordinator at the prototype contractor's facility is possible. But regardless of the scope or type of the Advanced Prototype Program certain basic functions must be performed by the Government. They are: Procurement, Financial Management, Technical Assessment and Guidance, and Test and Evaluation.

The following organization and job statements apply to how two System Advanced Prototype programs could be organized, manned and managed at the Aeronautical Systems Division.

ORGANIZATION



Job Statements

Director of Prototype Programs:

He is responsible for maintaining the organizational support balance to the prototype program directors. He interfaces with the equivalent levels at the laboratory and test center to obtain required support and to assure appropriate interface between laboratories and test center management prototype system/subsystem efforts and the prototype programs within the areas of his responsibility. He monitors and guides the prototype programs being conducted for ASD by AFSC laboratories.

Chief Engineer:

He is responsible for maintaining technical management consistency between all Advanced Prototype programs. He advises the Director on advanced technologies applicable to long range program planning. He is responsible for the technical evaluation of Advanced Prototype proposals received from either Government or Industry.

Procurement and Financial Management Group:

This Group is responsible for executing and administering the Government's contract with Industry, for assuring contractor compliance with the contract and the fulfillment of Government obligations under the contract. This Group is also responsible for developing, in conjunction with the contractor, the management methods and procedures that will provide visibility to the Program Manager and higher authority on the financial status of the program and its relationship to performance and schedule goals.

Project Manager:

He is responsible for the development of the Project Management Plan. He is the final authority on how the program objectives will be accomplished within established limits. He is responsible for the assessment of program progress and problems and for the reporting required by higher authority.

Project Engineer:

He provides to the Project Manager a Government assessment of the technical approach being proposed or followed by the Contractor, his progress and his problems. He works directly with the Contractor to provide technical assistance and advice. He works with and calls upon, as appropriate, the full technical community of the Government. He provides the Government's evaluation of the contractor's attainment of technical goals.

Test and Evaluation Group:

This Group is responsible for developing, in conjunction with the Contractor, test plans suitable for evaluation of the article being fabricated and for coordinating the test program with supporting Government test agencies. They supervise the demonstration test program to assure a thorough evaluation of actual performance compared with established performance goals. They also assure that competitive evaluations are conducted in a manner that is fair and complete with respect to each test article.

3. Procedures of Adaptive Management:

The specific procedures used, and not used, by the Program Management Office are the heart of the Adaptive Management Concept. It is through this approach that Industry is afforded a maximum opportunity and freedom to concentrate on primary program objectives and for the Air Force to maintain full program visibility at a minimum of cost.

a. Procedures Not Applicable:

Since demonstration prototypes are not initially considered for future operational employment, many of the regulatory documents of the Department of Defense, USAF, and AFSC applicable to acquisition of systems, subsystems, and equipment for the inventory, will not be applicable to acquisition of demonstration prototypes. The following are examples of requirements that are considered not applicable to advanced prototypes.

(1) Planning Documentation:

(a) Personnel Subsystem Plan (AFR 30-8):

This plan identifies types and numbers of personnel and training requirements for people required to operate and maintain systems, subsystems and equipment being acquired for operational employment.

(b) Integrated Logistic Support Plans (AFSCR/AFLCR 400-10):

There is no requirement to plan for initial and follow-on logistic support for advanced prototypes. Any required support, other than initial GFE, will be provided by the contractor.

(c) Production Plan (AFSCM 84-3):

Since no follow-on production of advanced prototypes is planned initially, there is no requirement for a Production Plan.

(d) AGE and Training Equipment Plan (AFSCR/AFLCR 375-10):

There will be minor requirements for AGE and training equipment by the prototype contractor; this will not require any formal planning documentation.

(e) Real Property Facilities Plan (AFM 85-26):

Advanced prototypes will not require acquisition of new construction; therefore, there is no need for a Real Property Facilities Plan.

(f) System Engineering Management Plan (MIL-STD-499):

No formal System Engineering Management Plan will be required for advanced prototype development. The contractor will establish his own system engineering criteria.

(g) Technical Performance Measurement Plan (MIL STD-499, AFR 375-7)

No formal milestones demonstrating technical performance will be required of the contractor in advanced prototype developments.

(2) Engineering:

(a) Military Specification Drawings (AFR 81-10):

There are no requirements for MIL Spec drawings. Contractor drawings will be used throughout the prototype development.

(b) Technical Orders (AFR 8-2, AFSCR 66-7)

No Technical Orders are required for advanced prototypes. Contractor data will be used exclusively.

(c) Design Standardization:

The advanced prototype contractor will be given maximum design flexibility. None of the provisions of the Design Handbooks will be mandatory requirements for the contractor. None of the requirements of the Defense Standardization Program are applicable.

(d) Human Engineering (MIL-H-46855):

Specific Human Engineering contractual requirements are not applicable to advanced prototypes.

(3) Program Management:

(a) Value Engineering (AFR 320-1):

Contractual Value Engineering requirements are not applicable to advanced prototypes.

(b) Management Control Systems List (DOD I 7000.7, AFR 600-1):

No formal management control systems will be applied to advanced prototype contracts.

(c) Cost Reduction Program (AFM 400-12):

No formal cost reduction considerations are applicable to advanced prototype programs.

(d) Work Breakdown Structure (AFR 375-8):

No formal work breakdown structure will be applied to advanced prototype contracts. The contractor will be provided maximum flexibility to structure the program.

(4) Cost/Schedule:

(a) Cost Information Reports (DOD I 7041.2, AFR 173-5):

No formal Cost Information Reports are proposed for advanced prototype programs.

(b) Cost Schedule/Performance Control System (AFR 375-7):

No formal reporting requirements will be imposed on the advanced prototype contractor.

b. Contractor Applied Procedures:

The following subjects will be applied during the prototype effort, but only to the extent determined essential by the prototype contractor. Response to the requirements (and degree of application) of the following does not require preparation of any formal reports or use of structured reviews. However, and to the degree appropriate to the program, the Air Force will monitor the contractor's approach to satisfying the intent of requirements.

(1) Reliability (AFR 80-5, MIL-STD-785)
(2) Maintainability (AFR 80-5, MIL-STD-470, 471 and 473)
(3) Survivability/Vulnerability (AFSCR 80-19)
(4) System Engineering (MIL-STD-499)
(5) System Safety (AFR 127-1)
(6) System Security Engineering (AFSCM 207-1)
(7) Quality Assurance (ASPR Sec XIV, AFR 74-1, 6 MIL-Q-9858)
(8) Configuration Management (AFR 65-3)

(a) Specification Practices (MIL-STD-490)
(b) Configuration Audits (MIL-STD-483)
(c) Change Control (MIL-STD-480)

(9) Aircraft Structural Integrity Program (AFR 80-13)
(10) Integrated Logistics (DOD Dir 4100.35)
(11) Make-or-Buy (ASPR Sec III, Part 9)

c. Modified Procedures:

There are some procedures used by the Government in Full Scale Development which will be applied to Advanced Prototype Programs in a modified form. The modifications are generally made to achieve the flexible, streamlined management approach advocated in this report. The following are examples of the modifications that will be made:

(1) Verification Reviews:

(i.e., PDRs, CDRs) will be eliminated and personal surveillance substituted. The objective of Preliminary and Critical Design Reviews in Full Scale Development Programs is for the Government to control contractor design approaches. The concept of a Advanced Prototype Program is to allow the contractor design freedom. Such reviews are, therefore, unnecessary. By frequent contact with contractor design engineers, Air Force Program Office Personnel will be able to

keep abreast of the contractors design approach and provide him technical assistance when it is appropriate.

(2) Formal Program Reporting:

Will be limited to Program Assessment Review (PAR) levels or below. Depending on interest at the Secretary of the Air Force level, some programs may be reviewed as current PAR programs are. There should be no requirement for Selected Acquisition Reports to DOD or to Congress.

(3) Program Information:

Will be obtained either on a personal surveillance basis or in the contractor's format rather than a specified government format as compared to Full Scale Development Programs which usually require a certain deliverable data in formats specified in AFSC/AFLC Reg 310-1. The Advanced Prototype Program Management Technique strives to cut costs by keeping deliverable data to an absolute minimum. Contractor performance will be monitored by frequent personal contact between his people and Air Force Program Office personnel. This contact will be supplemented by review of the contractor's documentation at his facilities. In some cases, data will have to be delivered to the Air Force. In these cases, the contractor format for such data will be used as is available. This eliminates the need for the contractor to reformat his internal documentation system with the attendant costs involved.

d. Test and Evaluation:

Some changes will be made in the current Air Force Procedures for Test and Evaluation. In accordance with the current AFR 80-14, the Air Force exercises control over all contractor testing. This control has been eliminated in order to achieve the objective of maximum contractor flexibility. The Air Force will participate with the contractor in the development of his general test plan, but daily tests and test procedures will be under the control of the contractor. Thus, he is free to institute further investigation of test results which he feels is necessary and to eliminate tests which are not necessary based on his own technical judgment.

e. Test Facilities:

A second area where government control is reduced is in the selection of test facilities. The contractor will be allowed to use his own facilities or to request government facilities for his test program. This freedom is also in accordance with the basic tenent of Advanced Prototype Management of allowing the contractor to manage his

own resources and keep the cost of the individual program to a minimum.

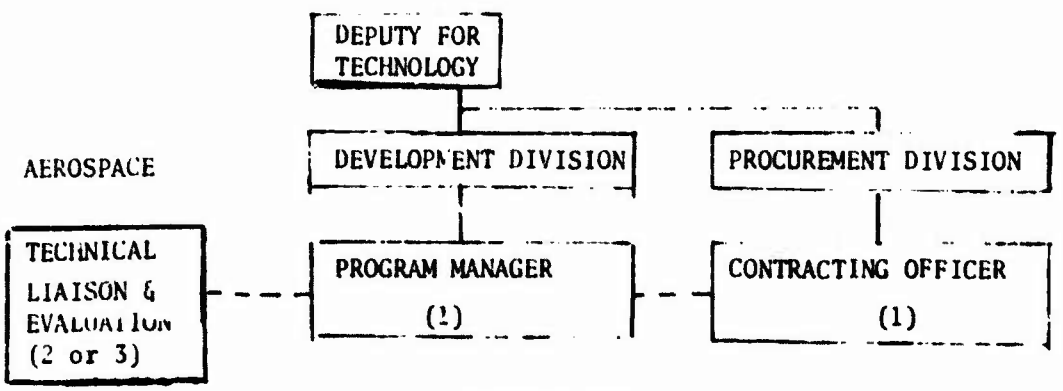
4. Adaptive Management and "Less Than Systems":

a. Introduction:

As has been previously discussed, the concept of prototyping can apply to a broad spectrum of interests from a functional complete aerospace system to the exploitation of a specific technology. Likewise a prototype might fall into a general category such as experimental or developmental, but in any event, the basic intent of Advanced Prototype Program is to provide information through fabrication, test, evaluation, or demonstration prior to major program commitments. The preceding section dealt with the specific application of the principles of Adaptive Management to system size programs. The same principles can and should be applied to Advanced Prototype Programs of "less than system" statute. In the case of "systems" a new management concept had to be defined. In the case of "less than systems", Prototype programs approach the conventional methods of management, as applied to Advanced Development Programs.

b. Organization:

Just as it is illogical to establish a standard organization location of structure for the management of System Advanced Prototype Programs, it is also illogical to recommend a standard organization for "less than system" demonstrations. However, the same functions performed by a system management office (i.e., Procurement, Financial Management, Technical Assessment and Guidance, and Test Evaluation) must be performed regardless of the scope of the program. In the case of a subsystem or equipment prototype demonstration (i.e., Magnetic Suspension Design Assembly), an organization might be structured at SAMSO as follows: It is adaptable to expansion for several Prototype Programs by combining common functions. Depending upon the nature of the program, the Program Manager and his technical team may or may not be located at the contractor's facility.



It is evident that the need for numbers of program dedicated personnel diminishes with the scope of the program. As in the case of systems, an Air Force Program Manager must be identified. Personal attention will be the accepted substitute for formal data and reports. Programs that fall within the general area of technology demonstrations can essentially be considered as Laboratory programs. The only organizational variation from a subsystem or equipment organization might be that even less than a full time program manager per program would be required. This would have to be determined by the nature of the program.

c. Procedures:

In the case of "System" Advanced Prototype Programs, the need for not imposing program requirements specifically related to Full Scale Development or Acquisition was necessary A.3.c.(1). In the case of "less than systems", such documentation is even less appropriate. Contractors should be encouraged to be attentive to design considerations of reliability, structural integrity, etc. (A.3.b.(2), but as in the case of System Prototypes, not required to fulfill these considerations beyond those that the contractor normally follows as good design or fabrication processes. The modified procedures (A.3.c.(3) recommended for "Systems" should be accepted and followed in "Less than Systems" Programs, i.e., eliminate formal configuration reviews and control over contractor preliminary testing. Simplify program status reporting to higher authority. Substitute personal observation for formal reports and contractor formatted data if data is required. No other procedural changes are recommended as being uniquely related to the execution of technology prototype programs.

5. Advanced Prototype Testing - Aeronautical Systems:

Since the major objective of any Advanced Prototype Program is to establish and evaluate the actual performance capabilities of the system, test and evaluation is of paramount importance. Historically, the Air Force has followed the classic approach established by AFR 80-14 (i.e., Category I, II, and III). Under AFR 80-14, the Air Force even exercises control of the Contractors Category I test program. These procedures may be appropriate for Full Scale Development; however, under the Demonstration Prototype concept, where goals have been substituted for requirements and the contractor has been given design freedom to achieve the goals, they are inappropriate. Nevertheless, both the Air Force and the Contractor must arrive at a plan that will satisfy their individual needs for information that can only be obtained by flight testing. Furthermore, it must be recognized that there will be only a limited number of test articles available for evaluation.

Several options as to how the Air Force's and the Contractor's interests might be satisfied. They are:

Case I — The Contractor performs all flight testing and the Air Force is strictly observer.

Case II — The Contractor performs an air worthiness demonstration and the Air Force, with no contractor participation, accomplishes the flight performance evaluation.

Case III — The Contractor and the Air Force jointly perform both the air worthiness demonstration and the flight performance evaluation, with the Air Force entering the program at the earliest possible point in time. Contractor participation would be reduced and phased out as soon as his needs for engineering design information have been satisfied.

Case IV — The Air Force would perform all flight testing to the total exclusion of the Contractor.

Obviously CASE I would not satisfy Air Force requirements for validated performance data or mission acceptability information. CASE IV would not be in consonance with the intent of the program. It must be recognized that the contractor may elect to incorporate design adjustments in the air vehicle during the flight test portion of the program and that his pilots are operating members of his integrated engineering design team. CASE II was dismissed as being the conventional sequential method of testing. Because it is sequential, it does not provide for the maximum amount of data in the minimum of time with limited resources. CASE III is recommended and the detail planning for the joint test program should be developed between the Air Force and Contractor Program Managers.

In evaluating air vehicles designed to common goals but using similar technology, it is extremely critical that the instrumentation systems, ranges and other measurement devices be the same for all competitors and employed under the same conditions. Data must be collected by like devices to the same tolerances, in order to minimize the effect of this equipment on the evaluation. The program must be structured to eliminate the variability of human operators from the evaluation of the designs. This may be achieved by rotating air crews from one design to the other throughout the program. The Air Force participants must realize that one contractor cannot be permitted to gain an advantage over the other by disclosure of data.

In the case of air vehicle advanced prototypes using different technologies, the problem of using like instrumentation systems and

facilities is diminished. Since many of the parameters to be measured are not common because of the differences in technology being used, common data gathering facilities need not be used. Measurement of absolute performance must be to the same tolerances.

Appendix 3

Procurement Approach Report

Outline

Appendix 3

Procurement Approach Report

1. Introduction:

For prototype developments the procurement approach has been structured around the concept of specifying simple, saleable, flexible and supportable procedures. A basic premise is that prototype candidates would enter the procurement process at different thresholds in the development spectrum, thus requiring varying procurement approaches to satisfy each individual need. Prototype managers should not be constrained or limited to a single approach, but rather be provided with maximum flexibility to acquire and manage prototype programs within the legal limits established by statute and directives. The admonition to keep the prices firm and all other elements open has been fully considered and adhered to.

In the paragraphs that follow, a number of tasks and considerations in the procurement process have been addressed, and the principles and alternatives, where appropriate, have been considered and the basis for "recommendations" established. In addition, a typical Procurement Plan (which includes a Source Selection Plan and D&F), Request for Proposal, and Model Contract have been provided using an Advanced Medium STOL Transport as the model.

2. Solicitation and Selection:

a. Negotiation Authority:

(1) Discussion:

All contracts entered into by the Department of the Air Force for property other than land, for which payment is to be made from appropriate funds must, pursuant to 10 USC 2304(a), be made by formal advertising unless one of the 17 statutory exceptions set forth therein is applicable. The procurement of prototypes by formal advertising is not feasible or practicable, primarily because the effort required cannot be described with the specificity required by 10 USC 2305(b). In addition, it is essential that the Government retain the opportunity to discuss and negotiate the terms of the contract and the effort to be performed thereunder with the prospective offerors, prior to award. Therefore, an appropriate statutory authority permitting the negotiation of the contract must be determined and utilized.

10 USC 2304(a)(11) authorizes the negotiation of contracts for property or services that the Secretary or Assistant Secretary of

the agency determines to be for experimental, developmental, or research work, or for making or furnishing property for experiment, test, development, or research.

10 USC 2310(b) requires that each determination under 10 USC 2304(a)(11) be based on a written finding setting out the facts and circumstances that are clearly illustrative of the conditions described in 2304(a)(11).

10 USC 2311 prohibits the delegation of the authority to execute D&Fs under 2304(a)(11) below the Assistant Secretary level for contracts in excess of $100,000.

10 USC 2310(a) authorizes D&Fs for a class of purchases or contracts as well as for an individual purchase or contract.

The Comptroller General has interpreted the applicable statutes to require that the D&F be executed prior to issuance of the solicitation.

(2) Recommendations:

That 10 USC 2304(a)(11) be utilized as the authority to negotiate contracts for the procurement of prototypes, since the proposed prototype effort involved is for experimental or developmental work, or property to be furnished for experiment, test or development.

That class D&Fs for prototypes be executed and utilized to the maximum practicable extent. The supporting documentation required by the statutes cited above for most contracts for prototypes will be virtually identical. Class D&Fs will avoid the unnecessary effort and time required to process individual D&Fs.

The present requirements (particularly those in ASPR Appendix J) for documentation to support requests for D&Fs under 10 USC 2304(a)(11) greatly exceed the statutory requirement. Program approval to proceed with individual procurements of prototypes should be issued pursuant to the separate procedures established for that purpose, whereas the documentation required to support the D&F should be limited to that information required to justify use of the negotiation authority. This approach will result in considerable savings in manpower and time.

The D&F should be submitted with the Advanced Prototype Program Plan and executed concurrently with approval to proceed with the program. The information necessary to support the D&F will be contained in the Plan. Considerable time and effort will be saved if the D&F is furnished to the procuring activity concurrent with program approval.

b. Statement of Work:

(1) Discussion:

Statements of work (SOW) for prototyping must be clear, complete, and individually tailored by technical and contracting personnel to attain the desired degree of flexibility for contractor creativity, both in submitting proposals and in contract performance.

The statement of work for prototypes should be specific in such areas as: (a) the overall description of what the Air Force desires to achieve from the prototype so as to assure that effective competition (if applicable) is obtained, and that funds will be properly expended, (b) the test results, reports or other data to be delivered, and (c) the tests or evaluations to be performed on or with the prototype. On the other hand, the statement of work should be sufficiently generalized so as not to inhibit innovative contractor concepts.

(2) Recommendation:

Wide latitude presently exists for preparing statements of work for prototypes. Section 1, Part 12 of ASPR, provides broad guidance for development of contract specifications and work statements. ASPR 4-105 furnishes additional general guidance concerning the preparation of prototype development requirements. Initiators are not constrained by narrow, restricted guidance and should exploit this broad latitude in developing prototype statements of work. For prototyping purposes, AFSCM 70-5, the work statement manual, is too structured and complex and should not be used for prototype programs. Prototyping statements of work should be simple, concise and limited to only the primary outputs of the prototype effort.

c. Methods of Solicitation:

(1) Discussion:

Generally, it is necessary to formally solicit all potential offerors to insure fair and impartial treatment. Presently, Requests for Proposals (RFP) and Requests for Quotations (RFQ) are specified for formal solicitation use. RFPs/RFQs are normally supplemented by synopses of procurements published in the Commerce Business Daily.

For prototype procurements, the method of solicitation should insure complete coverage of potential offerors without imposing unduly rigid procedures. The method(s) to be used should be individually selected for each procurement action so as to assure compliance with the principle.

In selecting the method of solicitation for procurement of prototypes the objective is to obtain the best qualified, cost effective

source(s) by using either "unlimited" or "limited" competition. "Unlimited" competition contemplates generally unrestricted consideration of potential sources in industry and the educational and non-profit community. "Limited" competition involves restricting solicitation to one or more sources for various valid reasons such as contractor capabilities, unsolicited proposals, time constraints, and resources available for evaluation.

When a contractor has a new idea or new product in the field of advanced development, it can be discussed with him and he can be encouraged to submit a proposal. Subject to obtaining a negotiation Determination and Findings, direct negotiations can be accomplished without a formal solicitation. An unsolicited proposal would be processed in accordance with ASPR 4-106 and AFSCR 80-8. Acceptance of an unsolicited proposal is the extreme of "limited" competition since a single source procurement results.

The time available to perform required pre- or post-award actions might require restricting competition to selected sources. However, time restrictions by themselves are difficult to support and rarely should be used.

(2) Alternatives:

Several methods for soliciting are presently included in ASPR. Other methods may require a formal deviation.

(a) The synopsis of proposed procurements is statutorily required (with limited exceptions) and fully explained in ASPR Section 1, Part 10. Individual or class synopses may be published in the Commerce Business Daily. The synopses process itself is normally used in conjunction with RFP/RFQ, but could constitute the sole method of solicitation by providing full and complete information concerning the proposed prototype procurements. The Commerce Business Daily notice should, in addition to other information, list the criteria offerors must meet in order to be determined to be fully qualified to assure that all sources were notified as to the qualifications required. This alternative may not be used when classified information is involved and may not be practical for system type prototypes when extensive information is necessary for solicitation.

(b) Formal RFPs/RFQs are fully explained in ASPR Section XVI, Part 1. An RFP is used only in fixed price procurements where limited negotiations are contemplated. RFQs are for use in all other situations; i.e., all cost-reimbursement procurements and fixed price procurements contemplating more than limited negotiations.

(c) In a single source or emergency situation, proposal(s) could be solicited verbally. When multiple sources are involved, complete requirement and selection criteria must be provided and immediate written confirmation should be issued.

(d) Present procedures do not provide for disclosure of funds planned for allotment to the procurement. For prototyping procurements, offerors could be advised in the solicitation document that not more than "X" dollars are planned for allotment to any individual prototype contract to be awarded.

(e) Sources sought announcements could be introduced through periodic or annual technological briefings or notices. The briefings could be singular or there could be a series of briefings at different CONUS locations. A notice of the Air Force's proposed briefings could be published in the Commerce Business Daily. Ground rules concerning Prototype Announcement Proposals (PAPs) would have to be published and observed including: (a) a specific time period for receipt of PAPs, (b) preferred contract type(s) to be included in the announcement, (c) data protection to be provided by the Government similar to that offorded unsolicited proposals, and (d) criteria for selecting competitive proposals. The Government: (a) would not be committed to make any award as a result of such solicitation, (b) would not be required to otherwise solicit competitive offers, and (c) could conduct further solicitation on a more formal basis if it chose. Contractors would: (a) be encouraged to submit PAPs in sufficient specific detail to reflect achievement of the prototype requirements, (b) express the contract type proposed, and (c) provide DD Form 633 "Certificate-Supportable Cost Information". This method would require an ASPR devlation.

(3) Recommendations:

That, except for valid single source actions, announcement of prototype requirements should be accomplished through synopses published in the Commerce Business Daily or by formal solicitation via the RFP/RFQ process to eliminate any suggestions of unfairness or favoritism in soliciting sources.

That the sources sought announcements (briefings and synopses) discussed in paragraph above should be employed. This would eliminate the need for individual or class synopses, keep the Air Force's prototype needs continually in the public view, and provide a simple, effective mechanism for obtaining prototype proposals.

That planned funds for prototyping as expressed in paragraph above should be specified. Offerors would operate from a common baseline.

That the Commerce Business Daily notice be used as the sole solicitation method for prototype efforts whenever possible. This method is simple, will maximize competition, and may be practical for technology prototype projects.

d. Sources to be Solicited:

(1) Discussion:

In accordance with applicable statutes and directives, the Government must obtain maximum competition consistent with the size and complexity of the procurement. The buying activity compiles a potential source list comprised of those contractors who held prior contracts for similar products or services, sources who have expressed an interest in the program or similar products. The list is further augmented by inputs from the AFSC mechanized source list. In addition, a notice is included in the Commerce Business Daily. Requests for Proposals/Quotations are then provided to all identified potential sources.

For source selections conducted under the provisions of AFR 70-15 and AFM 70-10, source list screening criteria is employed to insure that adequate competition is obtained while limiting the number of requested proposals to an economical and manageable quantity. Under this procedure, the Source Selection Advisory Council reviews and approves these criteria, appoints a source screening work group, and reviews and approves the results. The Request for Proposal is then released to the companies on the approved source list. For prototype source screening, this process should be as simple as possible while being equitable to industry.

The sources to be solicited should be fully qualified and limited to a reasonable number. When a single source offers a unique or novel approach, there should be no hesitancy to contract solely with that source.

Soliciting all companies who may express an interest in a particular prototype effort could lead to an unmanageable number of proposals to evaluate, an unproductive use of personnel to evaluate these proposals, and unnecessary cost and effort to the sources who might propose. Proposals should be solicited from only those sources who have been screened and found qualified to perform the prototype effort. Sources solicited should meet the following general criteria:

(a) Must have a security clearance commensurate with the work to be accomplished.

(b) Must be a United States contractor.

(c) Must have, or can obtain, the physical facilities required to design, develop, fabricate and test the prototype.

(d) Must have recent experience in the management, design, integration, development, fabrication, test, and production (if applicable) of a modern weapon system, subsystem, or equipment of the complexity envisioned for the prototype.

(2) Alternatives:

The solicitation may be limited to only one source when only one is fully qualified to perform, or where an unsolicited proposal for a unique prototype approach or development has been received.

Proposals could be solicited from all interested sources. This method would allow for the maximum number of companies to submit proposals. This alternative is not considered to be practical. Submission of a large number of proposals could waste the time and effort of the Government and the companies who were only marginally qualified to perform.

Solicitation of sources should be restricted to those companies who have been screened and found qualified to perform using the criterion discussed above. This screening action could be accomplished by an ad hoc group, or the manager responsible for the prototype program without requiring formally constituted review and approval groups. However, sources screened and found not to be qualified, who request an opportunity to propose will be advised of the reasons for limiting the solicitation and that it would be unlikely that he would receive an award.

(3) Recommendations:

That solicitation be limited to a single source where only one company is qualified, or when an unsolicited proposal is received that offers a unique or novel approach. Under circumstances where only one source is qualified, or where a company offers a unique or novel prototype approach, solicitation of other sources would serve no useful purpose.

That Requests for Proposals be forwarded to only those sources who have been screened and found to be fully qualified. Prototype contracts will normally require peculiar capabilities and facilities. Without these capabilities and resources, a contractor could not expect to compete realistically for the contract.

e. Proposal Data:

Data are required from offerors for two basic purposes: evaluating the proposal and contracting. Only data essential to the above will be requested.

(1) Discussion:

Contractual data consists of documents such as specifications, statement of work, test program and other documents that will become a part of the contract. Evaluation data is not incorporated in the contract and consists of the design approach to the problem along with management and financial data necessary for source selection. The contractual data will be validated, and any required changes will be negotiated. All other data will be used in the evaluation leading to the selection of the source. The type and volume of data will vary with the complexity of the procurement. Examples of data that should not be requested for prototyping include production plan, manufacturing plan, tooling plan, integrated logistics plan, make or buy plan, quality control plan, reliability program plan and other "ility" plans.

The Air Force has had underway for some time efforts to control data requested in the RFP and to avoid contractor submission of unnecessary data. In line with the prototype approach further reductions in data will be emphasized. The concept of more realistic prototype competition vis-a-vis paper competition, lends itself to reduced documentation costs.

The volume and type of proposal data required for prototype programs necessarily revolves around the immediate needs of the instant prototype acquisition. For example, under the A-X Program, all proposal data requirements were screened to assure that only data essential to a complete and fair proposal analysis and directly relatable to the prototype acquisition was requested. The usual planning documentation and/or contract provisions such as quality assurance, configuration management, reliability, maintainability, reports, etc., were either reduced or deferred. Acquisition of this documentation prior to establishing a preliminary product baseline is of no significant value and results in unnecessary cost. In the A-X Program, the technical/specification portion of the proposal was limited to 350 pages, with test, evaluation, management, cost, etc., limited to 10 to 50 pages.

(2) Alternatives:

The varied prototype programs pose the need for diverse approaches to documentation requirements. The volume and type of proposal data should be limited to the needs of the instant prototype requirement. Typical proposal data requirements could consist of the engineering/technical approach, test/evaluation plan, management plan, GFE requirements and cost proposal. There is no requirement for the numerous "ility" plans which directly relate to full engineering development and have no direct or significant relation to the prototype procurement.

(3) Recommendation:

That austere page limitations on requested data be included in the RFP, e.g., 35-50 pages for technical descriptions (except specifications), 10-25 pages for cost proposals, and 5-15 pages for the management approach.

f. Evaluation Criteria:

(1) Discussion:

In competitive procurements for prototypes, criteria for evaluation must be developed to provide discriminative capability during evaluation. The criteria must be furnished to the prospective contractors in the solicitation and be limited to those characteristics of the prototype system that are fundamental.

Evaluation criteria and their relative order of importance must be defined and included in the solicitation. Criteria should not overlap, be as simple as possible, and still permit an effective selection. Issues that will not affect the selection process should not be included. However, sufficient information must be requested in the solicitation to permit evaluation against specified criteria.

(2) Recommendation:

Both general and specific evaluation criteria will be developed for each competitive procurement. These criteria will establish the scope of the evaluation to be conducted. Evaluations may be subjective, and will not require extensive, detailed submissions by offerors. Evaluation criteria should include, and may be limited to, the following:

(a) General Criteria:

1. Contractor's Performance Capability:

A review will be made to determine the demonstrated competence and accomplishment by each offeror in the field of technology applicable to the proposed effort. Additionally, management and financial capability will be reviewed to the extent necessary to determine whether a follow-on production effort is likely, production capability should also be considered. The prospective offerors must be advised if production capability is to be assessed.

2. Contractual Considerations:

The soundness and adequacy of the offeror's specifications/statement of work/plans will be a factor. The offeror's acceptance of contract terms and conditions as contained in the solicitation will also be an important consideration.

(b) Specific Criteria:

1. For each project, specific criteria shall be developed for the evaluation.

2. Ordinarily, the most important consideration will be the area of technology to be exploited. Emphasis may be placed on creative approach, innovative techniques, or other high-risk areas, rather than soundness of technical approach or use of existing technology. This will have to be clearly spelled out to the competing offerors, and they should also be advised that the evaluation may be, for the most part, subjective.

g. Selection of Prototype Contractor(s):

(1) Discussion:

When only one source is available, such as when an unsolicited proposal is to be accepted, the buying activity proceeds directly to negotiation. However, in most prototype procurements there will be more than one qualified potential contractor willing to undertake the prototype program. To insure that a fair and impartial selection activity is conducted, a method of performing evaluations and preparing written analyses must be devised and used. Present methods, described in AFR 70-15 and AFSCM 80-10, often involve large numbers of people and generate significant amounts of data. A prototype program source selection could be conducted without complete compliance with these formal procedures and still result in documentation required to support contract award.

Source selection for prototype procurements should be conducted in a simple, straight-forward manner to reduce administrative time to a minimum, but still reflect a complete and supportable evaluation of the competing proposals. Authority to make the selection should be vested in a single individual. In order to make the best selection he must have the advice of competent specialists in the field of endeavor involved.

Evaluation teams have ranged from two or three highly qualified people to several hundred personnel, dependent upon the complexity and magnitude of the program. The method of solicitation can materially impact the resources required for evaluation, e.g., AFR 70-15 or AFSCM 80-10. For prototype procurements, limited evaluation teams could be employed. A source selection accomplished by a small ad hoc group of specialists (source selection committee) is the most effective way to select the contractor.

(2) Alternatives:

Existing procedures will accommodate most source selections for prototype programs, but some modification and streamlining should be done to reduce the time without degrading the quality. The provisions of AFR 70-15 cover all levels of competitive negotiated procurements, but they require complete and very detailed documentation of every step of the process. The nature of prototyping is such that more subjectivity is likely to be used in evaluating proposals. Generating volumes of supporting data is not going to substantially decrease that subjectivity. Therefore, most of the formal documentation can be dispensed with, while accomplishing the fundamental steps outlined in the regulation.

AFSCM 80-10 prescribes procedures for selecting sources for research and development projects based on technical evaluations of the proposals. This regulation also provides for a detailed grading system designed to achieve maximum objectivity, and would not be suitable for prototype projects without modifications.

(3) Recommendations:

That the source selection should consist of a review of all proposals by a designated small group of specialists (Source Selection Committee). A narrative report will be prepared and submitted to the Source Selection Authority (SSA). The evaluation should be subjective in nature, due to the emphasis on broadening the technological base and exploiting new ideas, rather than on low risk approaches to satisfaction of specific operational requirements.

That the Source Selection Committee should consist of recognized authorities specializing in the area of technology to be exploited by the prototype efforts. The committee should normally be composed of no more than five (5) people, augmented as necessary by consultants who would serve in an advisory capacity. The chairman of the committee would be appointed by the Source Selection Authority.

There are a number of variations possible using this approach. On those projects of significant import, the Secretary of the Air Force may retain SSA. The Source Selection Committee could be drawn from recognized authorities from:

(a) Other Government agencies, such as, NASA and GAO.

(b) Major command commanders, e.g., AFSC, AFLC, TAC.

(c) Members of Secretarial and Air Staff, e.g., SAFRD, DCS/RD, DCS/S&L.

That for many of the projects, however, the Secretary of the Air Force should delegate the SSA to the Division/Center/Laboratory Commander, who will appoint the committee.

That the Source Selection Committee (SSC) should document their findings in a report to the SSA. This report, will in narrative form, set forth the evaluation results of the proposals and will be the only formal document required to support the selection of source(s). The SSA will indicate his selection on the report and return it to the SSC. The SSA indorsement will constitute the selection decision.

3. Contracting:

a. Contract Type:

(1) Discussion:

A "prototype", by definition, may involve a complete system, subsystem, component, or other hardware, and may be contracted for at varying points within the development spectrum. The effort being performed may represent "exploratory development", "advanced development", "engineering development", or "operational systems development", and the hardware may be categorized as an "engineering", "development", "pre-production" or other prototype. The statement of work may contain specific requirements or may contain only "design goals" or a contractor's "best efforts". Single or multiple awards may be made and a particular award may be the result of competition or may be sole source. In view of the above, it should be readily apparent that no one type of contract would be appropriate for all procurements of "prototypes".

The criteria in ASPR 3-403(b) should be considered in the selection of the most appropriate contract type. The following are examples of factors which should be carefully considered:

- Specificity of statement of work
- Stage of development
- Type of system, subsystem or component
- Need for contractor latitude (flexibility & innovation)
- Contractor's incentive to control costs
- Risk to contractor and Government
- Cost visibility during performance
- Relationship to IR&D and continuity of design teams
- Period of performance
- Basis for cost estimates
- Ability to measure performance
- Single or parallel contracts

(2) Alternatives:

Many of the fixed price or cost types of contracts presentiy specified in the ASPR, or various combinations thereof, may be appropriate for a seiected prototype procurement, i.e., firm fixed price, cost, cost plus award fee, and cost plus fixed fee.

In selecting or deveioping the contract type, the basic premise is that a iimited or fixed amount of funds wiii be avaiiabie. Since firm fixed price contracts will not be appropriate in ali instances, a combination of cost and fixed price features may be required. The foliowing contract types may be particulariy appropriate depending upon the circumstances of the particular procurement:

(a) Combination Type:

The combination type of a contract considered appropriate for prototyping applies the concepts of a cost contract except that the Government's cost exposure wiil be fixed. Such a contract would provide a means whereby the contractor would know, prior to award, the maximum funds available to accompiish the prototype effort. it recognizes the best effort, broad specifIcation approach of a "design goal" prototype concept.

This type of contract would recognize that the contractor may not achieve the design goal enunciated in the SOW, but wouid require that the contractor deliver compieted hardware within the maximum amount of the contract. it embodies the concept of reiative "freedom from Government interferences", and wouid aliow the contractor maximum iatitude to "innovate". However, the contract shouid motivate the contractor to strive for technicai excellence within the funds on the contract. An appropriate labei for this type of contract would be "fixed cost".

Provisions for an award fee could be inciuded in this type of contract to provide desired motivation. The features of an award fee are discussed below.

(b) Cost Pius Award Fee (CPAF):

The CPAF contract provides a means of appiying incentives in contracts which are not susceptibie to finite measurements of performance necessary for structuring incentive contracts. An incentive to control costs could be placed upon the contractor by providing that a fixed portion of the fee wouid be payable oniy upon deiivery of the hardware within the totai estimated cost of the contract. Similariy, the funds availabie for the award fee could be reduced by the amount of any overrun in excess of the estimated cost of the contract plus the fixed fee.

The award fee may be based upon such criteria as the cost effectiveness of the prototype design, adherence to schedule, ingenuity, advancements in the state-of-the-art, and various performance parameters which may be subjective or objective in nature.

This type of contract violates the basic premise that the amount of funding is fixed, and is not recommended.

(c) Cost-Sharing with IR&D (CS/IR&D):

This type of contract may be appropriate when the following circumstances exist:

- Award based primarily on design team continuity
- Past IR&D activity demonstrates feasibility of prototype effort
- Significant portions of the prototype effort are included in the contractor's planned IR&D program
- Broad statement of work

Under a CS/IR&D contract the Government and the contractor will share in the cost of the prototype program. Unlike the usual cost-sharing contract, however (under which the contractor's contribution is paid from corporate profits), the contractor would charge his share of the cost to a separate negotiated ceiling in the contractor's tri-service advance agreement for IR&D costs. These costs would then be recoverable as allowable costs under the contractor's DOD contracts. The extent of the contractor's contribution to the cost-sharing contract (i.e., the sharing percentage) should be based upon the relationship of the relevant IR&D in the contractor's planned IR&D program when compared to the total estimated cost of the prototype effort. For example, if the total prototype cost is estimated to be $20M, and $5M of the effort would be expected to be performed as part of the contractor's IR&D program in the absence of a prototype contract, the sharing arrangement would be 75 percent Government, 25 percent contracto..

A CS/IR&D contract would offer the following advantages (assuming the particular circumstances identified above):

- Great latitude to the contractor (broad statement of work permitting contractor innovation)
- Continuity of contractor's design team
- Additional incentive on contractor to control costs

. Agreement in advance between the contractor and the Government regarding a significant portion of the contractor's IR&D program (a procedure authorized by ASPR 15-205.35(h), but seldom used). Such an arrangement would be responsive to the criticism that the present procedures regarding IR&D do not afford adequate controls, without hindering the "independence" deemed necessary for successful IR&D programs.

The following would be required in order to permit use of this type of contract:

. ASPR deviation authorizing this type of contract

. Close coordination with the tri-service personnel charged with the responsibility to negotiate advance IR&D agreements, and specific recognition of the prototype contract in the advance agreement.

. Allocation (through overhead) of the contractor's contribution only to DOD contracts - rather than to all of the contractor's business (to preclude the contractor from entering into similar arrangements with other than the DOD and allocating a share of such costs to DOD). This would require a deviation to Defense Procurement Circular No. 84.

. Authority to deviate from ASPR 15-205.19 (loss on other contracts) and ASPR 15-205.35 (definition of IR&D).

(d) Firm Fixed Price (FFP):

The FFP contract should be utilized for prototypes only where a reasonable basis for firm pricing exists, and where technical risks are minimal. A FFP may be particularly appropriate for parallel prototype contracts where follow-on development/production is contemplated.

(3) Recommendation:

That the fixed cost contract, with award fee provisions where appropriate, should be considered as the preferred type of contract for accomplishing most prototype efforts. For systems prototype effort being considered for FY-72, this appears to be the most appropriate type of contract. However, the conditions present in each procurement must be carefully examined to determine the most appropriate type of contract.

b. Contract Negotiations:

(1) Discussion:

After receipt and initial evaluation of proposals, written or oral dicussions (negotiations) must, in accordance with 10 USC 2304(g), be conducted with all responsible offerors who are in the competitive range.

The statute cited above has been interpreted by the Comptroller General to require, among other things: (a) "meaningful" discussions regarding technical and cost matters, (b) identification by the Government of significant deficiencies in the offeror's proposal, (c) the establishment of a common cut-off date for revised proposals and (d) a request for "best and final" offers upon conclusion of negotiations.

(2) Recommendation:

That technical and cost negotiations should be conducted with all responsible offerors in the competitive range, to the same extent and in the same manner as in other competitive procurements of research and development. A lesser approach will, in all probability, fail to satisfy the statute. An early determination and notification of those offerors not in the competitive range could be used to reduce the number of negotiations to be conducted.

c. Review and Award Process:

(1) Discussion:

After a source(s) is selected for negotiation or for contract award the time required to negotiate, review, execute and distribute a contract(s) always appears to be excessive. A number of actions are specified by law or regulation to be accomplished, e.g., equal employment opportunity certification, manual approval, etc. The review and award process should be streamlined to meet the needs of the individual prototype procurement action.

(2) Alternatives:

If a single source is involved, either initially or after evaluation of proposals, a letter contract could be issued to save that period of time required to negotiate, review, execute and distribute a definitive contract, thus permitting work to proceed at an early date. This normally would entail low risk at this point in the cycle since the work statement should be reasonably firm and a cost-reimbursement type contract (probably with cost-sharing and/or award fee provisions) contemplated. Delay in definitization of a letter contract could be an

award fee factor. This alternative is not recommended since it comprises the basic premise of a fixed amount.

In light of the various informal and expedited routes different prototype procurements can utilize, careful legal and procurement reviews are essential. However, the present layering of procurement reviews at Division and Headquarters levels should be eliminated. If the SSA is at Division or Center level he should be vested with manual approval authority notwithstanding the dollar magnitude of the program. This would eliminate Hq AFSC review if the prototype contract should exceed the presently delegated manual approval authority. If the SSA is retained at Headquarters or Secretarial level, the Division/Center procurement review could be accomplished jointly with the Headquarters review.

(3) Recommendation:

That the alternatives expressed in the last paragraph above should be employed.

4. Conclusions and Recommendations:

This part summarizes the conclusions and recommendations expressed in greater detail in other parts of this Appendix.

a. FY-72 Programs:

Use the synopses procedure and limited formal RFP/RFQ except for valid single source actions.

Use technological briefings and special synopses for prototype sources sought announcements.

In the RFP/RFQ, specify planned funds for each prototype program.

Where only one company is qualified or when a unique or novel unsolicited proposal is received, limit consideration to only that source.

Use qualification screening procedures to determine offerors who should receive a Request for Proposal.

Use 10 USC 2304(a)(11) as negotiation authority.

Use class negotiation determination and findings to maximum practicable extent.

Submit D&F with the Advanced Prototype Program Plan. It should be executed concurrent with approval to proceed with the program.

Exploit broad latitude in developing prototype statements of work. The work statement manual, AFSCM 70-5, should not be used.

Use limited, subjective evaluation criteria, minimizing offerors submissions of data.

Establish austere page limitations.

Limit the Source Selection Committee to a small group of about five (5) specialists reporting directly to the SSA. Minimize reporting.

Consider combination contract, containing cost and fixed price features, with award fee provisions (where appropriate) for most prototyping. Carefully consider all other contract types.

Negotiate with all offerors in the competitive range, price and other factors considered.

Eliminate layering of procurement reviews. Delegate full manual approval authority to activity Commander.

b. Future Programs:

Only one recommendation, in addition to the preceding recommendations, would be applicable to future programs. Use the Commerce Business Daily notice as the sole method of solicitation for prototype efforts whenever possible.

Typical Procurement Plan (Advanced Medium STOL Transport, Prototype

Format

1. System: Advanced Medium STOL Transport, Prototype

2. Estimated Procurement Cost: Not to exceed _____ million inclusive of GFE.

3. Delivery Requirements (Schedule): Development efforts, prototype fabrication, ground and flight tests and aircraft delivery to the Government will be completed 26 months after contract award.

4. Product Qauntity: One contractor will be selected to design, prototype and flight test two Advanced Medium STOL Transport Prototypes.

5. Current Procurement:

a. Procurement Method and Plan: This prototype concept impiements the Air Force objective to develop two Advanced Medium STOL Transport Prototypes. These aircraft will allow for the evaluation of the uncertainties in the areas of technoiogy necessary to design and fabricate an Advanced Medium STOL Transport Prototype aircraft.

b. This requirement will be accomplished on a negotiated, competitive basis. One contractor will be selected to prototype two aircraft in a flight evaluation phase. The Source Selection Plan is attached. Under the competitive prototype approach, greater reliance will be placed upon the capability and creativity of industry in the design and fabrication of the flying prototype, with minimum design constraints being placed on the contractors by the Air Force. During the competitive prototype phase, certain equipment will be Government furnished. It is contemplated that the competitive prototype contract will be a combination type with special provisions as developed in negotiations.

c. Proposed Sources: A sources sought announcement and potential subcontracting capability announcement will be published in the Commerce Business Daily. No known small business capability exists. Currently known sources and sources responding to the CBD announcement will be screened. A limited formal RFP will be issued to the selected sources.

6. Negotiation Authority and Justification:

a. Inasmuch as it is impossible to acquire competitive prototypes by formal advertising, negotiation will be accomplished pursuant to 10 USC 2304(a) (11) as contemplated by ASPR 3-211.1.

b. The foregoing established the legal justification for negotiation. Secretarial execution of the D&F will be accomplished concurrently with approval of the program plan.

7. Planned Schedule of Events:

Event	Date
Approval of D&F	X
Release of RFP	X+3
Proposals received	X+33
Evaluation complete	X+40
Definitive contracts finalized	X+47
Source selected	X+52
Award contracts	X+57

2 Atch
1. Source Selection Plan
2. Determination & Findings

Source Selection Plan
for
Advanced Medium STOL Transport, Prototype

I. Introduction:

a. The purpose of this Source Selection Plan is to identify and define the criteria, organizations, procedures, and documentation required for the conduct of the source selection action on the Advanced Medium STOL Transport Prototype system.

b. Basically, the source selection action will not conform to the detailed procedures contained in AFR 70-15 or AFSCM 80-10 to the simplified procedures in this plan.

II. Source Selection Organization:

a. Source Selection Authority (SSA):

It is contemplated that the Source Selection Authority will be delegated to the Commander, Aeronautical Systems Division.

b. Source Selection Committee (SSC):

This group will be composed of only the minimum personnel (about five) in the functional areas of engineering, procurement, and system management to evaluate proposals and report results to the Source Selection Authority.

III. Evaluation Techniques:

Upon receipt of contractor's proposals, the SSC will evaluate each proposal against the criteria. The SSC may use a scoring technique to assist in determining relative merit of the technical proposals. A narrative assessment will be written to identify the strengths, weaknesses, and risk of each contractor's proposal. This assessment will be integrated with other considerations, including contractor's past performance, cost, and contractual terms and conditions. The results will be compiled in an analysis report reflecting the overall merit of each proposal against the prototype objectives.

IV. Source List Screening Criteria:

a. Potential sources will be screened and only those sources meeting the following criteria should be given a Request for Proposal:

1. Must have, or can obtain, security clearances commensurate with the overall system security classification of SECRET and must be a United States contractor.

Atch #1

2. Must have, or have the means to obtain, the critical physical facilities required for the design, fabrication, test of the Advanced Medium STOL Transport Prototype.

3. Must have recent experience in the management, design, integration, development, fabrication and test of an aircraft weapon system of the complexity envisioned for the Advanced Medium STOL Transport Prototype.

V. Evaluation Criteria:

a. General Criteria:

1. The factors below will be considered in the following order of importance:

(a) The soundness and adequacy of the contractor's proposal for the conduct of the prototype development effort, including flight test demonstrations to provide assurance that the program objective can be met.

(b) The soundness and adequacy of the contractor's design concept and technical approach to meeting the performance goals set forth in the Request for Proposal.

(c) The contractor's past performance on development projects of a similar nature will be considered.

(d) Cost - Reasonableness, realism, and completeness of the contractor's cost proposal will be considered.

b. Specific Criteria:

Primary emphasis will be placed on the proposed technical approach for accomplishment of the prototype development and flight test demonstration effort.

1. Technical Area:

The technical excellence of the contractor's approach to meeting the technical goals specified in the Request for Proposal will be evaluated. The extent to which each contractor's proposed design gives proper consideration to the design goals will be assessed.

(a) T.1 - Performance:

This item is concerned with the validity of predicted performance capability for the proposed Advanced Medium STOL Transport Prototype system.

(b) T.2 - Flight Test:

The contractor's proposed flight test demonstrations to meet the objectives of the competitive prototype development approach will be assessed. The nature and scope of the proposed test program, coupled with the time phasing of these efforts, will be evaluated for safe and proper exploitation of the flight envelope of the proposed system.

2. Management Area:

This area includes the contractor's proposed plan for management of the prototype development and flight test program. In particular, emphasis will be placed on avoidance of unduly complex, sophisticated, and costly management control systems.

Department of the Air Force

Determination and Findings

Authority to Negotiate Contracts

Upon the basis of the following findings and determination which I hereby make as agency head, the proposed contracts described below may be negotiated without formal advertising pursuant to the authority of 10 USC 2304(a) (11).

Findings

1. The Air Force Systems Command proposes to procure by negotiation experimental, developmental or research work calling for the design, development, fabrication, and test of Advanced Medium STOL Transport, Prototype aircraft, associated test data, drawings, mockups, test support equipment, including spare parts, technical services, and GFAE at an estimated cost of $ for not more than two (2) aircraft each from one (1) competitive source. The proposed contract will not call for quantity production within the meaning of paragraph 3-211.3 of the Armed Services Procurement Regulation.

2. Procurement of the above described services and property is necessary because it is impossible to describe in precise detail, or by definite drawings and specifications, the nature of the work to be done under the proposed contracts; only the ultimate objectives and scope of the work can be outlined.

3. Use of formal advertising for procurement of the above described services and property is impracticable because it is impossible to describe in precise detail, or by any definite drawings and specifications. the nature of the work to be done; only the ultimate objectives and general scope of the work can be outlined.

Determination

The proposed contracts are for experimental, developmental, or research work. This class determination shall remain in effect until 26 months from the date of this finding.

Atch #2

Appendix 4

Program/Project Recommendation Report (U)

Outline

Appendix 4

Program/Project Recommendation Report (U)

1. (U) Procedures Discussion:

The effort to screen and recommend prototype projects was conducted by an ad hoc group constituted as described in Appendix 6 of this report. The group represented a spectrum of experience and expertise in operational requirements and the state of technology.

The projects reviewed were those received from the field organizations of AFSC. In a message of 21 April, Hq AFSC/XR requested all AFSC agencies to submit candidates for FY-72 and 73 to support an AFSC program of prototyping. The definition of prototype included the spectrum from a complete system with its aerospace ground equipment to proving the technical feasibility of a technique or piece of equipment. Prototype programs that were already in the FYDP could be proposed in order to accelerate the schedule for development. The proposed candidates were collected by Hq AFSC/XR and provided to the Prototype Study Group. Some 220 proposed projects were received from the AFSC production divisions, centers and laboratories.

As the initial step in screening the projects, the group developed a set of criteria to serve as the basis for selecting the recommended candidates. These criteria are presented in Section III of the report. To additionally facilitate the evaluation of the proposals, candidates were separated into FY-72 and FY-73 starts, categorized as systems, subsystems/equipment, and technology items, and similar projects were grouped together within each category. Of the 220 proposed projects 45 were candidate system projects and some 175 were subsystem/equipment or technology items. With the projects grouped such that they could be compared on generally the same bases, those which best satisfied the criteria were selected as the recommended candidates. In the selection process emphasis was given to identifying those projects with the potential for highest payoff, but which were not being adequately pursued through current development efforts. An Air Force Advanced Prototype Program Plan (see Appendix 5) was developed for each selected system project.

2. (U) Selection Results

The initial selection of candidates by the Project Selection Group included systems, subsystems/equipment and technology. These projects were then compared to evaluate their relative pay-off and potential for development under current programs. Since prototyping of subsystems/equipment and technology items is a normal activity in advanced development, the recommended prototype projects were restricted to systems. The selected projects in the subsystem and technology

categories were submitted as possible new initiatives for advanced development funding. Particular attention was given in the study to aircraft and aeronautical technology and the recommended systems represent this as the area of interest to be emphasized during the initial phase of the prototype program. Program plans for the selected systems - Advanced Medium STOL Transport, Very Low Radar Cross Section (RCS) Vehicle, Large Tanker Aircraft, Lightweight Fighter (LWF) Aircraft, Quiet Aircraft and Remotely Piloted Vehicle (RPV) - are attached.

3. (U) Additional Considerations:

There were a number of relatively small subsystems with potential high return that have progressed past the technology stage, but require demonstration at the system level to increase confidence of the system designers. In some cases, operational demonstration comparable to the past practice of service testing is necessary to provide sufficient proof of concept to allow incorporation of the subsystem into existing systems. Consideration should be given to defining a class of subsystems/equipment such as the proposed line item, 6379XF, Ancillary Aircraft Equipment. A preferred approach would be a line item for each product division and center that provides each commander the flexibility of developing appropriate systems/equipment. As a group, these items would merit consideration, but no one item is significant enough to warrant prototyping.

6 Atch
1. Advanced Medium STOL Program Plan
2. Very Low Radar Cross Section Vehicle Program Plan
3. Large Tanker Aircraft Program Plan
4. LWF Program Plan
5. Quiet Aircraft Program Plan
6. RPV Program Plan

Air Force Advanced Prototype Program Plan

1. Program Element No: 63XXXF

2. Project Title: Advanced Medium STOL Transport (U)

3. Program Summary:

a. Objective: To provide flight test data concerning the design features associated with short field performance in a medium weight (C-130 class) aircraft.

b. Description:

(1) Background: Tactical Air Command has a need to replace its present inventory of intra-theater transports of the C-130 class of aircraft. The proposed replacement aircraft would support Army and Air Force requirements in the field where normal support facilities are austere or unavailable. The aircraft should have the capability to take off and land using a 2,000 foot airstrip and the cruise speed necessary for deployment, The higher speed achieved with turbofan propulsion systems necessitates the development of new high lift devices, i.e., mechanical flaps plus vectored thrust, externally blown flaps or augmentation systems.

(2) Program Brief: To date, Lockheed and Boeing have submitted proposals for satisfying the STOL requirement.

(a) Lockheed proposes modifications to the C-130E to a STOL configuration using either improved turboprop or turbofan propulsion. The prototype would utilize a bailed USAF C-130E with Government furnished equipment. In addition, Lockheed has proposed modification of the C-141 to a STOL configuration using increased performance engines.

(b) Boeing proposes prototyping an entirely new aircraft employing a new wing design and a new high lift devices including mechanical flaps combined with thrust vectoring. This prototype might complement a NASA plan to develop a technology demonstrator for externally blown flaps and augmentation systems and could provide for the development of a single design for investigating STOL technology. Boeing also offers several lesser options deleting the requirement for a new aircraft, but requiring the use of existing modified commerical 737 and 727 wings. The Boeing proposal is considerably more costly than Lockheed's and involves a program of much longer time duration.

(c) Since the interest is in an advanced medium STOL transport, a program with emphasis on new technology associated with use of turbofan engines is proposed for prototyping.

(3) Technological Assessment: Two high risk areas exist:

(a) Achievement of required lift.

(b) Development of a combination thrust reversal and thrust deflector.

c. Correlation with Other Efforts: As stated earlier, the Boeing proposal might complement the NASA requirement leading to a single new design for investigating STOL technology.

4. RDT&E Funds ($ in Millions by Fiscal Year):

The funding required for each of the different approaches is as follows:

a. Proposed:

	FY-73	FY-74	FY-75	Total
Boeing approach - two aircraft	14.6	56.0	15.4	86.0
Lockheed approach - one C-130 turbofan	6.0	8.0		14.0
Lockheed approach - two C-130 turboprop aircraft	4.2	5.0		9.2
Lockheed approach - one C-141 aircraft	10.0	10.0		20.0

b. FYDP (F&FP):

c. Net Change:

Boeing approach - two aircraft	14.6	56.0	15.4	86.0
Lockheed approach - one C-130 turbofan	6.0	8.0		14.0
two C-130 turboprop	4.2	5.0		9.2
one C-141 aircraft	10.0	10.0		20.0

5. Funding Levels:

The funding levels highest cost approach is shown below:

a. Boeing approach

(1) FY-73

Initiate engineering design

(2) FY-74

(a) Conduct wind tunnel testing

(b) Fabricate tooling

(c) Initiate manufacturing

(3) FY-75

(a) Complete manufacturing

(b) Conduct flight testing

6. Program Management Plan: Management of the Advanced Medium STOL program will follow the Adaptive Management concept as defined in Appendix 2. An Advanced Medium STOL program office would be established under the Director of Prototype Programs to direct this effort.

7. Procurement Approach: A procurement plan similar to the typical one in Appendix 3, Section 5, will be developed to define the procurement approach for the Advanced Medium STOL transport.

8. Program Schedule and Milestones:

The Boeing approach is the longest duration and has the following milestones:

Program start - FY 73

Complete mock-up - 15 months

Prototype engine - 19 months

Rollout - 23 months

First flight - 25 months

9. Support: To be determined based upon the contractor selected for the prototype effort.

Air Force Advanced Prototype Program Plan (U)

1. Program Element Number: 63XXXF

2. Project Title: Very Low Radar Cross Section Test Vehicle (U)

3. Program Summary:

a. Objective: To verify the capability of achieving extremely low radar cross-sections in an airborne vehicle by full-scale flight tests.

b. Description:

(1) Background: The capability to achieve extremely low radar cross sections has been demonstrated by large scale, non-flying, test models. This capability has significant application to many strategic and tactical systems. The capability to remain "invisible" to radar so radically changes the posture of most offensive and defensive systems and that prototype testing to confirm this capability is warranted. In addition, the evaluation of the impact of this technology on the U. S. air defense system is necessary.

(2) Program Brief: Teledyne Ryan Aeronautical has proposed to design, manufacture and flight test three (3) unmanned, Very Low Radar Cross Section (RCS) Vehicles with the following characteristics:

Approximately 3,000 pounds gross weight

Very low radar cross section

Very high altitude capability

Subsonic speed

Air launched from a C-130

Recovered with the existing Mid-Air Retrieval System (MARS)

The vehicle will make maximum use of existing equipment in the areas of propulsion, avionics, launch, recovery and fuel systems.

(3) Technological Assessment: Measurements made at U. S. Government radar range facilities have verified that the technology to achieve extremely low radar cross sections is available. These tests have reached a limit where the radar return from the range is

significant, compared to the return from the vehicle. The next step in verifying this technology is through a flying prototype. The airframe will use conventional construction techniques and presents minimum technological risk. Maximum use will be made of existing flight control guidance, engine and recovery systems, thus reducing the risk factors in these areas.

4. RDT&E Funds: ($ Millions)

	FY-72	FY-73	FY-74	Total at Completion
Proposed	5.0	8.0	6.8	19.8
FYDP (F&FP)	0	0	0	0
Net Change	5.0	8.0	6.8	19.8

5. Funding Levels:

a. FY-72

(1) RCS optimization testing

(2) Complete preliminary design

(3) Initiate structural and system design

b. FY-73

(1) Wind tunnel testing

(2) Complete full scale RCS model edge treatment testing

(3) Soft tooling complete and initiate manufacture of vehicles 1, 2 and 3

(4) Flight test planning

c. FY-74

(1) Ground RCS testing first article

(2) Structure testing

(3) EMI testing

(4) Flight testing

6. Program Management Plan: The management approach for this project will be in accordance with the adaptive management concept defined in Appendix 2.

7. Procurement Approach: It is anticipated that due to the uniqueness of this project a sole source contract with Teledyne Ryan Aeronautical will be implemented.

8. Program Schedule and Milestones:

Jan 72 - Start

Apr 72 - Preliminary design complete

Nov 72 - Design complete

Nov 72 - Full scale RCS model test complete

Dec 72 - Manufacture first article starts

Aug 73 - RCS test first article (ground test)

Dec 73 - Start flight test

Jun 74 - Complete flight test

9. Support:

a. GFE:

(1) Three sets of 147 SD avionics
(2) Three J-100 engines and controls
(3) Three sets of 147 SD fuel system equipment
(4) Fifteen sets of 147 SD parachute recovery systems (MARS)
(5) One set of 147 SD AGE

b. Facilities and Services:

(1) Wind tunnel
(2) Radar cross section test range
(3) AFFTC facilities, launch and recovery aircraft

Air Force Advanced Prototype Program Plan

1. Program Element No: 63XXXF

2. Project Title: Large Tanker Aircraft

3. Program Summary:

a. Objective: To determine the interaction effects between the 747 Transport Aircraft and current Air Force inventory aircraft in simulated refueling operations.

b. Description:

(1) Background: Various aircraft options have been studied to define possible candidates to augment the KC-135 tanker force. Due to the capability provided, very large transport aircraft such as the 747 are being considered for modification to tankers. Due to the wake produced by the 747, flight demonstrations are necessary to answer questions concerning boom and receiver aircraft controllability during refueling operations.

(2) Program Brief: The Boeing Company has proposed a program to demonstrate the 747's capability as a potential tanker using a company owned aircraft. The initial effort will be to evaluate the uncoupled characteristics of the F-4, B-52 and FB-111 aircraft when placed in representative boom refueling positions behind the 747. Then the 747 will be modified to incorporate a standard KC-135 aerial refueling boom and its associated equipment together with an operator's station. The next phase will be to accomplish dry hookups in flight between the 747 and the F-4, B-52 and FB-111 receiver aircraft.

(3) Technological Assessment: There is a minimum risk associated with modification of the 747 since no technology is involved and the changes to the aircraft are relatively small.

4. RDT&E Funds: ($ Millions)

	FY-72	Total at Completion
Proposed	1.8	1.8
FYDP (F&FP)	0	0
Net Change	1.8	1.8

5. Funding Levels:

a. FY-72:

Modification of the 747 and conduct of flight testing.

6. Program Management Plan:

The management approach for this project will be in accordance with the Adaptive Management Concept discussed in Appendix 2.

7. Procurement Approach:

Since this project is associated with modification of the 747, the procurement for this effort will be sole source to the Boeing Company.

8. Program Schedule and Milestones:

Contract Award	Dec 71
Complete Uncoupled Testing	Dec 71
Complete Aircraft Modifications	Mar 72
Complete Dry Hook-up Testing	Apr 72

9. Support:

Air Force F-4, B-52, and FB-111 aircraft and flight crews.

Air Force Advanced Prototype Program Plan (U)

1. Program Element Number: 63XXXF

2. Project Title: Lightweight Fighter Aircraft (U)

3. Program Summary:

a. Objective: To demonstrate the high maneuverability and controllability of a lightweight fighter aircraft.

b. Description:

(1) Background: Because of the technical risks involved the Air Force has been unable to include an optimum combination of new aerodynamic concepts and design ideas in approved development programs of fighter aircraft. By restricting any potential mission applications to day air-to-air capability a lightweight fighter design with high performance should be achieved by combining these new technologies.

(2) Program Brief:

(a) Design Goals: A dual source (two aircraft each) prototype effort is planned to evaluate two different technical approaches. Significantly different proposals are expected from industry due to the large number of contractors expressing interest in pursuing this program. The design and performance objectives will be goals in order to allow design tradeoffs which will result in the best overall system. Guidelines for design and performance goals will include: low weight - less than 20,000 lbs., unequalled performance and maneuverability in the transonic (8 - 1.5 Mach), high-g, combat arena; combat radius on internal fuel of about 225 NM, with increases up to 700 NM with external tanks; limited supersonic capability at sea level (Mach 1 - 1.2), increasing to about Mach 2 at altitude as constrained by fixed geometry inlets optimized for the transonic battle arena; in being or late developmental propulsion; mission essential avionics; armament to include a representative state of the art/high muzzle velocity gun, and an effective low cost air-to-air missile; hardpoints and systems to give a credible air/ground capability; outstanding visibility; and excellent handling qualities optimized for the combat arena.

(b) Test Program: The test program will be limited to demonstrating the performance and operational capabilities of the aircraft as a prototype vehicle rather than as a production model. As

such, full scale Category I, II, and III tests will not be performed. Instead, a joint airworthiness and flight performance evaluation will be conducted with the Air Force entering the program at the earliest possible point in time. The contractor will retain his traditional role in that he will demonstrate the basic airworthiness and initial expansion of the flight envelope, with emphasis on flight loads, flutter, and structural demonstrations. This will allow the contractor to incorporate design refinements in the vehicle during the flight test portion of the program. The Air Force will then conduct limited performance and operational suitability tests to include: stability and control, systems, performance/propulsion, and operational effectiveness capabilities. The tests are envisioned to be accomplished in approximately 300 flight hours, with about 100 to be flown initially by the contractor, 100 to demonstrate performance, systems, and stability goals, and 100 to investigate operational capabilities.

(3) Technological Assessment:

(a) Uncertainties involved in the prototype effort vary with the individual proposals. While no formal request for proposal has been issued, contractor data presently available indicate generally reasonable chances of technological/operational success. Representative areas of possible risk include: technological advances in high acceleration cockpits; sidestick/fly-by-wire control; automatic variable camber; neutral stability; and flutter, lift, and drag associated with high aspect ratio thin wings. Operational risks encompass the effectiveness of a small, lightweight, simply designed, relatively inexpensive air-to-air fighter aircraft with exceptional maneuverability and austere mission essential avionics. Growth options for follow-on technological investigation may include: composite structures; side force, direct lift, and task oriented control; integrated stores; and attack subsystems investigations.

(b) Potential combat effectiveness gains of the lightweight fighter concept appear to be exceptional. The most advanced of the available proposals indicate combat performance capabilities far superior to the present and postulated fighter threat. Attainment of these goals in the prototype aircraft appears to be reasonably probable.

4. RDT&E Funds: ($ Millions)

	FY 72	FY 73	FY 74	Total at Completion
Proposed	8.0	46.0	16.0	70.0
FYDP (F&FP)	0	0	0	0
Net Change	8.0	46.0	16.0	70.0

5. Funding Levels:

a. FY 72

(1) Complete conceptual design.

(2) Initiate preliminary design.

b. FY 73

(1) Complete wind tunnel testing.

(2) Complete detail design.

(3) Initiate fabrication.

c. FY 74

(1) Complete fabrication.

(2) Conduct flight testing.

6. Management: Management of the Lightweight Fighter program will follow the Adaptive Management concept as defined in Appendix 2.

7. Procurement Approach: The approach for procurement of the LWF will be in accordance with the Advanced Procurement Plan in Appendix 3, Sec 5.

8. Program Schedule and Milestones:

Jan 72 - Program start

Feb 72 - Initiate preliminary design

Apr 72 - Complete conceptual design

Jul 72 - Initiate preliminary design

Jan 73 - Initiate fabrication

Aug 73 - First flight

Aug 74 - Complete flight testing

9. Support: Support requirements will be dependent upon the contractor selected.

Air Force Advanced Prototype Program Plan

1. Program Element No: 63XXXF

2. Project Title: Quiet Aircraft (U)

3. Program Summary:

a. Objective:

To demonstrate the capability to reduce overall sound pressure level of an aircraft through reduction of aerodynamic and engine noise.

b. Description:

(1) Background:

Previous studies and flight tests have shown that aerodynamic noise generation is a critical aspect in providing an acceptably quiet aircraft. A quiet aircraft could provide an effective system for conducting covert, night-time operations in a low level conflict.

(2) Program Brief:

Lockheed-California Company has submitted an unsolicited proposal to demonstrate a quiet aircraft based upon a modified T-1A. The modifications include a new aero-acoustically designed wing and acoustically treated engine installation. Lockheed proposes to modify and flight test two aircraft with delivery 22 months after program go-ahead.

(3) Technological Assessment:

The risk is relatively low and no significant problems are anticipated.

4. RDT&E Funds: ($ in Millions)

	FY-72	FY-73	FY-74	Total at Completion
a. Proposed	4	8	3	15
b. FYDP (TSFP)	0	0	0	0
c. Net Change	4	8	3	15

Atch 5

5. Funding Levels:

a. FY-72:

Design, fabrication and testing of a scaled model in the Lockheed low speed wind tunnel. Design and initiate fabrication of flight articles. Initiate engine acoustic testing.

b. FY-73:

Complete engine acoustic testing. Complete fabrication of flight articles and initiate flight testing.

c. FY-74:

Complete flight testing.

6. Program Management Plan:

The management approach for this project will be in accordance with the Adaptive Management Concept as discussed in Appendix 2.

7. Procurement Approach:

The procurement for this project will be either sole source to Lockheed or an approach similar to the procurement plan in Appendix 3, Section 5.

8. Program Schedule & Milestones:

Contract Award	December 1971
Initiate Fabrication & Assembly	January 1972
Design Complete	April 1972
Engine & Acoustic Tests	August-October 1972
First Flight	December 1972
Aircraft Delivery	August 1973

9. Support:

Government Furnished Equipment

a. 2 T-1A Aircraft

b. 4 TF-34 Engines

c. Communications Equipment

d. Tire, Wheel & Brake Assemblies

Air Force Advanced Prototype Program Plan

1. Program Element No: 63XXXF

2. Project Title: Advanced Remotely Piloted Vehicle Prototype (U)

3. (C) Program Summary:

a. Objectives: To exploit current flight vehicle, propulsion and avionics technology by designing and fabricating prototype advanced remotely piloted vehicles (RPVs) for flight demonstration and evaluation. Mission objectives would include air/ground for defense suppression and air/air for air superiority.

b. Description:

Background: Technology is in hand which when properly configured and combined is readily adaptable to RPV concepts. Capitalizing on the apparent potentials of RPVs, e.g., reduced crew exposure in heavily defended airspace; low cost vehicles; elimination of design/maneuver constraints associated with manned aircraft -- can result in acquisition of a new family of mission-oriented Air Force combat systems. RPVs are in line with the trend of Air Force systems -- lower cost/less manpower operational forces.

Program Brief: Detailed design data suitable for initiating an advanced RPV prototype program are not available to the Air Force at present. However, preliminary conceptual design concepts do exist in-house, and in a segment of the aerospace industry. AFFDL proposes to prepare a Design Objectives Document outlining desired characteristics and applicable technologies which could be exploited in prototype RPVs. Copies of this document would be made available to selected aerospace companies, with the understanding that those interested would utilize their in-house design teams to develop preliminary designs of RPVs suitable for prototype fabrication and flight test. Subsequent submittal of offers to AFFDL to build and test prototypes would be evaluated and a contractor (or more) selected to build and test the prototype(s).

The advantages of this approach include reduction of planning and proposal lead time, minimal Air Force funding prior to contract for hardware, and stimulation of contractor ingenuity and competition.

Technological Assessment: Flight vehicle advances have been and are being demonstrated in Air Force Flight Dynamics Laboratory technology programs which could be applied to RPVs as well as manned aircraft. The advances which would be considered include improved transonic

air foils (supercritical wing), control systems tailored to improve maneuverability, reduce vehicle drag, and improve weapon delivery accuracy, advanced materials for lower weight and cost structures, recovery systems such as air cushion landing gear (eliminates need for parachute mid air retrieval). The application of low cost turbine engines proposed by the Aero Propulsion Laboratory will also be investigated. The RPV does not require all the provisions for a human crew, therefore, the technological risks and cost of developing and testing a prototype should be lower than that for a manned aircraft.

c. Related Efforts: The current flight demonstration program for the BGM-34A will provide flight data during the next six months which can be useful in planning this program. The RPV study program being initiated by ASD/XR will provide data on desired RPV characteristics. The planned AFFDL in-house RPV technology flight demonstrations using the Model 147G drones will also provide a base of hardware testing in support of the program. The Navy and NASA also have flight programs underway or planned which would provide valuable data useful to planning and pursuing this program.

4. RDT&E Funds ($ Millions):

	FY 73	FY 74	FY 75	Total
a. Proposed	6.0	6.0	3.0	15.0
b. FTDP	0	0	0	0
c. Net Change	6.0	6.0	3.0	15.0

Notes: 1) If two competitive prototypes are desired, the proposed funds would be doubled.

2) This cost estimate is based on the fact that industry is proposing to make and test lightweight fighter prototypes for about $30 million. RPVs are much smaller/simpler; therefore, they should be cheaper (1/2 fighter cost). More precise costs will become available when contractor data is received.

3) Propulsion costs are not included. It is assumed that for the initial prototypes, engines such as J69/J85 would be available from Air Force inventory.

5. Funding Levels:

a. FY 73 - The program will be initiated with the $6.0 million proposed. The contractor selected will complete preliminary design and start detailed design, drawing releases and fabrication of 2-3 prototype RPVs.

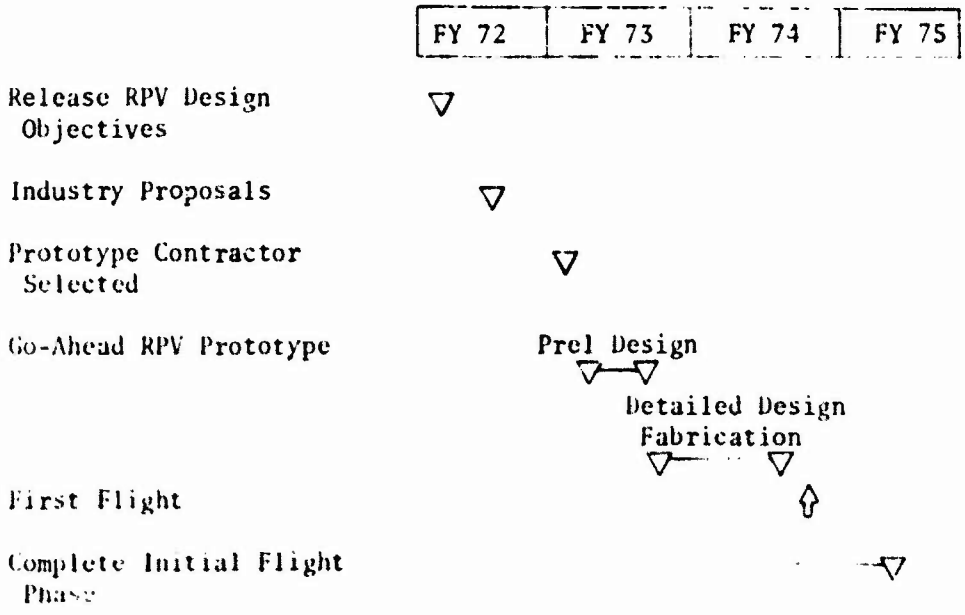
b. FY 74 - The $6.0 million for this year will be used to complete detailed design, fabrication and for the start of testing. It is assumed that testing would be conducted at AFFTC and that some support by Air Force organizations such as the 6514th Drone Test Squadron would be required.

c. FY 75 - Initial phase of flight testing would be completed with the $3.0 million proposed for this year.

6. Program Management Plan: The management approach for this project will be in accordance with the Adaptive Management concept defined in Appendix 2.

7. Procurement Approach: The procurement for this project will be similar to the approach outlined in the procurement plan in Appendix 3, Section 5.

8. Program Schedule and Milestones:



9. Support: To be determined.

Appendix 5

Programming and Funding Considerations

Outline

Appendix 5

Programming and Funding Considerations

1. Budgetary Implications:

All RDT&E requirements to be funded must be identified with program elements in the DOD Five Year Defense Program (FYDP) and the USAF Force and Financial Plan (F&FP). Accordingly, a program element for advanced prototypes in the FYDP is highly desirable. In view of similarity with advanced development projects, it should be in that area (63XXXF). A Program Objective Data Sheet (PODS) describing the prototype approach at program element level will be utilized for this purpose. (Note example of PODS in paragraph 2 of this appendix). Paragraph 3 provides a sample format for the Air Force Advanced Prototype Program Plan used to document efforts within the program element.)

Normally, all proposed programs are documented, evaluated, and phased in with budget cycle activities pertinent to annual appropriations and apportionments. Sequential reviews of all submissions include consideration by the Program Evaluation Group (PEG) in Hq AFSC and Program Requirements Committee (PRC) in Hq USAF prior to release to higher authorities.

After processing by OSD and OMB, the request for annual appropriation is submitted to Congress by the President in January each year. Congressional committees concerned with approval of RDT&E programs have indicated that new programs cannot be activated without prior approval. However, obligating authority generally is made available for on-going efforts in July by a continuing resolution pending enactment of appropriation legislation. Congress reserves the right to approve RDT&E reprogramming actions valued at $2 million or more. Hq USAF is permitted to approve reprogramming below that level within current constraints. They apply to advanced prototypes as well as other RDT&E programs unless exceptions are authorized. Therefore, it is believed that reprogramming between projects within the program element for the advanced prototype program should be authorized as exceptions to this policy. Such flexibility is needed to facilitate expeditious accomplishment of program objectives.

2. Program Objective Data Sheet (Example):

Format

1. Program Element No: 63XXXF

2. Title: Demonstration Prototypes

3. RDT&E Funds ($ in millions by fiscal year):

	FY-71	FY-72	FY-73	FY-74	FY-75	FY-76	FY-77
FYDP (F&FP)	0	0	0	0	0	0	0
Proposed	0	30.3	88.5	99.0	99.0	99.0	99.0
Net Change	0	30.3	88.5	99.0	99.0	99.0	99.0

a. Summary of Objectives:

Advanced Prototypes provide full-scale, working representations designed and constructed to demonstrate new technology or serve anticipated military needs. Objectives are to expedite development and testing of systems, subsystems, and other aerospace equipment, including technology demonstrations, in order to provide a stable of options for acquisition when requirements are confirmed. Continued viability of the U.S. aerospace industry and continuity of industrial design teams also will be considered. A simplified low cost development approach will be considered. This program will reduce uncertainties and lead to improvement of full-scale development and production phases upon successful completion of prototypes.

b. Guidance:

The Deputy Secretary of Defense and Secretary of the Air Force have requested expeditious implementation of this program.

c. Discussion of Program Objectives:

Details are provided with Advanced Prototype Program Plans for pertinent projects.

(1) Near-Term (FY-72, FY-73): (When candidates are selected they will be listed here by title and amount.)

(a) Summary of efforts to be conducted with FY-72 funding levels proposed.

(b) Summary of efforts to be conducted with FY-73 funding levels proposed.

(2) Forecasts:

Projections for FY-74 and future years indicate level of effort proposed. Details will be submitted with annual prototype planning documentation. (Provide here a summary of efforts to be conducted with the funding level proposed for each year.)

3. Air Force Advanced Prototype Program Plan (Sample Format):

Format

1. Program Element No: 63XXXF

2. Project Title: _____

3. Program Summary:

a. Objective(s)

b. Description

(1) Background (need, urgency, value)

(2) Program Brief (abbreviated work proposal)

(3) Technological Assessment (risk, uncertainties, desired technical achievements)

c. Correlation with other efforts of USAF, NASA and other agencies as applicable.

d. RDT&E Funds ($ in millions by fiscal year)

	FY-71	FY-72	FY-73	FY-74	FY-75	etc.	Total at completion
Proposed							
FYDP (F&FP)							
Net Change							

e. Funding Levels (provide narrative discussion of objectives that will be accomplished within proposed funds by applicable fiscal year)

(1) FY-72

(2) FY-73

(3) FY-74

etc.

f. Program Management Plan

(1) Procedures

(2) Organization and Manning

(3) Information, Control, Reporting, Documentation

(4) Air Force/Contractor Relationships

g. Procurement Approach

(1) Solicitation

(2) Procurement Plan

(3) Authority to Negotiate

h. Program Schedule and Milestones

i. Support

Appendix 6

STUDY MEMBERSHIP

Steering Committee

Secretary Hansen (SAFRD)
Lt General O'Neill (AFSC)
Lt General Glasser (USAF)
Maj General Kent (USAF)
Maj General Graham (USAF)

Study Director

Brig General Chapman (AFSC)

Integrating Group

Col Paulisick (ASD)
Col Myers (DOL)
Col Inglis (ESD)
Col Shaw (AFSC)
Col Merkling (USAF)
Col Sorlie (USAF)
Dr. Zimmerman (USAF)
Lt Col Mott (AFSC)
Maj Breyfogle (ASD)

Project Selection Task Group

Col Cameron (ASD)
Col Boyd (AFSC)
Lt Col Shaffer (ASD)
Lt Col Davis (USAF)
Lt Col Moore (USAF)
Lt Col Baird (AFSC)
Maj Griggs (SAMSO)
Maj Nowacki (RADC)
Maj Kutyna (USAF)
Capt Radford (AFSC)
Mr. Sen (ESD)
Mr. Dudas (ADTC)

Management Approach Task Group

Mr. Short (ASD)
Col Walsh (ESD)
Capt Colligan (AFSC)
Mr. Baillie (USAF)
Mr. Friedlander (AFSC)
Mr. Tremaine (ASD)
Mr. Shook (SAMSO)

Procurement Approach Task Group

Col Dunlap (ASD)
Lt Col Strube (USAF)
Lt Col Troxell (USAF)
Maj Roan (AFSC)
Mr. Spates (AFSC)
Mr. Rooney (ESD)
Mr. Spear (AFSC)
Mr. Muth (AFSC)
Mr. Robinson (ASD)
Col Shaw (AFSC)

Appendix 7

RFP/Model Contract

Outline

FROM: ASD/XXXX

SUBJECT: Advanced Medium STOL Transport Request for Proposal

TO: XYZ Corporation

1. You are invited to submit a proposal to the Air Force for furnishing two (2) prototype STOL Transport aircraft as described in the Request for Proposal attached hereto. A test program and certain data will also be required. One source may be selected to perform the prototype program. Funds will not exceed $XX,XXX,XXX.

2. The primary objective of the Advanced Medium STOL Transport program is to investigate and demonstrate the required technologies required for operation of large transport aircraft into and out of relatively small austere operating locations at a relatively low cost to the government. Once contract award(s) are made, further funding will not be accomplished. No follow-on effort is planned at present.

3. Please submit, for evaluation only, that data requested by this RFP. Any data not directly pertinent to the RFP will be either returned to you immediately, or discarded. The attachments to this letter describe the proposal requirements. Your proposal must be responsive to the RFP attached hereto, and be limited to 50 pages of technical information, 10 pages of management data, and 10 pages in your cost proposal. Required certifications and cost data format are specified in the DD Form 633 attached.

4. Your proposal (seven copies) must be furnished to Hq ASD/XXX, Bldg XXXXX, by 1300 on XX October 1971.

1 Atch
RFP (C)

If enclosures are withdrawn or not attached the classification of this correspondence will be cancelled

Advanced Medium STOL Transport
Request for Proposal

1. Introduction:

a. The Air Force intends to demonstrate the technical and operational feasibility of low cost, austere field capable, medium STOL transport aircraft. This aircraft, if successful, could provide an option which, with further engineering development, could lead to modernization of the Tactical Airlift fleet.

b. An advanced prototype demonstration effort is planned in order to evaluate the potential of STOL transport aircraft. The prototype demonstration will provide the means to eliminate uncertainties in the areas of technology necessary to operate STOL transport aircraft into and out of relatively small, austere operating locations. The demonstration program will consist of a 26 month development program during which the contractor will design, develop and fabricate one or two prototype aircraft. The contractor will flight test his prototype aircraft to the extent necessary to verify the validity of the design approach to satisfy the performance design goals. The Air Force will conduct a limited flight test program to evaluate the capability of the aircraft to satisfy the Design/Performance Goals and the associated operational effectiveness objectives.

2. Work Required:

The contractor will perform the following tasks during conduct of this program:

Task 1 - Design, develop and fabricate one prototype STOL transport aircraft based upon the Performance/Design Goals of Attachment A. A second aircraft will be provided at the option of the government. Provide the equipment necessary for support of the aircraft with maximum use of standard hardware

Task 2 - Conduct sufficient ground testing and systems checkout to insure that the aircraft is ready and safe for flight. Provide a safety of flight certification prior to first flight and subsequently prior to aircraft delivery to the Air Force. The flight certification shall include a matrix of major components, safety critical functions and verification methods, a definition of the flight profiles within which the aircraft can be safely operated and any limitations or restrictions required to assure that no unsafe conditions occur during flight testing.

Task 3 - Conduct a flight test program to verify the capability of the aircraft to satisfy the design requirements as established by the contractor considering the Air Force goals defined in Attachment A. Based upon the flight test program the contractor shall provide the Air Force with the data defining the aircraft flight characteristics.

Task 4 - Provide the necessary instruction and data for ground and flight training of four Air Force test pilots.

Task 5 - Provide logistics and maintenance support of the prototype aircraft during the Air Force flight testing. The Air Force flight test program will consist of approximately 200 hours over a 12 month period at Edwards AFB.

Task 6 - Interface with the Air Force to insure that sufficient information concerning progress of the program is available when necessary.

3. Proposal Data Requirements:

a. Contractor Performance Capability:

The offerors shall define their demonstrated competence and accomplishment relating to STOL aircraft and their current capability to conduct an advanced medium STOL transport prototype development program.

b. Prototype Program:

The offerors shall describe their proposed program to conduct the prototype program defined herein. The proposed schedule, GFE/GFAE, test programs and management approach will be included.

c. Technical Approach:

The offerors shall submit the necessary data to establish the design approach to satisfy the performance/design goals defined in Attachment A. Specific attention should be given to describing the techniques used in attaining STOL performance and minimizing cost.

d. Cost:

The offerors shall submit costs for accomplishment of the six tasks on a DD Form 633. Offerors will comply with the instructions on the DD Form 633 and furnish the necessary supporting details. The offerors will define costs for the government at its option to acquire a second aircraft at the beginning, during the development or at the end of the program.

Attachment A

Performance/Design Goals

1. Purpose:

The goals set forth below define the minimum capability desired for the Advanced Medium STOL Transport.

2. Goals:

a. General:

The Advanced Medium STOL Transport should provide a capability to operate into and out of small, austere operating locations at relatively low cost. The objective of this program will be to investigate the combined technologies required for such operations. Other program objectives are: to provide a hardware option which, with further engineering development, could provide a transport aircraft to augment or replace the C-130 airlift force; to obtain visibility on costs associated with short field performance; and to define STOL operational rules, safety rules, and related design criteria.

b. Performance Goals:

(1) Short Takeoff and Landing/Payload

The desired takeoff and landing capability is operation into and out of 2000 ft by 60 ft midpoint airstrips with a 15 ton payload and fuel for a 500nm radius mission.

(2) Speed

A maximum cruise speed of 3.75M-0.85M is desired. In addition, the aircraft should have at least a 350kt low-level dash capability.

c. Design Goals:

In design of the Advanced STOL Transport prototype the goals defined below will be considered. The sizing constraints are provided to insure that an aircraft representative of an ultimate operational system is obtained to evaluate the performance capability.

(1) Handling qualities

Special attention should be given to design features that provide controllability at the low speeds required for STOL.

(2) Structure and Materials

The aircraft should be designed for a 3.0g load factor with a 30,000 lb. payload.

(3) Avionics

The avionics subsystem provided in the prototype will provide the minimum capability for communication and navigation during the test period. An instrumentation system compatible with the Edwards AFB test range capability will be provided.

(4) Flotation

A capability for operation from unimproved fields (CBR-6) is desired.

(5) Use of Available Hardware

Maximum use should be made of available hardware to minimize costs.

(6) Sizing constraints

(a) Radius of action

A capability for a radius of 500nm is desired.

(b) Weight

The desired payload capability varies from approximately 30,000 pounds from a 2000 ft airstrip to a maximum of 60,000 pounds.

(c) Cargo Compartment

The aircraft design should be based upon a cargo compartment approximately the size of the C-130. A compartment size of 12 ft high, 11.7 ft wide and 55 ft long is desirable.

PART I - GENERAL INSTRUCTIONS
SECTION A - COVER SHEET

INFORMATION TO OFFERORS TRQ/clm	SOLICITATION NO. ☐ ADVERTISED (IFB) ☒ NEGOTIATED (RFP)

ISSUING OFFICE (Complete mailing address including Zip Code)

AFSC AERONAUTICAL SYSTEMS DIVISION
WRIGHT-PATTERSON AFB, OHIO 45433

ITEM(S) TO BE PURCHASED (Brief description)

ADVANCED MEDIUM STOL TRANSPORT, PROTOTYPE,
TEST AND DATA

THIS PROCUREMENT IS:

☐ UNRESTRICTED

☐ SET-ASIDE. (THIS IS A % SET-ASIDE FOR ☐ SMALL BUSINESS OR ☐ LABOR SURPLUS AREA CONCERNS.) (SEE SECTION C OF THE TABLE OF CONTENTS IN THIS SOLICITATION FOR DETAILS OF THE SET-ASIDE.)

☐ OTHERWISE RESTRICTED TO

NOTE THE AFFIRMATIVE ACTION REQUIREMENT OF THE EQUAL OPPORTUNITY CLAUSE WHICH MAY APPLY TO THE CONTRACT RESULTING FROM THIS SOLICITATION.

NOTE THE CERTIFICATION OF NONSEGREGATED FACILITIES IN THIS SOLICITATION. Bidders, offerors and applicants are cautioned to note the "Certification of Non-Segregated Facilities" in the solicitation. Failure of a bidder or offeror to agree to the certification will render his bid or offer nonresponsive to the terms of solicitations involving awards of contracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause.

OFFEROR "FILL-INS". Offerors are provided on the face and reverse of Standard Form 33 or other solicitation document and Section B of Table of Contents in this solicitation and should be examined for applicability.

CAUTION - LATE OFFERS. See the paragraph of this solicitation entitled "Late Offers and Modifications or Withdrawals" (Paragraph 8 of Standard Form 33A).

OFFERS. The envelope used in submitting your offer must be plainly marked with the Solicitation Number, as shown above, and the time, date and date set forth in the solicitation document (Block 9 of Standard Form 33).

NO OFFER. If NO OFFER is to be submitted, detach this sheet from the solicitation, complete the information requested on reverse, fold, staple, affix postage, and mail. NO ENVELOPE IS NECESSARY.

NOTE - Offers must set forth full, accurate, and complete information as required by this solicitation (including attachments). The penalty for making false statements is prescribed in 18 U.S.C. 1001.

FOR INFORMATION ON THIS PROCUREMENT WRITE OR CALL (Not applicable if Standard Form 33 is attached)

ADDITIONAL INFORMATION

NAME AND ADDRESS	TELEPHONE (Area Code, No. & Ext.)	NO COLLECT CALLS

DD FORM 1707

NO OFFER SUBMITTED FOR REASONS CHECKED			
☐	CANNOT COMPLY WITH SPECIFICATIONS	☐	CANNOT MEET DELIVERY REQUIREMENT
☐	UNABLE TO IDENTIFY THE ITEM(S)	☐	DO NOT REGULARLY MANUFACTURE OR SELL THE TYPE OF ITEMS INVOLVED
☐	OTHER (Specify)		
☐	DE DO ☐ WE DO NOT, DESIRE TO BE RETAINED ON THE MAILING LIST FOR FUTURE PROCUREMENT OF THE TYPE OF ITEM(S) INVOLVED.		

NAME AND ADDRESS OF FIRM (Include Zip Code)	SIGNATURE
	TYPE OR PRINT NAME AND TITLE OF SIGNER

FOLD FOLD

FROM:

AFFIX STAMP HERE

TO:

ATTN:
AFSC AERONAUTICAL SYSTEMS DIVISION
WRIGHT-PATTERSON AFB, OHIO 45433

SOLICITATION NO. _____

CLOSING TIME, ZONE AND DATE 5pm, _____

SECTION B Contract Form and Representations, Certifications, and Other Statements of Offeror.

STANDARD FORM 33, JULY 1986 GENERAL SERVICES ADMINISTRATION FAR (48 CFR) 53.214(c)	SOLICITATION, OFFER, AND AWARD TRG/CLM	3 CERTIFIED FOR NATIONAL DEFENSE UNDER DMSA REG. 2 AND/OR DMS REG. 1. RATING: Not Applicable	4. PAGE 3 OF

1. CONTRACT (Proc. Inst. Ident.) NO	2. SOLICITATION NO.	3. DATE ISSUED	4. REQUISITION/PURCHASE REQUEST NO
Class:	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)		

5. ISSUED BY CODE	6. ADDRESS OFFER TO (If other than Block 7)
AFSC Aeronautical Systems Division Wright-Patterson Air Force Base, Ohio 45433	

SOLICITATION

7. Sealed offers in original and 2 copies for furnishing the supplies or services described in the Schedule will be received at the place specified in Block 8 OR IF HAND-CARRIED, IN _____ until 5PM. (Hour, Date, and Time)

If this is an advertised solicitation, offers will be publicly opened at that time. CAUTION—LATE OFFERS. See par. 8 of Solicitation Instructions and Conditions. All offers are subject to the following:

1. The attached Solicitation Instructions and Conditions, SF 33A.
2. The General Provisions which are Attached are incorporated herein by reference.
3. The Schedule included below and/or attached hereto.
4. Such other provisions, representations, certifications and specifications as are attached or incorporated herein by reference. (Attachments are listed in the Schedule.)

FOR INFORMATION CALL (Name and Telephone No.) (No collect calls):

TABLE OF CONTENTS

(X)	SEC	THE FOLLOWING CHECKED SECTIONS ARE CONTAINED IN THE CONTRACT	PAGE	(X)	SEC		PAGE
		PART I - GENERAL INSTRUCTIONS		X	* G	Preservation/Packaging/Packing	
X	A	Cover Sheet	1	X	* H	Deliveries or Performance.	
X	B	Contract Form and Representations, Certifications, and Other Statements of Offeror.	3	X	* I	Inspection & Acceptance.	
X	C	Instructions, Conditions, and Notices to Offerors.	12		J	Special Provisions	
	D	Evaluation & Award Factors.			K	Contract Administration Data.	
		PART II - THE SCHEDULE				PART III - GENERAL PROVISIONS	
X	E *	Supplies/Services & Prices.		X	* L	General Provisions	
	F	Description/Specifications.				PART IV -LIST OF DOCUMENTS AND ATTACHMENTS	
		*See attached Model Contract			M	List of Documents and Attachments	

OFFER (NOTE: Items Must Also Be Fully Completed By Offeror)

In compliance with the above, the undersigned offers and agrees, if this offer is accepted within 60 calendar days (~~60 consecutive calendar days~~) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered, at the price set opposite each item, delivered at the designated point(s), within the time specified in the Schedule.

10. DISCOUNT FOR PROMPT PAYMENT
_____ % 10 CALENDAR DAYS, _____ % 20 CALENDAR DAYS, _____ % 30 CALENDAR DAYS, ____ ____ % _____ CALENDAR DAYS

11. OFFEROR NAME & ADDRESS (Street, city, county, state, & ZIP Code) CODE	FACILITY CODE	12. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or Print)
Area Code and Telephone No.:		13. SIGNATURE / 14. OFFER DATE

☐ 15. If Remittance Address Is Different From Above - Enter Such Address In Sec.B.9,Pg.5

AWARD (To Be Completed By Government)

16. ACCEPTED AS TO ITEMS NUMBERED	17. AMOUNT	18. ACCOUNTING AND APPROPRIATION DATA
19. SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK _____		20. NEGOTIATED PURSUANT TO: ☐ 10 U.S.C. 2304(a) ☐ 41 U.S.C. 253(c)
21. ADMINISTERED BY (If other than Block 7) CODE		22. PAYMENT WILL BE MADE BY CODE
23. NAME OF CONTRACTING OFFICER (Type or Print)	24. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	25. AWARD DATE

26. See Award will be made on this form, or on Standard Form 26, or by other official written notice.

REPRESENTATIONS, CERTIFICATIONS, AND ACKNOWLEDGMENTS

The Offeror represents and certifies as part of his offer that: *(Check or complete, if applicable boxes or blanks.)*

1. SMALL BUSINESS *(See par. 14 on SF 33.1)*

He ☐ is, ☐ is not, a small business concern. If offeror is a small business concern and is not the manufacturer of the supplies offered, he also represents that all supplies to be furnished hereunder ☐ will, ☐ will not, be manufactured or produced by a small business concern in the United States, its possessions, or Puerto Rico.

2. REGULAR DEALER–MANUFACTURER *(Applicable only to supply contracts exceeding $10,000).*

He is a ☐ regular dealer in, ☐ manufacturer of, the supplies offered.

3. CONTINGENT FEE *(See par. 13 on SF 33.1)*

(a) He ☐ has, ☐ has not, employed or retained any company or person *(other than a full-time, bona fide employee working solely for the offeror)* to solicit or secure this contract, and (b) he ☐ has, ☐ has not, paid or agreed to pay any company or person *(other than a full-time, bona fide employee working solely for the offeror)* any fee, commission, percentage, or brokerage fee contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (a) and (b) above, as requested by the Contracting Officer. *(For interpretation of the representation, including the term "bona fide employee," see Code of Federal Regulations, Title 41, Subpart 1-1.5.)*

4. TYPE OF BUSINESS ORGANIZATION

He operates as ☐ an individual, ☐ a partnership, ☐ a nonprofit organization, ☐ a corporation, incorporated under the laws of the State of _____.

5. AFFILIATION AND IDENTIFYING DATA *(Applicable only to advertised solicitations.)*

Each offeror shall complete (a) and (b) if applicable, and (c) below:

(a) He ☐ is, ☐ is not, owned or controlled by a parent company. *(See par. 16 on SF 33.1.)*

(b) If the offeror is owned or controlled by a parent company, he shall enter in the blocks below the name and main office address of the parent company:

NAME OF PARENT COMPANY	MAIN OFFICE ADDRESS *(Include ZIP code).*

(c) Employer's Identification Number: *(See par. 17 on SF 33.1)*

OFFEROR'S E.I. NO.	PARENT COMPANY'S E.I. NO.

6. EQUAL OPPORTUNITY

He ☐ has, ☐ has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause herein or the clause originally contained in section 301 of Executive Order No. 10925, or the clause contained in section 201 of Executive Order No. 11114, that he ☐ has, ☐ has not, filed all required compliance reports; and that representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. *(The above representation need not be submitted in connection with contracts or subcontracts which are exempt from the clause.)*

7. BUY AMERICAN CERTIFICATE

The offeror hereby certifies that each end product, except the end products listed below, is a domestic source end product (as defined in the clause entitled "Buy American Act"); and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS	COUNTRY OF ORIGIN

8. CERTIFICATION OF INDEPENDENT PRICE DETERMINATION *(See par. 18 on SF 33.1.)*

(a) By submission of this offer, the offeror certifies, and in the case of a joint offer, each party thereto certifies as to its own organization, that in connection with this procurement:

(1) the prices in this offer have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other offeror or with any competitor;

(2) unless otherwise required by law, the prices which have been quoted in this offer have not been knowingly disclosed by the offeror and will not knowingly be disclosed by the offeror prior to opening in the case of an advertised procurement or prior to award in the case of a negotiated procurement, directly or indirectly to any other offeror or to any competitor; and

(3) no attempt has been made or will be made by the offeror to induce any other person or firm to submit or not to submit an offer for the purpose of restricting competition.

(b) Each person signing this offer certifies that:

(1) he is the person in the offeror's organization responsible within that organization for the decision as to the prices being offered herein and that he has not participated, and will not participate, in any action contrary to (a) (1) through (a) (3) above; or

(2) (i) he is not the person in the offeror's organization responsible within that organization for the decision as to the prices being offered herein but that he has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (a) (1) through (a) (3) above, and as their agent does hereby so certify; and (ii) he has not participated, and will not participate, in any action contrary to (a) (1) through (a) (3) above.

ACKNOWLEDGMENT OF AMENDMENTS

The offeror acknowledges receipt of amendments to the solicitation for offers and related documents numbered and dated as follows:

AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

9. REMITTANCE ADDRESS

Indicate the address to which payment is to be mailed if such address is different from that shown by the offeror on Standard Form 33, Solicitation, Offer and Award, Section B, Page 3.

_____

_____

_____

10. This procurement is not set aside for labor surplus area concerns. However, the offeror's status as such a concern may affect entitlement to award in case of tie offers or offer evaluation in accordance with the Buy American clause of this solicitation. In order to have his entitlement to a preference determined if those circumstances should apply, the offeror must:

(i) furnish with his offer evidence that he or his first-tier subcontractor is a certified-eligible concern with a first preference in accordance with 29 CFR 8.7(b) and 8.9(c) or a certified-eligible concern with a second preference in accordance with 29 CFR 8.7(c) and 8.9(d), and identify below the address at which the costs he will incur on account of manufacturing or production (by himself if a certified concern or by certified concerns acting as first tier subcontractors) amount to more than 25% of the contract price, or

(ii) identify below the persistent or substantial labor surplus area in which the costs he will incur on account of manufacturing or production (by himself or his first-tier subcontractors) amount to more than 50% of the contract price. (If the offeror proposes to qualify as a persistent or substantial labor surplus area concern by including costs to be incurred by a certified concern not located in a labor surplus area, evidence of such certification must be furnished.)

_____

_____

Failure to furnish evidence of certification by the Secretary of Labor if applicable, and to identify the locations as specified above will preclude consideration of the offeror as a labor surplus area concern. Offeror agrees that if, as a labor surplus area concern, he is awarded a contract for which he would not have qualified in the absence of such status, he will perform the contract or cause it to be performed, in accordance with the obligations which such status entails. (1970 SEP)

11. CERTIFICATION OF NONSEGREGATED FACILITIES (Applicable to contracts, subcontracts, and to agreements with applicants who are themselves performing Federally assisted construction contracts, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause.). By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of habit, local custom or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES. A Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually). (1970 AUG) (Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.)

12. AFFIRMATIVE ACTION PROGRAM (1970 AUG)

(The following certification shall be completed by each offeror whose offer is $50,000 or more and who has 50 employees or more)

The offeror certifies that he ☐ has, ☐ has not, developed and maintained at each of his establishments Equal Opportunity Affirmative Action Programs, pursuant to 41 CFR 60.2.

13. CERTIFICATION OF EQUAL EMPLOYMENT COMPLIANCE (1970 AUG)

By submission of this offer, the offeror certifies that, except as noted below, up to the date of this offer, no advice, information or notice has been received by the offeror from any Federal Government agency or representative thereof that the offeror or any of its divisions or affiliates or known first-tier subcontractors is in violation of any of the provisions of Executive Order No. 11246 of September 24, 1965, Executive Order No. 11375 of October 13, 1967, or rules and regulations of the Secretary of Labor (41 CFR, Chapter 60) and specifically as to not having an acceptable affirmative action program or being in noncompliance with any other aspect of the Equal Employment Opportunity Program. It is further certified and agreed that should there be any change in the status of circumstances certified to above between this date and the date of expiration of this offer or any extension thereof, the Government Contracting Officer cognisant of this procurement will be notified forthwith.

14. PLACE OF PERFORMANCE

Offeror shall state the intended place of performance, including the street address, and the names and addresses of owner and operator of producing facilities, if other than offeror, when it is reasonably anticipated that such facilities will be used in the performance of the contract.

_____

_____

_____

15. ROYALTY INFORMATION (1961 AUG)

When the response to this solicitation contains costs or charges for royalties totaling more than $250, the following information shall be furnished with the offer, proposal, or quotation on each separate item of royalty or license fee:

(i) name and address of licensor;
(ii) date of license agreement;
(iii) patent numbers, patent application serial numbers or other basis on which the royalty is payable;
(iv) brief description, including any part or model numbers of each contract item or component on which the royalty is payable;
(v) percentage or dollar rate of royalty per unit;
(vi) unit price or contract item;
(vii) number of units; and
(viii) total dollar amount of royalties.

DD Form 783, Royalty Report, is approved for use in furnishing the above information. In addition, if specifically requested by the contracting officer prior to execution of the contract, a copy of the current license agreement and identification of applicable claims of specific patents shall be furnished.

16. The offeror shall list the names and telephone numbers of persons authorized to conduct negotiations:

_____

_____

17. CONTRACTOR'S DATA CERTIFICATION (1967 APR)

The offeror shall submit with his offer a certification as to whether he has delivered or is obligated to deliver to the Government under another contract or subcontract the same data; if so, he shall identify one such other contract or subcontract for each item of data and state where he has already delivered such data.

18. CERTIFICATE OF CURRENT COST OR PRICING DATA:

This is to certify that, to the best of my knowledge and belief, cost or pricing data as defined in ASPR 3-807.3(f) submitted, either actually or by specific identification in writing (see ASPR 3-807.3(g)), to the Contracting Officer or his representative in support of _____ are accurate, complete, and current as of _____.
day month year

Firm_____

Name_____

Title_____

_____
Date of Execution

19. RESTRICTIONS ON DISCLOSURE AND USE OF DATA IN PROPOSALS AND QUOTATIONS

A proposal may include data, such as a technical design or concept or financial and management plan, which the offeror does not want disclosed to the public for any purpose or used by the Government for any purpose other than evaluation of the proposal. If an offeror wishes so to restrict his proposal, he shall mark the title page with the following legend:

"This data, furnished in connection with Request for Proposals No. _____, shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than to evaluate the proposal; provided, that if a contract is awarded to this offeror as a result of or in connection with the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction is contained in Sheets _____. (1966 DEC)"

The offeror shall mark each sheet of data which he wishes to restrict with the following legend:

"Use or disclosure of proposal data is subject to the restriction on the Title page of this Proposal. (1966 DEC)"

STANDARD FORM 33A, JULY 1966
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.101

SOLICITATION INSTRUCTIONS AND CONDITIONS

1. DEFINITIONS.
As used herein:
(a) The term "solicitation" means Invitation for Bids (IFB) where the procurement is advertised, and Request for Proposal (RFP) where the procurement is negotiated.
(b) The term "offer" means bid where the procurement is advertised, and proposal where the procurement is negotiated.
(c) For purposes of this solicitation and Block 2 of Standard Form 33, the term "advertised" includes Small Business Restricted Advertising and other types of restricted advertising.

2. PREPARATION OF OFFERS.
(a) Offerors are expected to examine the drawings, specifications, Schedule, and all instructions. Failure to do so will be at the offeror's risk.
(b) Each offeror shall furnish the information required by the solicitation. The offeror shall sign the solicitation and print or type his name on the Schedule and each Continuation Sheet thereof on which he makes an entry. Erasures or other changes must be initialed by the person signing the offer. Offers signed by an agent are to be accompanied by evidence of his authority unless such evidence has been previously furnished to the issuing office.
(c) Unit price for each unit offered shall be shown, and such price shall include packing unless otherwise specified. A total shall be entered in the Amount column of the Schedule for each item offered. In case of discrepancy between a unit price and extended price, the unit price will be presumed to be correct, subject, however, to correction to the same extent and in the same manner as any other mistake.
(d) Offers for supplies or services other than those specified will not be considered unless authorized by the solicitation.
(e) Offeror must state a definite time for delivery of supplies or for performance of services unless otherwise specified in the solicitation.
(f) Time, if stated as a number of days, will include Saturdays, Sundays and holidays.
(g) Code boxes are for Government use only.

3. EXPLANATION TO OFFERORS. Any explanation desired by an offeror regarding the meaning or interpretation of the solicitation, drawings, specifications, etc., must be requested in writing and with sufficient time allowed for a reply to reach offerors before the submission of their offers. Oral explanations or instructions given before the award of the contract will not be binding. Any information given to a prospective offeror concerning a solicitation will be furnished to all prospective offerors as an amendment of the solicitation, if such information is necessary to offerors in submitting offers on the solicitation or if the lack of such information would be prejudicial to uninformed offerors.

4. ACKNOWLEDGMENT OF AMENDMENTS TO SOLICITATIONS. Receipt of an amendment to a solicitation by an offeror must be acknowledged (a) by signing and returning the amendment, (b) on the reverse of Standard Form 33, or (c) by letter or telegram. Such acknowledgment must be received prior to the hour and date specified for receipt of offers.

5. SUBMISSION OF OFFERS.
(a) Offers and modifications thereof shall be enclosed in sealed envelopes and addressed to the office specified in the solicitation. The offeror shall show the hour and date specified in the solicitation for receipt, the solicitation number, and the name and address of the offeror on the face of the envelope.
(b) Telegraphic offers will not be considered unless authorized by the solicitation, however, offers may be modified by telegraphic notice, provided such notice is received prior to the hour and date specified for receipt. (However, see par. 8.)
(c) Samples of items, when required, must be submitted within the time specified, and unless otherwise specified by the Government, at no expense to the Government. If not destroyed by testing, samples will be returned at offeror's request and expense, unless otherwise specified by the solicitation.

6. FAILURE TO SUBMIT OFFER. If no offer is to be submitted, do not return the solicitation unless otherwise specified. A letter or postcard should be sent to the issuing office advising whether future solicitations for the type of supplies or services covered by the solicitation are desired. Failure of the recipient to offer, or to notify the issuing office that future solicitations are desired, may result in removal of the name of such recipient from the mailing list for the type of supplies or services covered by the solicitation.

7. MODIFICATION OR WITHDRAWAL OF OFFERS.
(a) If this solicitation is advertised, offers may be modified or withdrawn by written or telegraphic notice received prior to the exact hour and date specified for receipt of offers. An offer also may be withdrawn in person by an offeror or his authorized representative, provided his identity is made known and he signs a receipt for the offer, but only if the withdrawal is made prior to the exact hour and date set for receipt of offers. (However, see par. 8.)
(b) If this solicitation is negotiated, offers may be modified (subject to par. 8, when applicable) or withdrawn by written or telegraphic notice received at any time prior to award. Offers may be withdrawn in person by an offeror or his authorized representative, provided his identity is made known and he signs a receipt for the offer prior to award. (1968 DEC)

8. LATE OFFERS AND MODIFICATIONS OR WITHDRAWALS. (This paragraph applies to all advertised solicitations. In the case of Department of Defense negotiated solicitations, it shall also apply to late offers and modifications (other than the normal revisions of offers by selected offerors during the usual conduct of negotiations with such offerors) but not to withdrawals of offers. Unless otherwise provided, this paragraph does not apply to negotiated solicitations issued by civilian agencies.)
(a) Offers and modifications of offers (or withdrawals thereof, if this solicitation is advertised) received at the office designated in the solicitation after the exact hour and date specified for receipt will not be considered unless: (1) they are received before award is made; and either (2) they are sent by registered mail, or by certified mail for which an official dated post office stamp (postmark) on the original Receipt for Certified Mail has been obtained and it is determined by the Government that the late receipt was due solely to delay in the mails, for which the offeror was not responsible; or (3) if submitted by mail (or by telegram if authorized) it is determined by the Government that the late receipt was due solely to mishandling by the Government after receipt at the Government installation; provided, that timely receipt at such installation is established upon examination of an appropriate date or time stamp (if any) of such installation, or of other documentary evidence of receipt (if readily available) within the control of such installation or of the post office serving it. However, a modification of an offer which makes the terms of an otherwise successful offer more favorable to the Government will be considered at any time it is received and may thereafter be accepted.
(b) Offerors using certified mail are cautioned to obtain a Receipt for Certified Mail showing a legible, dated postmark and to retain such receipt against the chance that it will be required as evidence that a late offer was timely mailed.
(c) The time of mailing of late offers submitted by registered or certified mail shall be deemed to be the last minute of the date shown in the postmark on the registered mail receipt or registered mail wrapper or on the Receipt for Certified Mail unless the offeror furnishes evidence from the post office station of mailing which establishes an earlier time. In the case of certified mail, the only acceptable evidence is as follows: (1) where the Receipt for Certified Mail identifies the post office station of mailing, evidence furnished by the offeror which establishes that the business day of that station ended at an earlier time, in which case the time of mailing shall be deemed to be the last minute of the business day of that station; or (2) an entry in ink on the Receipt for Certified Mail showing the time of mailing and the initials of the postal employee receiving the item and making the entry, with appropriate written verification of such entry from the post office station of mailing, in which case the time of mailing shall be the time shown in the entry. If the postmark on the original Receipt for Certified Mail does not show a date, the offer shall not be considered.

9. DISCOUNTS. (a) Notwithstanding the fact that a blank is provided for a ten (10) day discount, prompt payment discounts offered for payment within less than twenty (20) calendar days will not be considered in evaluating offers for award, unless otherwise specified in the solicitation. However, offered discounts of less than 20 days will be taken if payment is made within the discount period, even though not considered in the evaluation of offers.

10. AWARD OF CONTRACT. (a) The contract will be awarded to that responsible offeror whose offer conforming to the solicitation will be most advantageous to the Government, price and other factors considered.

(b) The Government reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

(c) The Government may accept any item or group of items of any offer, unless the offeror qualifies his offer by specific limitations. UNLESS OTHERWISE PROVIDED IN THE SCHEDULE, OFFERS MAY BE SUBMITTED FOR ANY QUANTITIES LESS THAN THOSE SPECIFIED; AND THE GOVERNMENT RESERVES THE RIGHT TO MAKE AN AWARD ON ANY ITEM FOR A QUANTITY LESS THAN THE QUANTITY OFFERED AT THE UNIT PRICES OFFERED UNLESS THE OFFEROR SPECIFIES OTHERWISE IN HIS OFFER.

(d) A written award (or Acceptance of Offer) mailed (or otherwise furnished) to the successful offeror within the time for acceptance specified in the offer shall be deemed to result in a binding contract without further action by either party.

The following paragraphs (e) through (h) apply only to negotiated solicitations:

(e) The Government may accept within the time specified therein, any offer (or part thereof, as provided in (c) above), whether or not there are negotiations subsequent to its receipt, unless the offer is withdrawn by written notice received by the Government prior to award. If subsequent negotiations are conducted, they shall not constitute a rejection or counter offer on the part of the Government.

(f) The right is reserved to accept other than the lowest offer and to reject any or all offers.

(g) The Government may award a contract, based on initial offers received, without discussion of such offers. Accordingly, each initial offer should be submitted on the most favorable terms from a price and technical standpoint which the offeror can submit to the Government.

(h) Any financial data submitted with any offer hereunder or any representation concerning facilities or financing will not form a part of any resulting contract; provided, however, that if the resulting contract contains a clause providing for price reduction for defective cost or pricing data, the contract price will be subject to reduction if cost or pricing data furnished hereunder is incomplete, inaccurate, or not current.

11. GOVERNMENT-FURNISHED PROPERTY. No material, labor, or facilities will be furnished by the Government unless otherwise provided for in the solicitation.

12. LABOR INFORMATION. General information regarding the requirements of the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), the Contract Work Hours Standards Act (40 U.S.C. 327-330), and the Service Contract Act of 1965 (41 U.S.C. 351-357) may be obtained from the Department of Labor, Washington, D.C. 20210, or from any regional office of that agency. Requests for information should include the solicitation number, the name and address of the issuing agency, and a description of the supplies or services.

13. SELLER'S INVOICES. Invoices shall be prepared and submitted in quadruplicate (one copy shall be marked "original") unless otherwise specified. Invoices shall contain the following information: Contract and order number (if any), item numbers, description of supplies or services, sizes, quantities, unit prices, and extended totals. Bill of lading number and weight of shipment will be shown for shipments made on Government bills of lading.

14. SMALL BUSINESS CONCERN. A small business concern for the purpose of Government procurement is a concern, including its affiliates, which is independently owned and operated, is not dominant in the field of operation in which it is submitting offers on Government contracts, and can further qualify under the criteria concerning number of employees, average annual receipts, or other criteria, as prescribed by the Small Business Administration. (See Code of Federal Regulations, Title 13, Part 121, as amended, which contains detailed industry definitions and related procedures.)

15. CONTINGENT FEE. If the offeror, by checking the appropriate box provided therefor, has represented that he has employed or retained a company or person (other than a full-time bona fide employee working solely for the offeror) to solicit or secure this contract, or that he has paid or agreed to pay any fee, commission, percentage, or brokerage fee to any company or person contingent upon or resulting from the award of this contract, he shall furnish, in duplicate, a complete Standard Form 119, Contractor's Statement of Contingent or Other Fees. If offeror has previously furnished a completed Standard Form 119 to the office issuing this solicitation, he may accompany his offer with a signed statement (a) indicating when such completed form was previously furnished, (b) identifying by number the previous solicitation or contract, if any, in connection with which such form was submitted, and (c) representing that the statement in such form is applicable to this offer.

16. PARENT COMPANY. A parent company for the purpose of this offer is a company which either owns or controls the activities and basic business policies of the offeror. To own another company means the parent company must own at least a majority (more than 50 percent) of the voting rights in that company. To control another company, such ownership is not required, if another company is able to formulate, determine, or veto basic business policy decisions of the offeror, such other company is considered the parent company of the offeror. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.

17. EMPLOYER'S IDENTIFICATION NUMBER. (Applicable only to advertised solicitations.) The offeror shall insert in the applicable space on the offer form, if he has no parent company, his own Employer's Identification Number (E.I. No.) (Federal Social Security Number used on Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941), or, if he has a parent company, the Employer's Identification Number of his parent company.

18. CERTIFICATION OF INDEPENDENT PRICE DETERMINATION. (a) This certification on the offer form is not applicable to a foreign offeror submitting an offer for a contract which requires performance or delivery outside the United States, its possessions, and Puerto Rico.

(b) An offer will not be considered for award where (a)(1), (a)(3), or (b) of the certification has been deleted or modified. Where (a)(2) of the certification has been deleted or modified, the offer will not be considered for award unless the offeror furnishes with the offer a signed statement which sets forth in detail the circumstances of the disclosure and the head of the agency, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

19. ORDER OF PRECEDENCE. In the event of an inconsistency between provisions of this solicitation, the inconsistency shall be resolved by giving precedence in the following order: (a) the Schedule; (b) Solicitation Instructions and Conditions; (c) General Provisions; (d) other provisions of the contract, whether incorporated by reference or otherwise; and (e) the specifications.

20. PRE-AWARD ON SITE EQUAL OPPORTUNITY COMPLIANCE REVIEW (1970 AUG)

In accordance with regulations of the Office of Federal Contract Compliance, 41 CFR 60.1, effective 1 July 1968, an award in the amount of $1,000,000 or more will not be made under this solicitation unless the bidder and each of his known first-tier subcontractors (to whom he intends to award a subcontract of $1,000,000 or more) are found, on the basis of a compliance review, to be able to comply with the provisions of the Equal Opportunity clause of this solicitation.

21. AVAILABILITY OF SPECIFICATIONS, STANDARDS AND DEPARTMENTS OF DEFENSE DATA ITEM DESCRIPTIONS

Specifications, standards and those data item descriptions from the Department of Defense Authorized Data List (identified by prefix "DI," e.g. DI-M-3407/H-107-2) cited in this Invitation for Bids/Request for Proposals are available as indicated below:

(a) Unclassified Federal, Military and Other Specifications, Standards (Excluding Commercial) and Department of Defense Data Item Descriptions. Submit request on DD Form 1425 (Specifications and Standards Requisition) to:

Commanding Officer
U. S. Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, Pennsylvania 19120

DD Form 1425 shall be completed to indicate the document title, number, date, and any applicable amendment thereto by number and date. An initial request, where the prospective contractor does not have DD Form 1425, may be submitted in letter form, giving the same information as listed above, and the IFB, RFP or contract number involved.

(b) Commercial Specifications and Standards. These specifications and standards are not available from Government sources. They may be obtained from the publishers.

22. GOVERNMENT SURPLUS (1965 JAN)

(a) In the event the bid or proposal is based on furnishing items or components which are former Government surplus property or residual inventory resulting from terminated Government contracts, a complete description of the items or components, quantity to be used, name of Government agency from which acquired, and date of acquisition shall be set forth on a separate sheet to be attached to bid or proposal. Notwithstanding any information provided in accordance with this provision, items furnished by the Contractor must comply in all respects with the specifications contained herein.

(b) Except as disclosed by the Contractor in (a) above, no property of the type described herein shall be furnished under this contract unless approved in writing by the Contracting Officer.

23. NEW MATERIAL (1965 JAN)

Except as to any supplies and components which the Specification or Schedule specifically provides need not be new, the Contractor represents that the supplies and components including any former Government property identified pursuant to the "Government Surplus" clause of this contract to be provided under this contract are new (not used or reconditioned, and not of such age or so deteriorated as to impair their usefulness or safety). If at any time during the performance of this contract, the Contractor believes that the furnishing of supplies or components which are not new is necessary or desirable, he shall notify the Contracting Officer immediately in writing, including the reasons therefor and proposing any consideration which will flow to the Government if authorization to use such supplies is granted.

24. Clause 6, Failure to Submit Offer, on Standard Form 33A, is amended by revising the first sentence to read:

"If no offer is to be submitted, do not return the Solicitation, accompanying drawings, specifications and any other procurement data furnished thereunder unless otherwise specified."

25. UNNECESSARILY ELABORATE CONTRACTOR'S PROPOSALS/QUOTATIONS (1969 OCT)

Unnecessarily elaborate brochures or other presentations beyond that sufficient to present a complete and effective proposal or quotation are not desired and may be construed as an indication of the offeror's or quoter's lack of cost consciousness. Elaborate art work, expensive paper and bindings and expensive visual and other presentation aids are neither necessary nor wanted.

26. APPLICABLE SMALL BUSINESS SIZE STANDARD AND PRODUCT CLASSIFICATION

Not more than _____ employees.

Standard Industrial Classification (SIC) Code _____.

27. PRIORITY RATING

Contracts or purchase orders to be awarded as a result of this solicitation shall be assigned a ☐ DX ___ rating; ☐ DO-___ rating; ☐ DMS allotment number ___ in accordance with the provisions of BDSA Regulation 2 and/or DMS Regulation 1.

28. NOTICE: Offeror's attention is directed to Item I of Defense Procurement Circular Number 84 dated 30 November 1970 relating to the payment of Independent Research and Development and Bid and Proposal (IR&D and B&P) costs.

29. COST DATA

Cost data shall be presented pursuant to the provisions of ASPR Paragraph 16-206. Such data shall be prepared according to the instructions appearing on the reverse side of the applicable DD Form 633 attached hereto and those delineated in the attached ASD/PPF distribution entitled "Guidance for the Use of DD Form 633," dated 18 August 1967.

30. GOVERNMENT PROPERTY IN OFFEROR'S POSSESSION

The use of Government-owned facilities by the Contractor and/or subcontractor(s) will be a factor in the award of the contract. Offeror may use, in performing the work offered upon, any items of Government property in the offeror's and/or his subcontractor(s) possession under an existing facilities contract or other agreement provided such facilities contract or other agreement authorizes such use. If the offeror and/or subcontractor(s) plans to use such Government property he will so state in his offer and in such event the offeror shall submit an itemized list and description of the items to be used, indicating the amount of use and the estimated fair rent for such contemplated use and identify the contracts or agreements under which each item of such Government property was furnished or acquired. Offers in response to this Request will be predicated upon use at the rental rates stipulated in such facilities contract or other agreement. Rental cost must be clearly identified in the offer. Any use of Government-owned facilities not specified in the offer for consideration during the offer evaluation will either be subject to the rental charge as specified in ASPR 7-702.12 Attachment or the contract price will be reduced by an equivalent amount.

31. RESTRICTIONS ON DISPOSITION OF GOVERNMENT PRODUCTION AND RESEARCH PROPERTY

Offerors shall state whether, to their knowledge, the procurement involves the acquisition of Government production and research property, the disposal of which may be restricted by patent or other proprietary rights of offeror applicable to said property or by the offeror's ownership or control of the site upon which said nonseverable Government production and research property is to be located.

32. LOS ANGELES CITY LICENSE TAXES.

Notwithstanding any other provisions of this contract:

(a) The contract price includes allocable Los Angeles City License taxes, including those taxes (hereinafter referred to as "additional taxes") resulting from the application of principles expressed by the Los Angeles City Attorney in his opinion dated 2 March 1960. If, after the contract date, the contractor is not required to pay or bear the burden, or obtains a credit or refund of all or a portion of said taxes from the City of Los Angeles, the contract price shall be decreased by the amount of such relief or refund allocable to this contract, or that amount shall be paid to the Government, as the Contracting Officer directs. The contract price shall be similarly decreased if the Contractor, through his fault or negligence or failure to follow instructions of the Contracting Officer as provided in (b) below, is required to pay or bear the burden or does not obtain a refund of any such taxes. Interest paid or credited to the Contractor incident to a refund of these taxes shall inure to the benefit of the Government to the extent that such interest was earned after the Contractor was paid or reimbursed by the Government for these taxes.

(b) The Contractor shall comply with the instructions of the Contracting Officer in order to obtain a reduction, credit or refund of Los Angeles City License Taxes, and the contract price shall be equitably adjusted to cover the costs of such compliance, including reasonable attorneys' fees arising therefrom.

(c) The Contractor shall maintain accurate records showing the amount of Los Angeles License Taxes, and specifically the amount of additional taxes, included in the contract price.

33. INCORPORATION OF REFERENCED DOCUMENTS:

All specifications, exhibits, drawings, amendments and/or other documents which are referenced in this contract, but are not attached hereto, are hereby incorporated herein by reference.

34. TYPE OF CONTRACT

It is contemplated that a Cost Plus Fixed Fee Contract with an Award Fee will be awarded hereunder, and that the award will be made by execution of a contract containing terms and conditions similar to those set forth in the MODEL CONTRACT attached hereto and made a part hereof. The contract will also contain a provision setting forth the maximum obligation to the Government under the contract, notwithstanding the fact that it is a cost reimbursement contract. Attention is directed to paragraph 14 of Section J of the MODEL CONTRACT.

DEPARTMENT OF DEFENSE
CONTRACT PRICING PROPOSAL

Form Approved
Budget Bureau No. 22-R100

This form is for use when submission of cost or pricing data (*see ASPR 3-807.3*) is required

PAGE NO.	NO. OF PAGES

NAME OF OFFEROR	SUPPLIES AND/OR SERVICES TO BE FURNISHED
HOME OFFICE ADDRESS (*Include ZIP Code*)	QUANTITY / TOTAL AMOUNT OF PROPOSAL $
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED	GOVERNMENT SOLICITATION NO.

COST ELEMENTS			PROPOSED CONTRACT ESTIMATE		
			TOTAL COST[1]	UNIT COST[2]	REFERENCE[3]
1. DIRECT MATERIAL[4]	a. PURCHASED PARTS[5]				
	b. SUBCONTRACTED ITEMS[6]				
	c. OTHER MATERIAL	(1) RAW MATERIAL[7]			
		(2) STANDARD COMMERCIAL ITEMS[8]			
		(3) INTERDIVISIONAL TRANSFERS (at other than cost)[9]			
2. MATERIAL OVERHEAD[10]					
3. INTERDIVISIONAL TRANSFERS AT COST[11]					
4. DIRECT ENGINEERING LABOR[12]					
5. ENGINEERING OVERHEAD[10]					
6. DIRECT MANUFACTURING LABOR[12]					
7. MANUFACTURING OVERHEAD[10]					
8. OTHER COSTS[13]					
9. *SUBTOTALS*					
10. GENERAL AND ADMINISTRATIVE EXPENSES[10]					
11. ROYALTIES[14]					
12. FEDERAL EXCISE TAX[15]					
13. *SUBTOTALS*					
14. PROFIT OR FEE					
15. TOTAL PRICE (*Amount*)					

I. HAVE THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OR THE ATOMIC ENERGY COMMISSION PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS?

☐ YES ☐ NO *IF YES, IDENTIFY BELOW.*

NAME AND ADDRESS OF REVIEWING OFFICE (*Include ZIP Code*)	TELEPHONE NUMBER

II. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS PROPOSED CONTRACT?

☐ YES ☐ NO *IF YES, IDENTIFY ON A SEPARATE PAGE.*

III. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT?

☐ YES ☐ NO *IF YES, IDENTIFY:* ☐ ADVANCE PAYMENTS ☐ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

IV. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR SIMILAR ITEMS WITHIN THE PAST THREE YEARS?

☐ YES ☐ NO *IF YES, SHOW CUSTOMER(S) AND CONTRACT NUMBER(S) BELOW OR ON A SEPARATE PAGE.*

V. DOES THIS COST SUMMARY CONFORM WITH THE COST PRINCIPLES SET FORTH IN ASPR, SECTION XV (*see 3-807.3(c)(2)*)?

☐ YES ☐ NO *IF NO, EXPLAIN ON A SEPARATE PAGE*

This proposal is submitted for use in connection with and in response to _____ _____

_____* and reflects our best estimates as of this date, in accordance with the instructions to offerors and the footnotes which follow:

*DESCRIBE RFP, ETC.

TYPED NAME AND TITLE	SIGNATURE

NAME OF FIRM	DATE OF SUBMISSION

DD FORM 1 APR 60 633 PREVIOUS EDITIONS ARE OBSOLETE.

INSTRUCTIONS TO OFFEROR

1. The purpose of this form is to provide a standard format by which the offeror submits to the Government a summary of incurred and estimated costs *(and attached supporting information)* suitable for detailed review and analysis. Prior to the award of a contract resulting from this proposal, the offeror shall, under the conditions stated in ASPR 3-807.3, be required to submit a Certificate of Current Cost or Pricing Data *(see ASPR 3-807.3(e) and 3-807.4)*.

2. As part of the specific information required by this form, the offeror must submit with this form, and clearly identify as such, cost or pricing data *(that is, data which is verifiable and factual and otherwise as defined in ASPR 3-807.3(a))*. In addition, he must submit with this form any information reasonably required to explain the offeror's estimating process, including:

a. The judgmental factors applied and the mathematical or other methods used in the estimate including those used in projecting from known data, and

b. The contingencies used by the offeror in his proposed price.

3. Where attachment of supporting cost or pricing data to this form is impracticable, the data will be specifically identified and described *(with schedules as appropriate)*, and made available to the contracting officer or his representative upon request.

4. The formats for the "Cost Elements" and the "Proposed Contract Estimate" are not intended as rigid requirements. These may be presented in different format with the prior approval of the contracting officer if required for more effective and efficient presentation. In all other respects this form will be completed and submitted without change.

5. By submission of this proposals offeror, if selected for negotiation, grants to the contracting officer, or his authorized representative, the right to examine, for the purpose of certifying the cost or pricing data submitted, those books, records, documents and other supporting data which will permit adequate evaluation of such cost or pricing data, along with the computation and projections used therein. This right may be exercised in connection with any negotiations prior to contract award.

FOOTNOTES

NOTE 1. Enter in this column those *necessary* and reasonable costs which in the judgment of the offeror will properly be incurred in the efficient performance of the contract. When any of the costs in this column have already been incurred *(e.g., on a letter contract or change order)*, describe them on an attached supporting schedule. When "preproduction" or "startup" costs are significant or when specifically requested in detail by the contracting officer, provide a full identification and explanation of same.

NOTE 2. The use of this column is optional for multiple line item proposals, except where the contracting officer determines that a separate DD Form 633 is required for selected line items.

NOTE 3. Attach separate pages as necessary and identify in this column the attachment in which the information supporting the specific cost element may be found. No standard format is prescribed, however, the cost or pricing data must be accurate, complete and current and the judgment factors used in projecting from the date to the estimates must be stated in sufficient detail to enable the contracting officer to evaluate the proposal. For example, provide the basis used for pricing raw bill of materials such as by vendor quotations, shop estimates, or invoice prices; the reason for use of overhead rates which depart significantly from experienced rates *(planned volume, a planned major rearrangement, etc.)*; or justification for an increase in labor rates *(anticipated wage and salary increases, etc.)*. Identify and explain any contingencies which are included in the proposed price, such as anticipated cost of rejects and defective work, anticipated costs of engineering redesign and retesting, or anticipated technical difficulties in designing high-risk components.

NOTE 4. Provide a list of principal items within each category of material indicating known or anticipated source, quantity, unit price, competition obtained, and basis of establishing source and reasonableness of cost.

NOTE 5. Include material for the proposed contract other than material described in the other footnotes under the cost element entitled "Direct Material."

NOTE 6. Include parts, components, subassemblies, and services to be produced or performed by other than you in accordance with your designs, specifications, or directions and applicable only to the prime contract.

NOTE 7. Include raw and processed material for the proposed contract in a form or state which requires further processing.

NOTE 8. Include standard commercial items normally fabricated in whole or in part by you which are generally stocked in inventory. Provide explanation for inclusion at other than the lower of cost or current market price.

NOTE 9. Include all materials sold or transferred between your plants, divisions or organizations under a common control at other than cost to the original transferor and provide explanation of pricing method used.

NOTE 10. Indicate the rates used and provide an appropriate explanation. Where agreement has been reached with Government representatives on the use of forward pricing rates, describe the nature of the agreement. Provide the method of computation and application of your overhead expense, including cost breakdown and showing trends and budgetary data as necessary to provide a basis for evaluation of the reasonableness of proposed rates.

NOTE 11. Include separate breakdown of costs.

NOTE 12. Provide a separate breakdown of labor by appropriate category and furnish basis for cost estimates.

NOTE 13. Include all other estimated costs *(e.g., special tooling, facilities, special test equipment, special plant rearrangement, preservation packaging and packing, spoilage and rework, and warranty)* which are not otherwise included. Identify separately each category of cost and provide supporting details. If the proposal is based on a F.O.B. destination price, indicate separately all outbound transportation costs included in total amount.

NOTE 14. If the total cost entered here is in excess of $250, provide on a separate page *(or on DD Form 743, Royalty Report)* the following information on each separate item of royalty or license fee: name and address of licensor, date of license agreement, patent numbers, patent application serial numbers, or other basis on which the royalty is payable, brief description, including any part or model numbers of each contract item or components on which the royalty is payable, percentage or dollar rate of royalty per unit, unit price of contract item, number of units, and total dollar amount of royalties. In addition, if specifically requested by the contracting officer, a copy of the current license agreement and identification of applicable claims of specific patents shall be provided.

NOTE 15. Selling price must include any applicable Federal excise tax on finished articles.

* U.S. GOVERNMENT PRINTING OFFICE : 1966 O - 205-570

DEPARTMENT OF DEFENSE

CONTRACT PRICING PROPOSAL
(RESEARCH AND DEVELOPMENT)

Form Approved
Budget Bureau No. 22-R.00

This form is for use when (i) submission of cost or pricing data (see ASPR 3-807.3) is required and (ii) substitution for the DD Form 633 is authorized by the contracting officer.

PAGE NO. | NO. OF PAGES

NAME OF OFFEROR	SUPPLIES AND/OR SERVICES TO BE FURNISHED
HOME OFFICE ADDRESS (Include ZIP Code)	
DIVISION(S) AND LOCATION(S) WHERE WORK IS TO BE PERFORMED	TOTAL AMOUNT OF PROPOSAL $ / GOVT SOLICITATION NO.

DETAIL DESCRIPTION OF COST ELEMENTS

			EST COST ($)	TOTAL EST COST[1]	REFERENCE
1. DIRECT MATERIAL (Itemize on Exhibit A)					
a. PURCHASED PARTS					
b. SUBCONTRACTED ITEMS					
c. OTHER - (1) RAW MATERIAL					
(2) YOUR STANDARD COMMERCIAL ITEMS					
(3) INTERDIVISIONAL TRANSFERS (At other than cost)					
TOTAL DIRECT MATERIAL					
2. MATERIAL OVERHEAD [2] (Rate % X $ base $)					
3. DIRECT LABOR (Specify)	ESTIMATED HOURS	RATE/HOUR	EST COST ($)		
TOTAL DIRECT LABOR					
4. LABOR OVERHEAD (Specify department or cost center) [2]	O.H. RATE	X BASE =	EST COST ($)		
TOTAL LABOR OVERHEAD					
5. SPECIAL TESTING (Including field work at Government installations)			EST COST ($)		
TOTAL SPECIAL TESTING					
6. SPECIAL EQUIPMENT (If direct charge) (Itemize on Exhibit A)					
7. TRAVEL (If direct charge) (Give details on attached Schedule)			EST COST ($)		
a. TRANSPORTATION					
b. PER DIEM OR SUBSISTENCE					
TOTAL TRAVEL					
8. CONSULTANTS (Identity - purpose - rate)			EST COST ($)		
TOTAL CONSULTANTS					
9. OTHER DIRECT COSTS (Itemize on Exhibit A)					
10. TOTAL DIRECT COST AND OVERHEAD					
11. GENERAL AND ADMINISTRATIVE EXPENSE (Rate % of cost element Nos.					
12. ROYALTIES [4]					
13. TOTAL ESTIMATED COST					
14. FEE OR PROFIT					
15. TOTAL ESTIMATED COST AND FEE OR PROFIT					

This proposal is submitted for use in connection with and in response to (Describe RFP, etc.)

and reflects our best estimates as of this date, in accordance with the instructions to offerors and the footnotes which follow.

TYPED NAME AND TITLE	SIGNATURE
NAME OF FIRM	DATE OF SUBMISSION

DD FORM 1 APR 55 633-4

EXHIBIT A - SUPPORTING SCHEDULE *(Specify. If more space is needed, use blank sheets)*

COST EL NO.	ITEM DESCRIPTION *(See footnote 5)*	EST COST *(5)*

I. HAVE THE DEPARTMENT OF DEFENSE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, OR THE ATOMIC ENERGY COMMISSION PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER GOVERNMENT PRIME CONTRACT OR SUBCONTRACT WITHIN THE PAST TWELVE MONTHS?

☐ YES ☐ NO *If yes, identify below.*

NAME AND ADDRESS OF REVIEWING OFFICE *(Include ZIP Code)*	TELEPHONE NUMBER/EXTENSION

II. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS PROPOSED CONTRACT?

☐ YES ☐ NO *If yes, identify on a separate page.*

III. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT?

☐ YES ☐ NO *If yes, identify:* ☐ ADVANCE PAYMENTS ☐ PROGRESS PAYMENTS OR ☐ GUARANTEED LOANS

IV. DO YOU NOW HOLD ANY CONTRACT *(or, do you have any independently financed (IR & D) projects)* FOR THE SAME OR SIMILAR WORK CALLED FOR BY THIS PROPOSED CONTRACT?

☐ YES ☐ NO *If yes, identify*

V. DOES THIS COST SUMMARY CONFORM WITH THE COST PRINCIPLES SET FORTH IN ASPR, SECTION XV *(See 3-807.2 (c) (3))*?

☐ YES ☐ NO *If no, explain on a separate page.*

INSTRUCTIONS TO OFFERORS

1. The purpose of this form is to provide a standard format by which the offeror submits to the Government a summary of incurred and estimated costs *(and attached supporting information)* suitable for detailed review and analysis. Prior to the award of a contract resulting from this proposal the offeror shall, under the conditions stated in ASPR 3-807.3, be required to submit a Certificate of Current Cost or Pricing Data (see ASPR 3-807.3(e) and 3-807.4).

2. As part of the specific information required by this form, the offeror must submit with this form, and clearly identify as such, cost or pricing data (that is, data which is verifiable and factual and otherwise as defined in ASPR 3-807.3(e)). In addition, he must submit with this form any information reasonably required to explain the offeror's estimating process, including:

   a. the judgmental factors applied and the mathematical or other methods used in the estimate including those used in projecting from known data, and

   b. the contingencies used by offeror in his proposed price.

3. When attachment of supporting cost or pricing data to this form is impracticable, the data will be specifically identified and described *(with schedules as appropriate)*, and made available to the contracting officer or his representative upon request.

4. The format for the "Cost Elements" is not intended as rigid requirements. These may be presented in different format with the prior approval of the contracting officer if required for more effective and efficient presentation. In all other respects this form will be completed and submitted without change.

5. By submission of this proposal, offeror, if selected for negotiation, grants to the contracting officer, or his authorized representative, the right to examine, for the purpose of verifying the cost or pricing data submitted, those books, records, documents and other supporting data which will permit adequate evaluation of such cost or pricing data, along with the computations and projections used therein. This right may be exercised in connection with any negotiations prior to contract award.

FOOTNOTES

1 Enter in this column those necessary and reasonable costs which in the judgment of the offeror will properly be incurred in the efficient performance of the contract. When any of the costs in this column have already been incurred (e.g., on a letter contract or change order), describe them on an attached supporting schedule. Identify all sales and transfers between your plants, divisions, or organizations under a common control, which are included at other than the lower of cost to the original transferor or current market price.

2 When space in addition to that available on Exhibit A is required, attach separate pages as necessary and identify in this "Reference" column the attachment in which information supporting the specific cost element may be found. No standard format is prescribed; however, the cost or pricing data must be accurate, complete and current, and the judgment factors used in projecting from the data to the estimates must be stated in sufficient detail to enable the contracting officer to evaluate the proposal. For example, provide the basis used for pricing materials such as by vendor quotations, shop estimates, or invoice prices; the reason for use of overhead rates which depart significantly from experienced rates (reduced volume, a planned major rearrangement, etc.); or justification for an increase in labor rates (anticipated wage and salary increases, etc.). Identify and explain any contingencies which are included in the proposed price, such as anticipated costs of rejects and defective work, or anticipated technical difficulties.

3 Indicate the rates used and provide an appropriate explanation. Where agreement has been reached with Government representatives on the use of forward pricing rates, describe the nature of the agreement. Provide the method of computation and application of your overhead expense, including cost breakdown and showing trends and budgetary data as necessary to provide a basis for evaluation of the reasonableness of proposed rates.

4 If the total royalty cost entered here is in excess of $250 provide on a separate page (or on DD Form 783, Royalty Report) the following information on each separate item of royalty or license fee: name and address of licensor; date of license agreement; patent numbers, patent application serial numbers, or other basis on which the royalty is payable; brief description, including any part or model number of each contract item or component on which the royalty is payable; percentage or dollar rate of royalty per unit; unit price of contract item; number of units; and total dollar amount of royalties. In addition, if specifically requested by the contracting officer, a copy of the current license agreement and identification of applicable claims of specific patents shall be provided.

5 Provide a list of principal items within each category indicating known or anticipated source, quantity, unit price, competition obtained, and basis of establishing source and reasonableness of cost.

GPO 886 781

PART I - GENERAL INSTRUCTIONS

SECTION A - Cover Sheet

STANDARD FORM 26, JULY 1966 GENERAL SERVICES ADMINISTRATION FED PROC REG (41CFR) 1-16.101	U **AWARD/CONTRACT**	PAGE 1 OF
2 CONTRACT (Proc. Inst. Ident.) NO	3 EFFECTIVE DATE	3 REQUISITION/PURCHASE REQUEST/PROJECT NO
		4 CERTIFIED FOR NATIONAL DEFENSE UNDER SSBA REG 3 AND/OR DMS REG 1 RATING
5 ISSUED BY USAF CODE AFSC AERONAUTICAL SYSTEMS DIVISION WRIGHT-PATTERSON AIR FORCE BASE, OHIO BUYER:	6 ADMINISTERED BY (If other than block 5) CODE	7 DELIVERY ☐ FOR DESTINATION ☐ OTHER (See below)
8 CONTRACTOR NAME AND ADDRESS CODE FACILITY CODE (Street, city, county, State, and ZIP code)		9 DISCOUNT FOR PROMPT PAYMENT 10 SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK
11 SHIP TO/MARK FOR CODE	12 PAYMENT WILL BE MADE BY CODE	
13 THIS PROCUREMENT WAS ☐ ADVERTISED, ☐ NEGOTIATED, PURSUANT TO: ☐ 10 U.S.C. 2304 (a)( ) ☐ 41 U.S.C. 253 (a)( )		
14 ACCOUNTING AND APPROPRIATION DATA		

(SEE CONTINUATION SHEET FOR SUPPLIES/SERVICES/PRICES)

(SEE TABLE OF CONTENTS ON PAGE 2

SUBJECT: ADVANCED MEDIUM STOL TRANSPORT, PROTOTYPE, TEST AND DATA

*The estimated cost is $_____
The fixed fee is $_____

15	TOTAL AMOUNT OF CONTRACT $ *

CONTRACTING OFFICER WILL COMPLETE BLOCK 17 OR 26 AS APPLICABLE

17 ☐ CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return ____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)	26 ☐ AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.
18 NAME OF CONTRACTOR BY _____ (Signature of person authorized to sign)	27 UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)
19 NAME AND TITLE OF SIGNER (Type or print) / 20 DATE SIGNED	28 NAME OF CONTRACTING OFFICER (Type or print) / 29 DATE SIGNED

TABLE OF CONTENTS

THE FOLLOWING CHECKED SECTIONS ARE CONTAINED IN THE CONTRACT

PART II - THE SCHEDULE

STANDARD FORM 30, JULY 1966 GENERAL SERVICES ADMINISTRATION FED PROC REG (41 CFR) 1-16.101	SECTION E SUPPLIES/SERVICES & PRICES	REF NO OF DOC BEING CONT'D	PAGE 3	OF

NAME OF OFFEROR OR CONTRACTOR

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	Design, develop, and fabricate Advanced Medium STOL Transport, Prototype, in accordance with _____ _____.				
0002	Perform flight tests of the Advanced Medium STOL Transport, Prototype, in accordance with _____ _____.				
0003	Data in accordance with DD Form 1423, designated Exhibit "A", attached hereto and made a part hereof.				

1. SPECIAL DATA PROVISION (OPTION)

The contractor hereby grants the Government an option to procure any and all data, the rights thereto and subject to the provisions described in the Special Data Provisions set forth below. Said option shall be exercisable by the Government within 2 years following the effective date of this contract. The delivery schedule for said option (To be established at time of award of this Contract) shall be compatible with Government requirements. The contractor further agrees that the total price to the Government for the exercise of said option in the acquisition contract shall in no event exceed $_____.

Special Data Provisions

(a) The contractor agrees to furnish the following data with unlimited rights under this contract or any subsequent follow-on contracts as part of or in addition to data otherwise required to be furnished under this contract or subsequent follow-on contracts:

(i) all data resulting directly from performance of the contract, and,

(ii) all data necessary to enable the manufacture of all the equipment furnished under this contract. As a minimum this data will be sufficient to allow competitive acquisition of identical items as defined by MIL-STD-885A(USAF) dated 30 October 1969.

(b) In addition to the data required to be furnished under paragraph (a) above, the contractor agrees to furnish all or any other data resulting from the performance of this contract with unlimited rights regardless whether it is data for articles called for under the contract. Such data shall be furnished upon the request of the contracting officer and shall be in the format requested by him. On the cost of reproduction of such data and placing it in the prescribed format, negotiated at the time demand for delivery is made, shall be paid therefor.

(c) The contractor agrees that he shall not impose limitations on the use of any data, or any portion thereof, which he may be required at a later date to deliver on a subsequent contract if the Government could have required delivery of such data under this contract or subsequent follow-on contracts without limitations.

(d) The contractor warrants that the data provided under this Option will be complete, accurate, and adequate as of the time of delivery for the purpose for which it was procured, and that he will promptly correct or furnish, as applicable, any data required hereunder which the contracting officer determines is incomplete, inadequate or deficient for those purposes, provided that the contracting officer notifies the contractor of the contracting officer's determination within three (3) years after the last data has been delivered under this contract or subsequent follow-on contracts.

(e) The purpose for the data set forth in this Option is agreed to be but not limited to the procurement of identical items from other sources the format of which and requirements for are set forth in paragraphs 3.2.5 and 3.2.5.1 of MIL-D-1000 dated 1 March 1965, and MIL-STD-835A(USAF) dated 30 October 1969.

(f) The contractor agrees to furnish any updating, change or modification data to the data required to be furnished by this Option upon demand by the contracting officer in the format prescribed by him. Only the cost of reproduction of such updating, changes or modification data and placing it in the prescribed format, negotiated at the time demand for delivery is made, shall be paid therefor.

(g) The contractor shall insert the provisions of this Option in all subcontracts or purchase orders and shall require this inclusion in all subcontracts or purchase orders of any tier.

2. STABILIZATION OF PRICES, RENTS, WAGES, AND SALARIES (1971 AUG)

(A) By Executive Order 11615, dated August 15, 1971, the President stabilized prices, rents, wages, and salaries. The Contractor represents that to the best of his knowledge and belief he is in complete compliance with Executive Order 11615. Further, the Contractor warrants that the amounts invoiced under this contract will not exceed the lower of (1) the contract price, or (2) the maximum levels established in accordance with the Order.

(B) The Contractor agrees to insert the substance of this clause, including this paragraph (B), in all subcontracts for supplies or services issued under this contract.

PART II - THE SCHEDULE

SECTION H - DELIVERIES OR PERFORMANCE

1. The Contractor shall perform the services and delivery to the Government the supplies called for hereunder in accordance with the following schedule:

Item 0001 -

Item 0002 -

Item 0003 - In accordance with the provisions of Exhibit "A" (DD Form 1423) attached

2. The Contractor shall request consignment instructions for the supplies, other that data, to be delivered hereunder from the Procuring Contracting Officer, Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

3. Data shall be consigned to the respective addressees indicated in the Blocks 14 of Exhibit "A" (DD Form 1423) attached.

PART II - THE SCHEDULE

SECTION I - INSPECTION AND ACCEPTANCE Page 5

1. The aircraft and associated hardware shall be finally inspected and accepted at the site where the aircraft is flight tested.

2. Data shall be finally inspected and accepted at destination - Headquarters, Aeronautical Systems Division, Wright-Patterson AFB Ohio.

3. The Contractor shall establish and maintain a system for controlling nonconforming supplies in accordance with U. S. Air Force Specification Number 515 as in effect on the date of this contract.

1. SPECIAL DATA PROVISIONS

(a) Rights in Data (Dec. 1967) - The rights obtained by the Government in Technical data are set forth in the Rights in Technical Data Clause incorporated in the contract, and nothing elsewhere in this contract or in any documents incorporated by reference in this contract shall be construed as in any way altering such rights except as restricted by the express terms, if any, of this contract as to data called for and furnished for provisioning purposes only.

(b) Marking Technical Data (Jul. 1964) - The Contractor agrees to mark the number of this contract, and the name and address of the Contractor or subcontractor who generated the data, on technical data delivered to the Government pursuant to any requirement of this contract.

(c) Limitation on Technical Data Requirements (June 1968) - All the technical data and reports requirements of this contract are set forth in the Contract Data Requirements List (DD Form 1423) attached thereto and made a part hereof, Section E, paragraph 1 of the Schedule and in the ASPR and Air Force ASPR Supplement clauses included herein. In case of difference or conflict between the data requirements list and the ASPR and Air Force ASPR Supplement clauses, the latter shall govern. Nothing in any other documents or specifications made a part hereof shall be construed as altering such data and reports requirements in any way.

(d) Contract Schedule Items Requiring Experimental, Developmental, or Research Work (1969 Aug) - For purposes of defining, pursuant to the clause of the General Provisions, entitled "Rights in Technical Data", the nature of the work and the scope of rights in data granted to the Government it is understood and agreed that this contract requires the performance of experimental, developmental, or research work. This clause does not constitute a determination as to whether or not any data required to be delivered under this contract falls within the definition of limited rights data.

(e) Contractor agrees that it will not incorporate any provision in its subcontracts, nor enter into any agreement, written or oral, either directly or indirectly with its subcontractors under this contract, which has or may have the effect of (i) restricting any rights of use of data the Government has or is entitled to acquire under any contract, or (ii) restricting sales to or for the Government of any material manufactured or produced to date to which the Government has or is entitled to acquire rights of use. (iii) The Contractor further agrees that it will not insert in any subcontract under this contract, any provision which would restrict the right of the subcontractor to sell to the Government directly or to any other Government contractor the item or service called for by the subcontract.

(f) Notwithstanding any existing agreements between the Contractor and its vendors and/or subcontractors, the Contractor further agrees that all data including data in which the Government may not have unlimited rights, furnished or otherwise made available by the Contractor for use by its vendors and/or subcontractors at any time in providing supplies or services in the performance of this contract of follow-on contracts with the Contractor, will be furnished by the Contractor to such vendors and/or subcontractors together with updating modifications and changes for use by such vendors and/or subcontractors in providing supplies and services for sale directly or indirectly to the Government, in support of or in connection with items acquired by the Government under this contract or any follow-on contract with the Contractor, without payment to the Contractor of any fee, royalty or other charge by the vendors, subcontractors, or the Government. For the purpose of this paragraph, the phrase "fee, royalty or other charge" shall not include within its meaning fees, royalties or other charges to the extent they are a reasonable return for the use of any patents.

2. GOVERNMENT FURNISHED PROPERTY

Subject to the provisions of the "Government Property (Cost Reimbursement)" clause of the General Provisions, the Government will furnish to the Contractor for use in the performance of this contract, the Government property listed below:

(List of GFP, if any.)

3. FURNISHING OF OTHER MATERIALS OR SUPPLIES AT THE OPTION OF THE GOVERNMENT

The Government, at its option and from time to time, may furnish the Contractor with some of the materials and supplies required by the Contractor for the performance of this contract. In such event, an equitable reduction in the estimated cost and fixed fee of this contract shall be made prior to delivery of such supplies to the Contractor or as soon thereafter as possible, but in any event no later than 30 days after such delivery.

4. REDIRECTION OF EFFORT

Notwithstanding any other provisions of this contract, the Procuring Contracting Officer shall be the only individual authorized to redirect the effort or in any way amend any of the terms of this contract.

5. INCORPORATION OF REFERENCED DOCUMENTS

All specifications, exhibits, drawings, or other documents which are referenced in this contract, but are not attached hereto, are hereby incorporated herein by reference.

6. ORDER OF PRECEDENCE (1965 Aug)

In the event of an inconsistency in this contract, unless otherwise provided herein, the inconsistency shall be resolved by giving precedence in the following order: (a) the Schedule; (b) General Provisions; (c) the other provisions of this contract whether incorporated by reference or otherwise; and (d) the Specifications.

7. USE OF GOVERNMENT FACILITIES ON A NO-CHARGE BASIS

(a) The Contractor is authorized to use, in the performance of this contract, the Government-owned facilities provided to it under Facilities Contract * in effect on the date of this contract, on a no-charge basis.

(b) If the Contractor enters into subcontracts with subcontractors who have Government-owned facilities provided to them under Facilities Contracts which provide that no-charge use may be authorized, the Contracting Officer may authorize the use of such facilities on a no-charge basis, provided (i) he determines that such use will not give the subcontractor a favored competitive position, and (ii) this contract is amended to reflect adequate consideration to the Government for the use of such facilities on a no-charge basis. Such subcontracts shall specifically authorize the no-charge use, and require the manual approval of the Contracting Officer. No amendment to this contract will be required, as provided in (ii) above, if the Contracting Officer determines that an elimination of charge for use of such facilities will of itself result in an adequate decreased cost to the Government under this contract.

(c) If the Government-owned facilities provided to the Contractor or any subcontractor hereunder on a no-charge basis are increased or decreased or do not remain available during the performance of this contract, or if any change is made in the terms and conditions under which they are made available, such equitable adjustments as may be appropriate will be made in the terms of this contract, unless such increase or decrease was contemplated in the establishment of the price of this contract or a subcontract.

(d) The Contractor agrees that it will not directly or indirectly, through overhead charges or otherwise, include in the price of this contract, or seek reimbursement under this contract for, any rental charge paid by the Contractor for the use on other contracts of the facilities referred to herein. Any subcontract hereunder which authorizes the subcontractor to use Government facilities on a no-charge basis shall contain a provision to the same effect as this paragraph (d).

*to be identified if applicable

8. BASE SUPPORT

The contractor shall, insofar as possible, avoid incurring direct or indirect costs in duplicating work or support capacity available at or through any Air Force installation involved in the performance of this contract or any major subcontract hereunder. Therefore, the contractor agrees to utilize or cause to be utilized all available Government or Government-controlled working space, equipment, supplies, materials, services, or other support (including communication services) at or available through any Air Force installation where work under this contract is performed. Unless otherwise stipulated in the schedule of this contract, such items will be made available on a no-charge-for-use basis and the value thereof shall be a part of the consideration for this contract. The contractor shall report any inadequacies or nonavailability of items contemplated hereby, together with a recommended plan for obtaining the requested item(s), to the contracting officer, who shall promptly determine the validity and extent of the requirement and the manner in which any approved requirement will be filled (as by purchase, rental, lease, or otherwise). The contractor shall not purchase or otherwise furnish any requirement covered by this clause, or authorize others to do so, without written approval of the contracting officer of the terms of the proposed purchase or other arrangement. Items of a capital nature shall not be purchased under authority of this clause. The amount and character of support, together with other terms and conditions appropriate to the furnishing thereof, shall be determined and set forth in the schedule and the item(s) agreed to be furnished shall be accounted for hereunder by categories and installations(s). The effect of additions or changes in such support shall be fully documented and, if appropriate under the circumstance, equitable adjustment shall be made in the terms and conditions (including price) of the contract, in accordance with the clause entitled "Changes."

(The Base Support contemplated by this clause will be identified during negotiations and included in the definitive contract prior to its execution)

ADDITIONAL SECURITY PROVISIONS

9. The Contracting Officer may modify Contractor's responsibilities for security with respect to any work being performed hereunder within the confines of a military installation. Such modification shall be transmitted to the Contractor by the Contracting Officer by written notice pursuant to the provisions of the clause of this contract entitled "Changes". If such modification results in an increase or decrease of security costs under this contract, an appropriate increase or decrease of the contract price contract target price estimated cost and/or fee hereunder shall be negotiated and evidenced by a supplemental agreement to this contract. The Contractor agrees to include substantially the same provisions in all subcontracts hereunder involving access to a military installation.

10. ACQUISITION OF ADDITIONAL SPECIAL TOOLING AND SPECIAL TEST EQUIPMENT

If during the performance of this contract, it is necessary to acquire additional special tooling/special test equipment in the implementation of any change authorized pursuant to the clause of the contract entitled "Changes", the equitable adjustment contemplated by said "Changes" clause shall not include the cost of any tooling/test equipment that does not meet the definition set forth in ASPR 13-101.5 and 13-101.6, except to the extent specified in ASPR 15-205.40(d). Therefore, the Contractor shall submit to the Contracting Officer separate lists, one for all special tooling (except for jigs, dies, fixtures, molds, patterns, and special taps) and one for all special test equipment required for any such contemplated or authorized change, no later than concurrently with the submission of his firm price proposal for an equitable adjustment (increase or decrease) contemplated by the "Changes" clause. The itemized list(s) shall include: (1) manufacturer's name, (2) general nomenclature and description of size, capacity, and function including breakout of major components, (3) estimated delivery cost, and (4) any special characteristics deemed pertinent to the classification of the item, including those reasons that support the contractor's contention that the items are in fact "special" and that the use of such tooling/equipment is limited to the development, production and/or testing of the particular supplies or parts thereof or in the performance of the particular services.

11. ESTIMATED COST, FIXED FEE AND PAYMENT OF FEE

(a) The estimated cost for the performance of this contract is $_____.

(b) The fixed fee for the performance of this contract is $_____.

(c) The fixed fee, as the said fee may be increased or decreased from time to time, shall be paid as it accrues, in monthly installments based upon the percentage of completion of work, as determined by the Contracting Officer.

12. AWARD FEE

(a) In addition to the fixed fee specified above, an award fee may be applicable at the Government's option. The potential award fee is $_____. Such fee will be payable at the completion of the contract in accordance with the provisions of this Clause.

(b) The Contractor's performance shall be continuously monitored by the Fee Evaluation Board consisting of _____
_____.

(c) The Fee Evaluation Board will perform the evaluation of the Contractor's performance under the contract by:

(1) Independently reviewing the Contractor's performance;

(2) Reviewing the Contractor's written documentation encompassing his performance; and

(3) Reviewing the comments and opinions of other Government support organizations.

(d) The Contractor may submit its voucher immediately upon notification by the Procuring Contracting Officer that the Contractor has been awarded said fee.

(e) The decision of the Fee Evaluation Board shall not be subject to the clause hereof entitled "Disputes".

(f) Payment of any award fee awarded to the Contractor hereunder shall not be subject to the provisions of the clauses of this contract entitled "Allowable Cost, Fixed Fee and Payment" and "Termination."

13. FUNDS ALLOTTED

For the purpose of the clause entitled "Limitation of Funds" the General Provisions hereof, the amount of $_____ is presently available for payment and allotted to this contract for the performance of all items hereunder through _____.

14. MAXIMUM OBLIGATION OF THE GOVERNMENT

(a) Notwithstanding any provisions of the clauses entitled "Limitation of Funds" or "Allowable Cost, Fixed Fee, and Payment" of the General Provisions hereof to the contrary, the maximum obligation of the Government for all effort (direct and indirect), materials, supplies, services and data required to be performed under this contract shall not exceed $_____ which represents the total of (i) the estimated cost, (ii) the fixed fee, and (iii) the award fee as set forth in paragraph 12 above.

(b) Accordingly, it is agreed that in the event the allowable costs incurred by the Contractor in the performance of this contract exceed the estimated cost, and the Government desires the Contractor to continue with the work called for by this contract, such costs in excess of the estimated cost will be funded from those obligated funds reserved for the payment of the fixed fee. The authorization making such obligated funds (those reserved for payment of the fixed fee) available for payment of allowable costs will be by a unilateral Contract Modification issued by the Procuring Contracting Officer citing this provision as its authority. Said Contract Modification shall also make a corresponding decrease in the amount of the fixed fee. This process shall continue until the fixed fee has been reduced to Zero.

(c) Further, it is agreed that whenever, pursuant to paragraph (b) above, the total of the obligated funds reserved for payment of the fixed fee have been utilized to fund allowable costs incurred by the Contractor in the performance of this contract, and the Contractor continues to incur allowable costs in excess of that available under paragraph (b) above, the Government may, if it desires, fund such costs in excess of those available under paragraph (b) above from those

funds otherwise reserved for payment of the award fee under paragraph 12 above. The authorization making such reserved funds (those set aside for payment of the award fee) available for payment of allowable costs will be by a unilateral Contract Modification issued by the Procuring Contracting Officer citing this provision as its authority. Said Contract Modification shall also make a corresponding decrease in the amount of the award fee. This process shall continue until the award fee has been reduced to Zero.

(d) Indirect and direct costs incurred by the Contractor and otherwise allowable and allocable to this contract and which exceed the maximum obligation of the Government under this contract will not be recognized by the Government, and the Contractor shall not request any reimbursement from the Government under this or any other Government contract or subcontract for any such costs either as direct or indirect charges. Any references in the General Provisions to estimated costs shall be construed in a manner consistent with this purpose.

(e) The maximum obligation of the Government hereunder does not alter the obligation of the Contractor to perform all work required under Items 0001, 0002 and 0003 until completion of said Items. Accordingly, if the Government completes the funding of this contract pursuant to paragraph (b) and (c) above, the Contractor shall continue performance of Items 0001, 0002 and 0003 at his own expense and incur costs as if such costs were otherwise allowable hereunder.

(f) Notwithstanding the above limitations, the Contractor agrees that (i) title to any equipment, supplies or materials purchased or fabricated by the Contractor in the performance of this contract shall pass to the Government under the provisions of the "Government Property (Cost Reimbursement)" clause to the same extent as though the Contractor were entitled to be reimbursed all the allowable cost thereof; and (ii) he shall maintain a complete record pursuant to the "Examination of Records" clause of all costs which are normally allowable under the terms of a cost reimbursement contract. In the event of a termination under the "Termination" clause, the limitation on the Government's obligation under this provision will be taken into consideration in the termination settlement. Except as specifically modified by this provision, all the clauses of this contract shall apply to the work the cost of which is borne by the Contractor.

GENERAL PROVISIONS

COST REIMBURSEMENT RESEARCH AND DEVELOPMENT CONTRACT

A. The provisions of the contract clauses set forth in the following paragraphs of the Armed Services Procurement Regulation (ASPR) 1969 Edition are incorporated into this contract by reference with the same force and effect as though herein set forth in full:

Clause Number	ASPR Requirement	ASPR Source	Clause Title	Date of Clause
1	7-402.1	7-103.1	Definitions	1962 Feb
3	7-402.3(a)	7-203.4(a)	Allowable Cost, Fixed Fee, and Payment	1968 Sep
4	7-402.4	7-402.4	Standards of Work	1959 Feb
6	7-402.6	7-103.8	Assignment of Claims	1962 Feb
7	7-402.7	7-203.7(a)	Examination of Records	1969 Apr
8	7-402.8(a)	7-402.8(a)	Subcontracts	1967 Apr
9	7-402.9	7-104.14(a)	Utilization of Small Business Concerns	1958 Jan
10	7-402.9	7-104.14(b)	Small Business Subcontracting Program	1965 Jun
11	7-402.10	7-203.10	Termination	1970 Jul
12	7-402.11	7-103.12(a)	Disputes	1958 Jan
13	7-402.12	7-103.13(a)	Renegotiation	1959 Oct
14	7-402.13	7-104.3	Buy American Act	1964 May
15	7-402.18	7-103.19	Officials Not To Benefit	1969 Jul
16	7-402.19	7-103.20	Covenant Against Contingent Fees	1958 Jan
17	7-402.20	7-302.21	Authorization and Consent	1961 Jan
18	7-402.21	7-103.23	Notice and Assistance Regarding Patent and Copyright Infringement	1965 Jan
19	7-402.22	7-302.23(b)	Patent Rights (License)	1969 Dec
20	7-402.23	7-104.9(a)	Rights In Technical Data	1969 Aug
21	7-402.23	7-104.9(d)	Deferred Ordering of Technical Data	1964 May
22	7-402.23	7-204.9(h)	Technical Data-Withholding Of Payment	1966 Oct

*See paragraph B for implementations, changes and/or deletions

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Includes ASPR Rev. 8
(1)

GENERAL PROVISIONS (CONTINUED)

COST REIMBURSEMENT RESEARCH AND DEVELOPMENT CONTRACT

Clause Number	ASPR Requirement	ASPR Source	Clause Title	Date of Clause
23	7-402.24(a)	7-104.12, as modified by 7-204.12	Military Security Requirements	1966 Apr
24	7-402.25	7-203.21	Government Property (Cost Reimbursement)	1970 Sep
25	7-402.26	7-203.22	Insurance Liability To Third Persons	1966 Dec
26	7-402.27	7-104.20(a)	Utilization Of Labor Surplus Area Concerns	1970 Jun
27	7-402.27	7-104.20(b)	Labor Surplus Area Subcontracting Program	1970 Jun
28	*7-402.28	7-203.27	Payment For Overtime Premiums	1967 Jun
29	7-402.29	7-104.40	Competition In Subcontracting	1962 Apr
30 (DPC#74)	7-402.30	7-104.41(c)	Audit and Records	1970 Jan
31 (DPC#74)	7-402.31	7-104.29(a)	Price Reduction For Defective Cost or Pricing Data	1970 Jan
32 (DPC#74)	7-402.32	7-104.42(a)	Subcontractor Cost or Pricing Data	1970 Jan
33	7-403.2	7-104.6	Filing of Patent Applications	1969 Dec
34	7-403.5	7-203.11	Excusable Delays	1969 Aug
35	7-403.7	7-104.18	Priorities, Allocations, and Allotments	1961 Jan
36	7-403.10	7-104.4	Notice to the Government of Labor Disputes	1958 Sep
37	7-403.11	7-104.16	Gratuities	1952 Mar
38	7-403.12	7-403.12	Limitation on Withholding of Payments	1959 Feb
39	7-403.13	7-203.14	Commercial Bills of Lading Notations	1969 Dec
40 (DPC#87)	7-403.22	7-104.37	Required Source For Jewel Bearings	1971 Jul
41	7-403.23	7-204.28	General Services Administration Supply Sources	1965 Jan
42	7-403.24	7-104.79 (a)	Safety Precautions For Ammunition and Explosives	1970 Sep

*See paragraph B for implementations, changes and/or deletions

PPI 71-7-4 CR
Includes ASPR Rev 8, DPC 87
(2)

GENERAL PROVISIONS (CONTINUED)

COST REIMBURSEMENT RESEARCH AND DEVELOPMENT CONTRACT

Clause Number	ASPR Requirement	ASPR Source	Clause Title	Date of Clause
43	7-403.25	7-104.39	Interest	1968 May
44	7-403.41	7-104.62	Material Inspection and Receiving Report	1969 Dec
45	*7-404.1	7-404.1	Changes	1967 Apr
46	*7-404.5	7-105.3(c)	Stop Work Order	1968 Sep
47	7-404.6	7-404.6	Reports of Work	1960 Jul
48	19-205	7-104.69	F.O.B Point For Delivery Of Government-Furnished Property	1968 Jun
49	19-208.2	*7-104.70	F.O.B. Origin	1968 Jun
50	19-208.4(b)	*7-104.72	F.O.B. Origin-Minimum Size of Shipments	1968 Jun
51	19-211(a)	7-104.73	Loading, Bracing, and Blocking Of Freight Car Shipments	1968 Jun
52	19-213.2	7-104.74	Shipments To Ports-Export Releases and Milstamp Documentation	1968 Jun
53	19-407	7-105.4	Report of Shipment (REPSHIP)	1968 Jun
54 (DPC #87)	7-403.46	7-104.82	Required Sources For Miniature and Instrument Ball Bearings	1971 Jul
55	7-402.2(c)	7-402.2(c)	Limitation of Funds	1966 Oct
56	7-403.32	7-104.50	Management Control Systems Requirements	1969 May
57	7-403.16	7-204.21	Flight Risks	1965 Oct

*See paragraph B for implementations, changes and/or deletions
PPI 71-7-4 CR
Includes ASPR Rev. 8 ,DPC 87
(3)

GENERAL PROVISIONS (CONTINUED)

COST REIMBURSEMENT RESEARCH AND DEVELOPMENT CONTRACT

B. The following implementations, changes and/or deletions are hereby made to the clauses referenced in A. above:

(1) Clause 23 - Payment For Overtime Premiums - "Zero" applies to paragraph (d).

(2) Clause 45 - Changes - The period within which any claim for adjustments must be asserted is extended from 30 to 60 days.

(3) Clause 46 - Stop Work Order - Modified pursuant to ASPR 7-205.6.

(4) Clause 49 - F.O.B. Origin - "Semicolon" after the word "available" in the eleventh line changed to a "period" and the remainder of the paragraph deleted.

(5) Clause 50 - F.O.B. Origin-Minimum Size Of Shipments - Next to last and last sentences deleted.

(6) Clause 54 - Required Sources For Miniature and Instrument Ball Bearings - The word "or" appearing before the figures "30" in the third line of (a)(i) is changed to "of".

GENERAL PROVISIONS (CONTINUED)

COST REIMBURSEMENT RESEARCH AND DEVELOPMENT CONTRACT

C. CONVICT LABOR (1949 Mar)

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

D. CONTRACT WORK HOURS STANDARDS ACT—OVERTIME COMPENSATION (1964 Jun)

This contract, to the extent that it is of a character specified in the Contract Work Hours Standards Act (40 U.S.C. 327-330), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder.

(a) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek or work subject to the provisions of the Contract Work Hours Standards Act unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all such hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the provisions of paragraph (a), the Contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a) in the sum of $10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of eight hours or in excess of his standard workweek of forty hours without payment of the overtime wages required by paragraph (a).

(c) *Withholding for unpaid wages and liquidated damages.* The Contracting Officer may withhold from the Government Prime Contractor, from any moneys payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions of paragraph (b).

(d) *Subcontracts.* The Contractor shall insert paragraphs (a) through (d) of this clause in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

(e) *Records.* The Contractor shall maintain payroll records containing the information specified in 29 CFR 516.2(a). Such records shall be preserved for three years from the completion of the contract.

E. WALSH-HEALEY PUBLIC CONTRACTS ACT (1958 Jan)

If this contract is for the manufacture or furnishing of materials, supplies, articles, or equipment in an amount which exceeds or may exceed $10,000 and is otherwise subject to the Walsh-Healey Public Contracts Act, as amended (41 U.S.C. 35-45), there are hereby incorporated by reference all representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

F. EQUAL OPPORTUNITY (1969 Jan)

During the performance of this contract, the contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency Contracting Officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor or pursuant thereto, and will permit access to his books, records, and accounts by the Contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized

GENERAL PROVISIONS (CONTINUED)
COST REIMBURSEMENT RESEARCH AND DEVELOPMENT CONTRACT

in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the provisions of Paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for non-compliance: *Provided*, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

G. SAFETY AND ACCIDENT PREVENTION (Jun.1969)

In performing any work under this contract on premises which are under the direct control of the Government, the Contractor shall (i) conform to all safety rules and requirements prescribed in Air Force Manual 127-101, as in effect on the date of this contract and (ii) take such additional precautions as the Contracting Officer may reasonably require for safety and accident prevention purposes. The Contractor agrees to take all reasonable steps and precautions to prevent accidents and preserve the life and health of Contractor and Government personnel performing or in any way coming in contact with the performance of this contract on such premises. Any violation of such rules and requirements, unless promptly corrected, as directed by the Contracting Officer, shall be grounds for termination of this contract in accordance with the default provisions hereof.

H. RESTRICTIONS ON PRINTING (1969 JUN.)

Reproduction of reports, data or other written material, if required, is authorized provided that the material produced does not exceed 5,000 production units of any page and that items consisting of multiple pages do not exceed 25,000 production units in the aggregate.* Reproduction of material in excess of the quantities cited above shall not be accomplished without express prior written authorization from the contracting officer. These restrictions do not preclude the writing, editing, preparation of manuscript or reproducible copy of related illustrative materials if required as a part of this contract. They do not apply to the printing or duplicating required by contractors for their own use in responding to the terms of this contract.

*The aggregate number of production units is to be determined by multiplying pages times copies. For purposes of this paragraph a production unit is one sheet, size 11X17" or less (10-3/4X14-1/4" maximum image), one side only, one color.

I. GOVERNMENT BILL OF LADING AND MAILING INDICIA (AUG 1966)

(a) When it is provided in this contract that the supplies shall be delivered other than FOB specified destinations, or freight prepaid, shipment(s) shall be made on U. S. Government Bills of Lading or U. S. Government Mailing Indicia. The required number of Government Bills of Lading and Mailing Indicia shall be furnished to the Contractor by the cognizant transportation or other activity. The Contractor shall acknowledge receipt of Government Bills of Lading and Mailing Indicia in the manner prescribed by the issuing office. As shipments are made, the Contractor shall prepare, or complete, and distribute Government Bills of Lading in accordance with instructions of the issuing office.

(b) U. S. Government Mailing Indicia shall be used in lieu of U. S. Government Bills of Lading when weight, cube, and character of commodity permit movement within the U. S. Postal System.

(c) The Contractor agrees that Government Bills of Lading and Mailing Indicia in excess of the requirements of this contract shall be returned to the issuing office(s) not later than submission time of final invoice for payment. The Contractor also agrees that no mailing charge is, or will be, included in the cost/price for postage fees in those instances wherein Government Mailing Indicia is authorized and used.

(d) For the purpose of this clause, the term supplies shall include correspondence, publications, and other written material.

J. MILITARY STANDARD TRANSPORTATION AND MOVEMENT PROCEDURES (MILSTAMP)

(a) DOD MILSTAMP Implementation (DOD Regulation 4500.32-R) prescribes uniform procedures and documents for the control of shipments moving wholly or in part within the Department of Defense Transportation System (LOGAIR, MAC, MSTS, QUICKTRANS). Minimum requirements consist of the use and preparation of the following:

(1) The assignment of a Transportation Control Number (TCN).

(2) DD Form 1384, "Transportation Control and Movement Document." A multipurpose document which is used as a basic movement and control document, terminal handling document (e.g., Dock Receipt), cargo manifest, or tracing document.

(3) DD Form 1385, "Cargo Manifest (Air and Surface)." A multipurpose manual or mechanized form for use in listing air or surface manifest data.

(4) DD Form 1387, "Military Shipment Label." The shipping address label to be used for transportation marking in accordance with MIL-STD-129 in effect on the date of this contract.

(5) DD Form 1387-1, "Military Shipping Tag." The shipping tag used for transportation marking in accordance with MIL-STD-129 in effect on the date of this contract.

(6) DD Form 1387-2, "Special Handling Data/Certification." A document prepared by the shipper for all shipments to be routed via military air transportation or commercial air augmentation which require special handling and/or certification in accordance with MIL-STD-129 in effect on the date of this contract.

(7) General Purpose Punch Cards. Used for all mechanized MILSTAMP formats where specific formats have not been prescribed herein.

(b) The forms and formats prescribed by this clause constitute a family of documents required for movement of cargo into and through the Defense Transportation System (DTS).

(c) The Contractor shall prepare and distribute such documents in accordance with MILSTAMP criteria. In the event the Contractor requires instruction and/or assistance in connection therewith, he may contact Transportation Management personnel of the Contract Administration Office to which the contract has been assigned.

K. APPROVAL OF CONTRACT (JUL. 1949):

This contract shall be subject to the written approval of the Secretary or his duly authorized representative and shall not be binding until so approved.

Appendix 8

USAF Prototype Study Briefing to Mr. Packard, 5 August 1971

Outline

USAF PROTOTYPE STUDY

BRIEFING TO MR. PACKARD

5 August 1971

(CONFIDENTIAL) Chart #1

REPORT

USAF PROTOTYPE

STUDY

August 1971

(CONFIDENTIAL)

TEXT: Mr. Secretary. We are pleased to be here today to report to you the results of our study of Prototype Development.

STATEMENTS ON "PROTOTYPING" Chart #2

- Use "Fly-Before-Buy approach
  - Reduce risks through hardware demonstration
  - Build and test before production commitment
- Streamline management and procurement approaches
  - Less Paper
  - Less Reporting
  - Less Service Involvement
- Design to performance goals rather than specifications - keep price firm
- Stated military "requirement" not needed
- Interest in industry design team continuity
- Not all selection emphasis on "proposals"
- Competition not always needed

TEXT: As a departure for our study, we compiled and reviewed a very large number of statements on prototyping from both Government and Industry officials. You will recognize some of the statements on this slide as your own comments on the subject. These ideas provided a base-line for structuring the approach to prototyping that you will hear in this briefing.

STUDY OBJECTIVES — Chart #3

- Develop rationale for prototyping
- Determine what to prototype
- Determine how to manage and procure program
- Examine advisability of, and an approach to, preserving continuity of industry design teams

TEXT: The specific objectives given us by Dr. Seamans for our study are shown on this slide. The briefing will follow the order in which these objectives are listed.

STUDY APPROACH Chart #4

- Focus on advanced development program category
- Consider prototyping to be complementary to normal development process
- Stress aircraft and aeronautical technology prototyping at system level
- Review past and current USAF prototype programs for lessons learned
- Stress innovation and emphasize simplicity in management and procurement approaches

TEXT: In organizing our study we decided to emphasize advanced development as the area of interest for system prototype development. Most classifications of prototypes show five general types: Research, Experimental, Developmental, Preproduction, and Production. Our attention was on prototype projects which might be described as experimental or developmental. Because we believe these kinds of prototypes should be part of our Advanced Development Program, and complement our normal development process, we call them "Advanced Prototypes." We gave particular attention in this study to aircraft and aeronautical technology. Later in the briefing I will describe how we intend to broaden our interests to cover missile systems and other Air Force hardware interests.

I would like to call attention to the point on this chart that considerable experience exists in the Air Force with regard to prototyping at system and subsystem levels. We have drawn heavily on this experience in our study.

MOTIVATIONS FOR AIR FORCE PROTOTYPING PROGRAM — Chart #5

- Improve total acquisition process
  - Better product visibility at relatively low cost
  - Potentially lower costs in any subsequent development phase
  - Added flexibility in management and procurement
  - Evolutionary approach to satisfying force needs
- Provide a variety of demonstrated options for application to military hardware needs
- Add "confidence" factor in decision making
- Make possible project initiation without force structure justification
- Permit the system demonstration of new, high risk technology
- Foster a viable system design and modeling capability within industry

TEXT: We found a very large number of incentives for expanded use of prototypes in our development programs. Foremost among these is the possibility of making further significant improvements in our acquisition activities. There is no question that our visibility will be improved on the hardware we purchase, and we believe overall cost reductions may be realized for those projects which are later moved into engineering development and production. We also see opportunities for added flexibility in management and procurement through the use of prototype development, and we see the opportunity to support a sufficient number of new technology starts so that full scale development programs will not be adventuresome and risky undertakings. Over a period of time advanced prototypes will provide the Air Force with a variety of demonstrated options for possible applications in our force structure. This variety, plus the demonstrated performance data, will add a new measure of confidence to our decisions. We envision the initiation of advanced prototype programs without the formalities, such as development concept papers, normal to programs where eventual procurement is initially intended. In other words, we see a rather uninhibited and hopefully unencumbered opportunity for system demonstrations involving new high risk technology without being

bound to detailed force structure considerations. And, of course, we hope that advanced prototypes will help us preserve a minimum required design and model building capability in the aerospace industry pertinent to our future interests.

USAF PROTOTYPE STUDY REPORT Chart #6

- What to Prototype

TEXT: The project selection group reviewed over 220 prototype development proposals. Of these about 45 were candidate system projects, and some 175 could be characterized as subsystem or technology projects. The selected projects from this latter group were submitted to OSD as possible new initiatives for Advanced Development funding. My briefing will report on our recommended advanced prototype system projects.

RECOMMENDED PROTOTYPE PROJECTS Chart #7

- Advanced Medium STOL Transport
- Very Low Radar Cross Section (RCS) Vehicle
- Large Tanker Aircraft
- Lightweight Fighter (LWF) Aircraft
- Quiet Aircraft
- Remotely Piloted Vehicle (RPV)

TEXT: Shown here are our recommended candidates for prototype development. On the next slides I will briefly describe each of these selected projects and identify the principal technical objectives which we have associated with them.

PRINCIPAL TECHNICAL OBJECTIVES Chart #8

- Advanced Medium STOL Transport
  - STOL performance
    - Powered lift
    - Low speed stability and control
    - Low speed deceleration
  - High speed cruise
    - Airfoil design
- Very Low RCS Vehicle

TEXT: ADVANCED MEDIUM STOL TRANSPORT - The Advanced STOL Transport is a medium weight (C-130 Class) high performance aircraft that can operate in and out of 2,000' landing strips. This aircraft is not intended to fill the Air Force's immediate need for STOL airlift capability of the C-7 /C-123 Class, but is intended to provide data on the cost and design features associated with short field performance in an aircraft of the C-130 size. A fully developed aircraft of this weight and size category would be a possible replacement for our C-130 inventory. NASA is also extremely interested in STOL aircraft performance. Their thoughts are on a smaller-lighter aircraft, but we are in complete agreement on the technologies to be investigated. We would plan a very closely coordinated program with NASA for this prototype development. You will notice from the list of technical objectives that, in addition to STOL performance, we are also examining high speed cruise, which is pertinent to Air Force airlift requirements.

VERY LOW RCS VEHICLE - The Very Low Radar, Cross-Section Vehicle is small. Its total weight is only 3,000 pounds and it is not man-rated in this configuration. If the low radar cross-section is achievable, any known radars will have extreme difficulty acquiring and tracking the vehicle. We have already demonstrated the technology on a laboratory mock-up and need to proceed to flight demonstration for verification.

PRINCIPAL TECHNICAL OBJECTIVES (CONTD) Chart #9

- Large Tanker Aircraft
  - Controllability of receiver aircraft and boom
- Lightweight Fighter Aircraft
  - High maneuverability and performance
    - Neutral stability
    - High aspect ratio wing
    - Automatic variable camber
    - High thrust/weight
    - Thin wing
  - Controllability
    - High "G" cockpit/sidestick control
    - Fly-By-Wire

TEXT: LARGE TANKER AIRCRAFT - The large tanker aircraft project involves modifying an existing large aircraft such as the Boeing 747 by incorporating a KC-135 boom and boom operator's station. Refueling approaches and dry hookups will be made to investigate the controllability of a receiver aircraft and the boom in the larger aircraft's wake. In a later phase this program could be expanded to include testing of multi-point refueling using wing-tip stations on the 747.

LIGHTWEIGHT FIGHTER AIRCRAFT - The Lightweight Fighter is a prototype demonstration of a very high performance aircraft. Gross weight is expected to be 20,000 pounds or less, presuming the mission applications are restricted. The principal technical objectives of this program are to achieve extremely high maneuverability and good controllability throughout the performance range of the aircraft. We are in complete agreement with NASA regarding the need to examine the related technologies in a specifically designed aircraft. Because of the technical risks involved we have not been able to include an optimum combination of these various aerodynamics concepts and design ideas into our approved development programs.

PRINCIPAL TECHNICAL OBJECTIVES (CONTD) Chart #10

- QUIET AIRCRAFT
  - Reduction of aerodynamic and engine noise
    - Aero-acoustic wing
    - Acoustically treated engine
- REMOTELY PILOTED VEHICLE (RPV)
  - Control in air/ground and air/air missions
    - Multiple vehicles
    - Data link security
  - Vehicle design/manuever of optimization

TEXT: QUIET AIRCRAFT - The Quiet Aircraft is a small, subsonic vehicle that can be jet or prop. To achieve the quiet capability it will include a new aero-acoustically designed wing and an acoustically treated engine installation.

REMOTELY PILOTED VEHICLE - The Remotely Piloted Vehicle project will exploit current technology hardware for flight demonstration. Demonstration of the ability to control RPV's in various mission applications is a necessary first step in realizing the potential of these systems. The multiple control and data link security features of the demonstration will be expecially important. By eliminating the constraints such as "G" limits, and crew escape provisions in the design optimization, the potential exists for achieving high performance and low cost in these vehicles.

COST SUMMARY
RECOMMENDED PROTOTYPE PROJECTS

Chart #11

	FY-72	FY-73	FY-74	FY-75	TOTAL
• Adv Med STOL Transport (1 Cntr, 1 or 2 Vehicles)	(3.5)	10-15	10-56	0-15	20-86
• Very Low RCS Vehicle (1 Cntr, 3 Vehicles)	5	8	7	-	20
• Large Tanker Aircraft (1 Cntr, 1 Vehicle)	2	-	-	-	2
• Lightweight Fighter A/C (2 Cntr, 2 Vehicles ea)	8	46	16	-	70
• Quiet Aircraft (1 Cntr, 2 Vehicles)	4	8	3	-	15
• Remotely Piloted Vehicle (1 Cntr, 2 Vehicles)	-	6	6	3	15
TOTALS	19	78-83	42-88	3-15	142-208

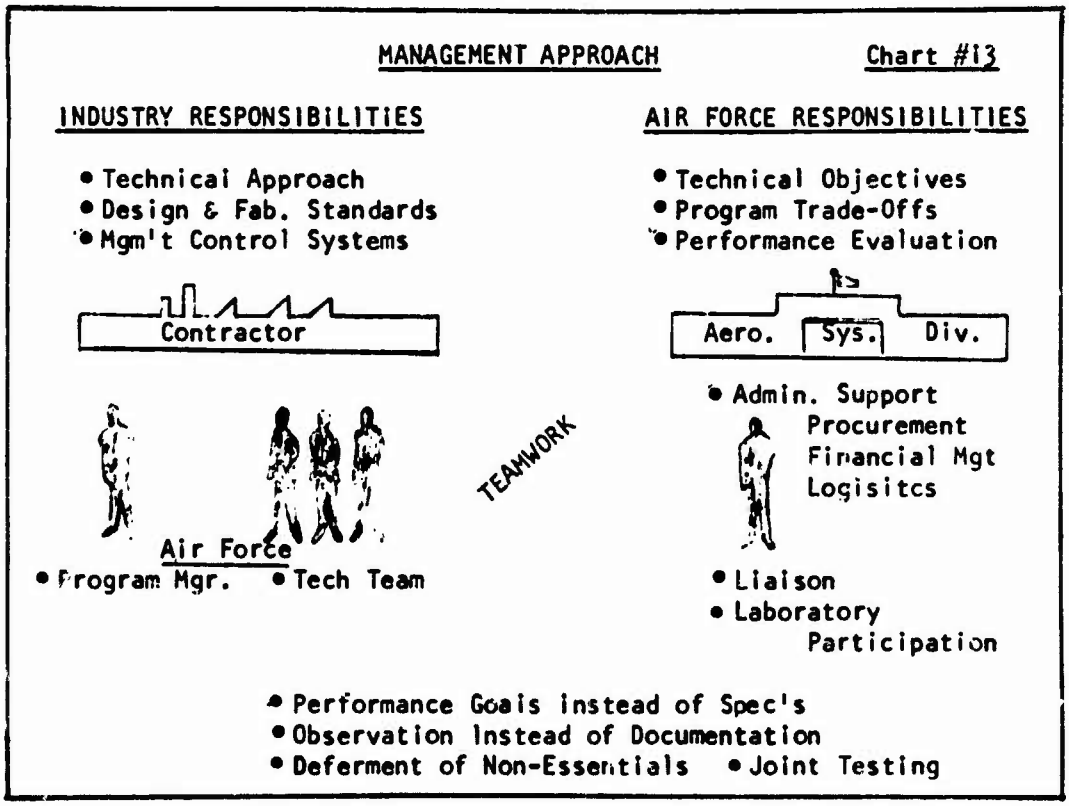
TEXT: Shown here is a summary by fiscal year of the costs for the recommended prototype projects. These cost figures are based on unsolicited contractor data and relate directly to the contractual approach shown for each project.

The cost range shown for the STOL Transport reflects both different configurations and quantities. The funding shown in FY 72 reflects the Air Force budget request for the technology and study programs which are planned in support of the STOL effort. Again, I would like to point out that this proposed STOL aircraft is of a different class than the interim SOL which would be a replacement for our C-7's and C-123's. We found no basis for the "Advanced Prototyping" of an interim STOL aircraft. The use of two contractors recommended for the Lightweight Fighter is contingent on sufficient uniqueness in the technical approaches proposed to warrant the cost of a second source. We intend, as part of our planning, to identify additional projects for FY74 and subsequent years, thereby maintaining a program of $80-100 million per year for advanced prototype developments. Obviously our attention will not be limited to aircraft in future years. We recognize that prototype development is not peculiar to aircraft but can be applied equally effectively to missiles, space systems, and other Air Force interests.

USAF PROTOTYPE STUDY REPORT Chart #12

- How To Manage

TEXT: Our study showed that a common management baseline built on the prototype philosophy, sufficiently flexible to accommodate the peculiarities of each program, is required. We labeled this concept "adaptive management." I will describe some of the features of the concept in this section of the briefing.



TEXT: The management concept is based on the Air Force retaining responsibility for establishing technical objectives, for maintaining a proper balance between these objectives and the program progress, and for evaluating the final results of the project. Responsibilities for establishing the technical approach, for selecting design and fabrication standards, and for exercising adequate management control of the project are assigned to the contractor. Because we advocate replacing paper with people, it is desirable to have the Air Force program manager and a small technical team working closely with the contractor. This team could on a selective basis be located at the plant with the liaison function at home where the additional support that a program manager requires can be provided on an as-needed basis. Laboratory participation will be obtained, perhaps to the extent of "managing the project" in some cases. Laboratory involvement will assure that the full spectrum of appropriate technologies are infused into the program. Each program management team would consist of a small number of highly qualified Air Force people separated organizationally from the Division Commander by not more than one level of authority. In summary, as shown on the chart, Air Force specified performance goals would be used for establishing the program rather

than firm requirements and rigid specifications, direct Air Force observation and participation would be substituted for contractor documentation, all matters not essential to the advanced prototype demonstration would be deferred, and the method of testing would be planned to satisfy both the contractor and the Air Force's interests at minimum cost and with minimum resources. In keeping with these concepts the next two charts describe how we would tailor existing directives for advanced prototype projects.

MANAGEMENT PROCEDURES — Chart #14

- TO BE WAIVED (EXAMPLES)
  - Production Planning - AFSCM 84-3
  - Integrated Log. Support Planning - AFR 375-12
  - Military Specification Drawings - AFR 81-10
  - Value Engineering - AFR 320-1
- OPTIONAL APPLICATION
  - Reliability - AFR 80-5, MIL STD 785
  - Maintainability - AFR 80-5, MIL STD-470, 471 & 473
  - Configuration Management - AFR 65-3
  - Aircraft Structural Integrity Program - AFR 80-13
- MODIFIED IN APPLICATION
  - Formal Verification Reviews - AFR 80-28
  - Documentation - AFR 800-2
  - Formal Program Reporting - XXXX
  - Test and Evaluation - AFR 80-14

TEXT: At the present time Air Force R&D program management is governed by over 900 procedural or policy regulations, manuals or directives. Many of them apply to the planning, engineering and management of a system committed to full-scale development or acquisition for inventory. They do not normally apply to advanced development projects. They should be firmly and officially set aside for advanced prototype programs.

Other documents, calling for specific program activities, should be selectively applied in advanced prototype programs, but not contractually invoked. The Air Force should satisfy itself that good design principles are being followed, but without extending or burdening the procedures and standards that industry uses in satisfying the civilian sector customers.

There is a third group of regulating documents that are generally appropriate to prototype development, but only if modified to match the intent of the advanced prototype projects. For example, formal design reviews are obviously not appropriate since design goals and "level of effort" contractor performance will replace detailed design

specifications.

Requirements for special reports can be eliminated by use of contractor formatted data when data is required. Formal program reporting by the Air Force program manager to higher authority must be kept as simple and direct as possible. A modified PAR reporting procedure seems appropriate -- SAR's and DSARC's do not.

Test and evaluation is always a critical area. We recommend that the contractor and the Air Force jointly perform both the air-worthiness demonstration and the flight performance evluation, with the Air Force entering the program at the earliest possible point in time.

The NASA flight test approach for research vehicles, where NASA performs all flight testing, would not be in consonance with the intent of permitting the contractor to incorporate design requirements in the Air Vehicle during the flight test portion of the program, and the recognition that his pilots are actually members of his integrated engineering design team. Contractor participation would be reduced and Air Force testing increased as the need for engineering design information is satisfied.

MANAGEMENT PROCEDURES (CONTD) Chart #15

- DOD DIRECTIVES AND INSTRUCTIONS TO BE WAIVED

(EXAMPLES)

• 4100.35	Development of Integrated Logistics Support for Systems and Equipments
• 4105.62	Proposal Evaluation and Source Selection
• 5010.7	Value Engineering Program
• 5010.19	Configuration Management
• 5010.21	Configuration Management
• 7000.2	Performance Measurement for Selected Acquisition
• 7000.6	Acquisition Management Systems Control

TEXT: Commensurate with our view of applicable Air Force directives, many DOD directives and instructions must also be set aside. This chart lists only a few of the many formal requirements imposed on weapon system acquisition programs. They do not normally apply to advanced development projects, and we do not believe they should be applied to advanced prototypes.

MANAGEMENT SUMMARY Chart #16

- Advanced Prototype Programs can be managed effectively with:
  - Small Program Offices
  - Maximum Use of Contractor Formatted Data
  - Tailored Application of Formal Procedures
  - Minimum Reporting
  - THROUGH
  - Increased Industry Responsibilities
  - Direct Air Force Participation
  - Integrated Flight Test Programs
  - Use of Contractor Control Systems

TEXT: In summary, we are confident that advanced prototype programs can be managed effectively with small program offices, maximum use of contractor formatted data, tailored application of formal procedures, and minimum reporting to higher authority. Increased industry responsibilities, direct Air Force participation, integrated flight test programs, and use of contractor control systems will adequately insure that the DOD receives a fair return for the dollars invested. We are also confident that by following the principles of adaptive management we will realize a significant benefit in demonstrated technology for a minimum of management costs.

USAF PROTOTYPE STUDY REPORT Chart #17

- HOW TO PROCURE

TEXT: For prototype developments the procurement approach has been structured around the concept of specifying simple, flexible and supportable procedures.

The basic premise used in the study was that we would recognize and accept all statutes that govern procurement, but that we would question all administratively established procedures and streamline these to the maximum extent practicable.

PROCUREMENT APPROACH Chart #18

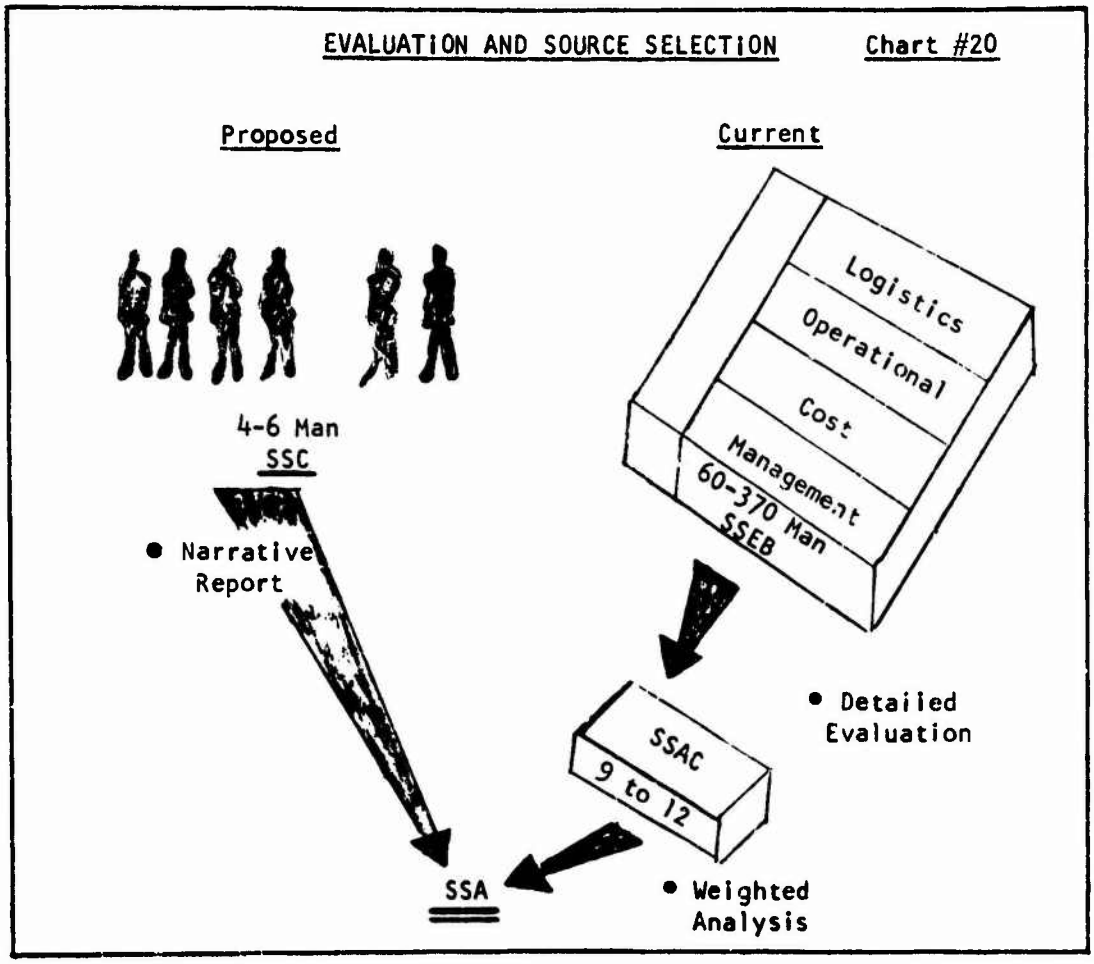
- Program Approval
- DD and Fund Release

Procurement

● Negotiation Authority	- Class D&F
● Solicitation	- Brief Work Statement - Abbreviated RFP - Limit RFP Response
● Evaluation/Source Selection	- Small SSC - Narrative Analysis
● Contract Type	- Specifically Tailored/Fixed Cost - Open Specifications - Limit on Government Liability - Hardware Delivery
● Review/Award	- AFSC Division Level

Solicitation Chart #19

Proposed	Request	Current
	(Work Statement EEO Instructions and Certifications Criteria Schedule)	
	Response (Engineering Technical Approach, Test/Eval. Plan, Management Plan GFE, Cost, etc.)	



TEXT: In order that a selected prototype program may be initiated, three things are required -- program approval, authority to negotiate, and funds. Historically, the related documents have been provided sequentially. In the interest of time and efficiency we recommend that all documents be issued simultaneously with the authority to negotiate which is the class determination and findings.

Solicitation of sources should be restricted to those companies that have been screened and found fully qualified to perform. The source screening to determine those eligible to compete for a particular project should be accomplished by an Ad Hoc Group established by and reporting to the Source Selection Authority. The Request for Proposal would be sent to only those sources selected by this screening group.

Where only one company is qualified, or when an Unsolicited Proposal is received that offers a unique or novel approach, sole source procurement should be used.

Statement of Work should be simple, concise and limited to the objectives of the prototype effort. As an example, we have prepared a Work Statement for one of the recommended projects that is two pages long.

The Request for Proposal should be likewise severely limited in size. (Flash Chart #19 - "Solicitation"). A brief Work Statement, requests for various certifications required by law or Executive Order, contingent fees, criteria to be used for evaluating proposals, and ground rules for the cost proposal are generally adequate inclusions for the Advanced Prototype RFP. While the complexities of each prototype effort will differ, we believe that the RFP generally should not be over 25-30 pages. To illustrate we have constructed a model RFP which is 26 pages. This compares to about 250-280 pages which would be required under current procedures.

Also, a stringent page limitation will be imposed on data that contractors can submit. The Air Force has had underway for some time efforts to control data requested in the RFP and to avoid contractor submission of unnecessary data. In line with the advanced prototype approach further reductions in data will be emphasized. Typical proposal data requirements could consist of the engineering/technical approach, test/evaluation plan, management plan, GFE requirements and cost proposal. We see no requirement for the numerous "ility" plans which directly relate to full engineering development and have no direct or significant relation to the prototype procurement. Therefore, we visualize that proposal data will generally be limited to around 60 pages (Chart #19 off).

Evaluation of proposals under current methods and procedures often involves large numbers of people and generates significant amounts of data. Since we are administering advanced development projects, the Source Selection can be conducted without complete adherence to these formal procedures and still produce the documentation required to support contract award.

Current directives on Source Selection require complete and very detailed documentation of competitive negotiated procurements. The nature of advanced prototyping projects is such that more subjectivity and less detail should be used in evaluating proposals. Most of the formal documentation requirements can be dispensed with, while accomplishing the fundamental steps outlined in the regulation. (Flash Chart #20 - "Evaluation and Source Selection).

The Source Selection should consist of a review of all proposals by a small group of specialists. The Source Selection Committee should consist of about five recognized authorities including specialists in the area of technology to be exploited by the prototype efforts. A narrative report will be prepared and submitted to the Source Selection Authority.

The evaluation should emphasize broadening the technological base, providing a viable industrial design team capability and exploiting new ideas. (Chart #20 off).

In developing the recommended contract type, the basic premise was that a fixed amount of funds will be available. Since firm fixed price contracts will not be appropriate in all instances, a combination of cost and fixed price features may be required. This specially tailored "level of effort" contract would recognize that the contractor may not achieve all design goals enunciated in the Statement of Work, but would require that he deliver completed hardware within the maximum amount of the contract. It embodies the concept of relative "freedom from government interferences", and allows the contractor maximum latitude to "innovate." Provisions for an award fee could be included in this type of contract to provide contractor performance motivation. We have, as part of the study, constructed a model contract.

Review/Award

Negotiations should be conducted with all offerors within a competitive range. These could be informal. Once negotiations have been completed, the narrative analysis for Source Selection would be submitted to the SSA. The contract should be awarded with a minimum of formal staff review. We recommend that manual approval of the contract should be at the Division level in Air Force Systems Command.

Using this procurement approach we could, in a typical "best effort," release an RFP, evaluate the proposals received, and negotiate and award a contract or contracts in about two months from the time that the necessary authorizing documents are issued.

PROCUREMENT SUMMARY Chart #21

- The Recommended "Streamlined" Procurement Approach for Advanced Prototype Programs will:
  - Comply with Statutes
  - Simplify Solicitation and Selection Processes
  - Reduce Procurement Lead Times
  - Result in Contracts Tailored to Requirements
  - Allow for Future Development Efforts or Possible Production

TEXT: In summary, then, we will conform to statutory requirements, greatly reduce the administrative aspects of the procurement process, negotiate contracts tailored to the specific objectives of the prototype program, and allow for follow-on development or production effort, if desired. This approach will in our view provide an effective and sound procurement.

STUDY FINDINGS Chart #22

- That Advanced Prototyping is Feasible and Desirable
- That Several Attractive Proposals Exist as Candidates for Advanced Prototyping
  - Advanced Medium STOL Transport
  - Very Low RCS Vehicle
  - Large Tanker Aircraft
  - Lightweight Fighter Aircraft
  - Quiet Aircraft
  - Remotely Piloted Vehicle
- That Costs for System-Like Aeronautical Vehicle Prototyping Appear Reasonable
  - FY 72 - $20M
  - FY 73 and Beyond - $80M Yearly
- That Streamlined, Responsive Management and Procurement Approaches can be Formulated and Should be Applied to Advanced Prototype Programs

TEXT: A synopsis of key study findings is presented on this viewgraph

IMPLEMENTATION CHALLENGES Chart #23

- Interface with Industry
  - Different USAF/Industry Views
  - Stress Air Force Concept and Objectives
- Interface with Congress
  - Acceptance of "Advanced Prototype" Concept
  - Promote Understanding of Purposes/Objectives
- Interface with NASA
  - Different Approaches and Interests
  - Continue Coordination and Cooperation
- Industry Design Team Continuity
  - Preservation of Required Support for Future Interests
  - Treat Implicitly in Prototype Program

TEXT: There are some matters raised in the course of study which we have shown here as challenges to be addressed in implementing the study recommendations.

First - it is quite apparent that disparate views exist between the Air Force and industry regarding the intent of Advanced Prototype Developments. Industry interest is centered on production and the long-lead planning associated with production. We have been unable to convince the industry representatives that the prototype projects are to be sponsored without implied production intent. We must continue to emphasize this point. Even more convincing will be the completion of some Advanced Prototype Programs without further program commitment.

The interface with Congress is judged to be even more challenging. We must present the case that Advanced Prototypes are a good way of doing business and that they can be approved without requiring estimates of

production costs, quantities, and IOC. We must persuade that System Prototypes under Advanced Development will provide a wider variety of defense options, better program controls, and at equal or less overall costs.

Our study has been very closely attuned to the NASA interests in research and experimental vehicles. Our differences are largely in the end product orientation where we are more closely oriented to anticipated force requirements. We see no major obstacles to continued coordination and cooperation with NASA as we expand our use of prototype development.

The matter of continuity of Industry Design Teams was examined in considerable depth in the study. "Design Teams" is a rather loose description of the engineering work leading to preproduction models. Even for Advanced Prototypes the size and cost of a "Design Team" fluctuates widely over the life of the development project. We estimate some fourteen potential bidders on a Fighter Aircraft Prototype. "Continuity" on that scale is beyond our funding capability. We do believe, however, that prototypes will help keep the good designers active and that by careful consideration of past performance we can preserve some minimum number of competent design teams to meet our future interests.

MPLEMENTATION Chart #24

- OSD
  - Approve and Support Concept and Implementing Actions
- Air Force
  - Submit Program Requirements and Reprogramming Proposals
  - Initiate Procurement Actions
  - Establish/Refine Interfaces with Congress, Industry, NASA

TEXT: We are prepared, following acceptance of the concepts derived in our study, to undertake implementing actions immediately. In this regard each proposed project must be considered unique. For the Fighter and STOL Transport we feel that solicitation is required due to the intense industrial interest. The Tanker and Low Radar Cross-Section Vehicle may be procurable on a Sole Source Basis. Our intention is to prepare the specific Prototype Project Proposals and the reprogramming recommendations and, with your support, seek Congressional approval.

Thank You.

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13. ABSTRACT

This report contains the results of the United States Air Force study on advanced prototype development. The study was conducted during the period June-August 1971 as an Air Force effort to review the rationale for prototyping and to structure a sound plan for prototype development.

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