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PROMAP 70

Final Report

PROGRAM FOR THE REFINEMENT OF THE MATERIEL ACQUISITION PROCESS

ARMY MATERIEL COMMAND
WASHINGTON, D.C.

JANUARY 1971

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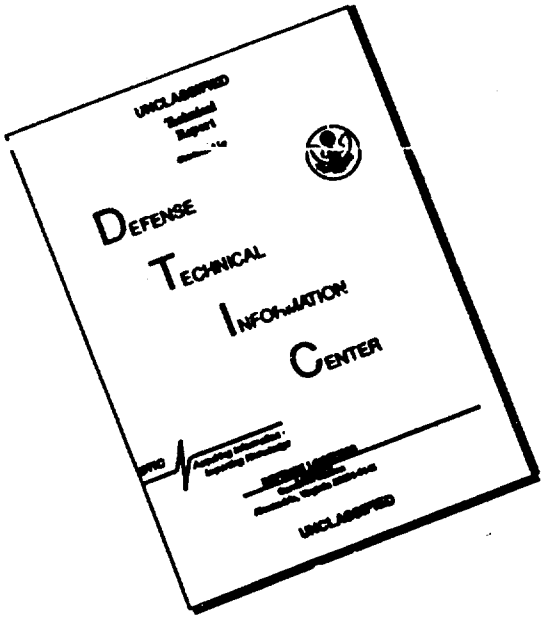

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FOREWORD

1970 has been a year of significant progress in the manner in which the Army acquires its major weapon systems and equipments. We accepted the challenge of Deputy Secretary of Defense Packard and Secretary of the Army Resor to improve our policies and procedures in this area. PROMAP-70, an acronym for "Program for the Refinement of the Materiel Acquisition Process", was AMC's principal vehicle for the definition and conduct of this effort. We emphasized two main principles throughout the program. First, positive lasting results could only be obtained if changes took place at the "grass root" operational levels - namely, at our Subordinate Commands and Project Manager offices. Second, real progress would occur when the revised policies and procedures are applied directly to our future products - Army weapon systems and major items. This report shows that positive results and real progress has occurred in all task areas.

This is the final report of the AMC Headquarters task directors. Each of these task directors has been heavily involved in PROMAP-70 during the past fifteen months. Each one has started PROMAP actions personally, all have provided guidance, coordination and help to their counterparts at the major subordinate commands and project manager offices. Every task director has briefed me on his tasks's progress at least once each quarter. All these things were done and done well for PROMAP in addition to each task director's normal duties. In preparing each tasks's final report, the task directors studied the final reports of each major subordinate command and each project manager for which the task applied. They discussed the various aspects of their tasks with fellow members of their staff sections and with my special assistants. Their task final reports document the progress and the effort that was involved in PROMAP-70 by AMC people at all levels.

For the future, we do not intend to be complacent. Each of these task final reports includes a section of "Follow-on Actions". During 1971 this unfinished business will form the basis for management checks on continued progress for all these improvement actions. In this way the momentum obtained through PROMAP-70 can be sustained during 1971. We intend to do our best to provide our nation's Army with the most effective equipment at the lowest reasonable cost and on a timely basis.

PAUL A. FEYEREISEN
Major General, USA
Deputy Commanding General
for Materiel Acquisition

PROMAP-70 FINAL REPORT

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INTRODUCTION

PROMAP-70 is an acronym for the "Program for the Refinement of the Materiel Acquisition Process - 1970." This program is the Army Materiel Command's response to the challenge issued by Deputy Secretary of Defense Packard and Secretary of the Army Resor to improve the entire Army Materiel Acquisition Process. With emphasis from October 1969 forward, improvement in acquisition management has been given visibility and high level emphasis. Through this program AMC has sought to improve the way that 50,000 employees -- those in the materiel acquisition field -- go about their jobs; and thereby to influence industrial contractors to improve their management of Army materiel acquisition projects.

The development, test, procurement, and production of items of Army Materiel involves complicated and expensive processes. In 1969 public scrutiny of military spending intensified as the Vietnam effort began to wind down. In July, 1969 Deputy Secretary of Defense Packard, based on his own observations and an awareness that military operations should be streamlined in the post-Vietnam period, outlined five general problem areas in acquisition management as follows: (1) Excessive optimism in cost estimating, (2) Control of changes in on-going programs, (3) Comprehensive assessment of risk prior to system development, (4) Use of competitive prototypes in developments, and (5) Excessive concurrency in development/test, and production. The Secretary of the Army in October 1969 responded to Secretary Packard's guidance with a 16-point Weapon's System Acquisition Improvement Program that addressed the entire life cycle of materiel acquisition. Since AMC is the Army's major operating command for acquisition management, this command assumed the responsibility for the greatest part of the Secretary's improvement actions. It focused its efforts through PROMAP-70.

We reviewed General Accounting Office (GAO), Army Audit Agency (AAA), and Congressional Hearing reports of the past five years to gain an insight into all deficient areas. Secretary Packard's guidance was requested and accepted in the full spirit of its purposes. We consulted at length with all Major Subordinate Commanders within AMC. We felt that if true improvements were to be obtained we must address all the parts of the acquisition life cycle. The inter-relations among parts of the cycle dictate this, and the 52 different PROMAP-70 objectives, called Tasks, reflect the program's coverage. (See Appendix I) Each PROMAP task was structured in such a way that the improvements could be measured. Criteria for improvement were developed for each task and each task was measured against these criteria on a monthly basis by the major subordinate commanders and by the AMC Deputy Commander for Materiel Acquisition. Formal training, orientation,

and actual application of the improved procedures to hardware systems were stressed to insure concrete payoffs. The Assistant Secretary of the Army (Installations and Logistics), Dr. J. Ronald Fox, insisted that rather than merely publish new procedures and regulations, we insure that "the people at all levels of materiel acquisition actually do things differently and better because of PROMAP-70."

To get to the grass roots operations of AMC, a task organization to conduct PROMAP was formed and integrated with the regular command structure. Task directors, senior military or civilian officials from the functional areas involved, were selected for each of the 52 tasks at AMC Headquarters. Similarly, Task Directors for applicable tasks were identified at each of the eight major subordinate commands. In addition, the 42 project/product managers adopted for implementation those PROMAP tasks which were applicable to their respective projects. Thus, over 500 individuals were directly responsible for improvement action in an area in which each was professionally qualified and motivated. Task directors were encouraged to communicate across command boundaries as well as up and down command channels. This structure, together with central PROMAP coordinators at each command and Project Manager's office, plus unusual command channel emphasis, was a key to the success of the program. The bureaucracy's massive resistance to change was minimized and PROMAP-70 became something special.

PROMAP-70 is the beginning to what must be a long term improvement effort within the Army. Many of the PROMAP-70 tasks have established new ways of managing materiel acquisition, and the real payoffs from these tasks will occur during the ensuing years of the life of the AMC projects. To insure that the objectives of PROMAP-70 can be maintained subsequent to 1970, the appropriate follow-up actions will become Specific Objectives and will be measured on an on-going basis. Examples of these follow-on actions were depicted with each of the tasks presented in this report.

The thrust of the long term AMC improvements will relate to the entire life cycle of materiel acquisition. Clear description of requirements and trade-offs between performance, cost, and time will become a way of life. Cost realism will be given more emphasis in source selection evaluations and every attempt will be made to analyze and disclose project risks beginning in the early stages of concept formulation. Throughout the life of the project, AMC will continue to improve the control over changes in a system's design. This control, plus timely and accurate measurement of contractor performance, is necessary if initial cost estimates and technical baselines are to be meaningfully utilized to control cost growth. The whole test and evaluation process must be streamlined and made more purposeful to include less reliance on paper studies in favor of hardware demonstration.

Finally, and perhaps most importantly, the key to the success of all the AMC improvement efforts will be increased quality and quantity of training, both formal and on-the-job.

The General Accounting Office activities of the past year have assisted the Army Materiel Command in effecting significant improvements in Army materiel acquisition policies and procedures.

Its team for the audit of Defense Materiel Acquisition Processes, headed by Mr. Hassell Bell, Associate Director, Defense Division, GAO, and Mr. William F. Coogan, GAO Army Team Chief, adopted a constructive and cooperative methodology of (a) auditing on a more current basis and (b) alerting Army operators of areas of concern as they were found to permit immediate Army inquiry and consideration. Their tentative findings on cost estimating and analysis, PM authorities vs. responsibilities, organizational structures, risk analysis, project priorities and materiel requirement decisions were most helpful.

Major General Paul A. Feyereisen, AMC Deputy Commanding General for Materiel Acquisition, and responsible to the Commanding General, AMC for the execution of PROMAP-70, has said this about the program: "PROMAP-70 was not an easy program. It faced the typically massive attitude against and resistance to change - yet we were suggesting change on a very broad front. It was addressed at a time of major Reductions in Force (RIFs) and dramatic cutbacks in defense budgets - yet we expected our people to do more with less. We have done more with less, but also less than perfect. We recognize, however, the need for improvement across the total acquisition spectrum and we have begun making those improvements. We accept the unusual challenge presented by the need, the hostile environment, and the diminishing resources - and we intend to achieve our goals and have our people do things differently and better throughout the materiel acquisition process."

I. TASK TITLE: Command Reviews - Major Weapons Systems

II. TASK OBJECTIVE: To afford the top echelon of command in AMC the opportunity to determine the correct status of the most important materiel acquisition program/projects.

III. BACKGROUND DISCUSSION: By letter, Subject: Improvements in Weapons Systems Acquisition, dated 28 October 1969, the Commanding General, AMC established two PROMAP tasks relating to Command Reviews. The two tasks, Command Review - Major Weapons Systems and Vice Chief of Staff (DA) Annual Reviews; were subsequently combined into a single PROMAP task as above.

In the past Command Reviews occurred on an informal or as required basis. The initial thrust of the PROMAP task was to formalize the Command Review process and to provide specific guidance regarding the purpose, contents and conduct of the reviews. This action resulted in the preparation and publication of AMCR 1-34 dated 27 April 1970 entitled "Command Reviews." Concurrently the PROMAP task directors of the major subordinate commands were requested to provide a listing of command type reviews as conducted by their Commanding General on assigned projects and programs during the time period July 1969 through December 1970.

In order to promulgate a systematic review of all major weapons systems, instructions were sent to the major subordinate commands and project managers directing the conduct of top level review during Calendar Year 1969 and Calendar Year 1970 for each of the major systems identified. A considerable effort was also devoted to identifying those high level reviews which were held by the Commanding General, AMC, Department of the Army and Department of Defense.

IV. ACCOMPLISHMENTS: During Calendar Year 1969, 16 Command Reviews were conducted on major programs/projects by the Commanding General, AMC. Data derived from those reviews provided the basis for the preparation and publications of AMCR 1-34 which provided guidance for and established periodic, top level, in-depth reviews of major weapon system/programs as required by the Commanding General, AMC. This document was published on 27 April 1970.

Efforts continued during Calendar Year 1970, to schedule and hold Command Reviews at Headquarters, AMC of the remaining 25 major programs/projects. As of December 1970, 23 of the 25 reviews were accomplished. The last two are scheduled for the early part of Calendar Year 1971.

From July 1969 through December 1970, 39 of the 41 identified major projects (Figure 1) have been subjected to intense in-depth Command Reviews by the Commanding General, AMC. Of these 39, 17 have been

reviewed by Department of the Army and Department of Defense.

During the period July 1969 through December 1970, data was compiled and recorded on all formal reviews held by the Commanding General of the AMC major subordinate commands. This was accomplished by researching data and reports relating to Command Reviews held during the last half of Calendar Year 1969 and by actively tracking and monitoring all Calendar Year 1970 Command Reviews. The data compiled indicates that the USAMC materiel development process is being subjected to a large number of reviews (Figures 2 and 3).

During Calendar Year 1970, a monthly summary briefing of Command Reviews held was presented to the Deputy Commanding General for Materiel Acquisition thereby providing high level command visibility.

V. FOLLOW-ON ACTIONS: One of the original goals of this task was to accomplish high level Command Reviews of each of the 41 major programs/projects at least once as of December 1970, 39 of the Command Reviews have been held. The last two major programs are scheduled to be conducted during February 1971. When these last two Command Reviews have been accomplished, all planned actions and milestones of this PROMAP Task will be complete.

Under the assumption that AMCR 1-34 correctly defines the USAMC Command Policy with respect to Command Reviews, the Program Management Divisions of the RDT&E Directorate will continue to monitor Command Reviews at all levels of command to insure adequate coverage of ongoing major materiel development projects.

Data collected under this task has been subjected to analysis in an effort to determine the adequacy of the current Command Review procedure in providing a periodic review of ongoing major weapons systems developments. Alternative methods of accomplishing the same objective were also considered. A briefing to the Deputy Commanding General for Materiel Acquisition on this particular subtask is scheduled.

MAJOR WEAPONS SYSTEMS PROGRAMS/PROJECTS

A. SUBJECTED TO COMMAND REVIEW - JULY 1969 THRU DECEMBER 1970

1. Chaparral/Vulcan/FAAR
2. Combustible Ammunition - 152MM
3. SLAE
4. Heavy Equipment Transporter
5. Lance
6. Shillelagh
7. Improved HAWK
8. M60A1E2 Tank
9. VRFWS-S (Bushmaster)
10. ARSV (Scout)
11. TOW
12. Dragon
13. Night Vision
14. SEA NiteOps
15. Rifles
16. Mobile Electric Power
17. LOH
18. Mallard
19. Selected Ammunition
20. Sheridan
21. LCSS
22. HLTAS
23. 2.75 Inch Rockets
24. Small Arms Agency
25. MICV
26. M5611/XM705 Vehicles
27. SATCOM
28. Pershing
29. NAV/Control
30. Utility Aircraft
31. Bombs and Related Components
32. AACOMS
33. STARCOM
34. GOER Vehicles
35. Safeguard Munitions
36. Close Support Weapons
37. AAWS (Cheyene)--- Dragon substitued
38. MBT
39. ADCAT

B. SUBJECTED TO COMMAND REVIEW - FEBRUARY 1971

40. MAVS
41. DESERET

FIGURE 1

COMMAND REVIEWS

JULY 1969 THROUGH DECEMBER 1970

LEVEL OF COMMAND	PRE-REVIEWS	REVIEWS	TOTAL
DOD	0	12	12
(SMR)	(0)	(9)	(9)
(DSARC)	(0)	(3)	(3)
DA	12	10	22
(SOMRB)	(0)	(3)	(3)
(SPR)	(0)	(7)	(7)
(SMR)	(9)	(0)	(9)
(DSARC)	(3)	(0)	(3)
CG AMC	22	39	61
CG MSCs	61	197	258

FIGURE 2

COMMAND REVIEWS

JULY 1969 THROUGH DECEMBER 1970

LEVEL OF COMMAND	PROJECTS OVER $25M RDTE or $100M PEMA	PROJECTS UNDER $25M RDTE or $100M PEMA	TOTAL BY COMMAND LEVEL
DOD	12	0	12
DA	10	0	10
AMC HQ	39	0	39
AMC MSC	89	108	197

FIGURE 3

I. TASK TITLE: Selected Acquisition Reports (SAR).

II. TASK OBJECTIVE: To improve management by upgrading the quality, completeness, and timeliness of SARs.

III. BACKGROUND DISCUSSION:

a. The SAR, submitted quarterly, is a comprehensive, summary status report on the technical characteristics, milestones, and costs of selected major acquisitions. It was developed specifically to meet the requirements for management control within DOD as well as stated Congressional review needs. Its purpose is to provide management with a picture of the status of a system as of a point in time. The SAR records current estimates, including mission-oriented technical estimates, and compares them to the estimates or assumptions used to justify the decision to pass from one critical development stage to another.

b. Department of Defense Instruction (DODI) 7000.3 provides the format and OSD guidance for preparation of the SAR. Army Regulation (AR) 37-200 is the implementing document. AMC, in turn, has provided detailed implementing instructions to the Project Managers and subordinate commands.

c. As of 31 December 1970, a total of 13 weapons systems are being reported on by SAR. These include the CHEYENNE, LANCE, MBT-70, SAM-D, SHERIDAN/152mm Ammo, SHILLELAGH, DRAGON, GAMA GOAT, M60A1E2, TACFIRE, TOW, Defense Satellite Communications System (SATCOM) Phase II, and Improved HAWK.

d. Since its inception, the SAR, because it is the only report which covers all of the significant facets of a systems, has been subject to pressure from all levels to provide answers to technical as well as management questions. As a result, the SAR increased in size at one point to where it was so voluminous that it was useless as a management tool. This led to the requirement for further revision of the DOD Instruction and departmental implementing instructions, which in turn increased the PROMAP-70 task.

IV. ACCOMPLISHMENTS:

a. Initial Steps.

The following initial steps were taken during the fourth quarter of 1969 to upgrade the quality, completeness, and timeliness of SAR:

(1) The staff of the SAR Division of the Cost and Economic Information Office, which has AMC Headquarters responsibility for SARs, was upgraded with talent familiar with the systems being reported on by SAR to assure correctness and completeness of the data portrayed.

(2) Time tables and schedules were established for review and processing of the reports through the various headquarters.

(3) Task groups, chaired by appropriate SAR Division members, with representatives from AMC Headquarters Directorates, were formed to review SARs submitted by the Project Managers to AMC Headquarters. In addition, Project Manager personnel and Department of Army action officers were invited to attend and participate in the reviews.

(4) Orientation and training of headquarters and project personnel on the selection and compilation of data and the preparation of the SAR were initiated.

(5) Arrangement was made for AMC participation in the Department of Army staff review of the SARs in order to provide early guidance to the Project Managers on changes to the SAR.

b. Actions to Improve the Format and Content of the SAR.

The following actions by the SAR Division were taken during 1970 to improve the format and content of the SAR:

(1) Recommendations for improvement of the SAR were submitted to the Comptroller of the Army for incorporation into a revised DODI 7000.3. Many of these recommendations were incorporated into the revised DODI 7000.3, 12 June 1970, contributing to a major reduction in the volume of the SARs.

(2) Recommendations to improve the submission of the SAR were submitted to the Comptroller of the Army for incorporation into a revised AR 37-200.

(3) Instructions were developed for the preparation of a System Cost Status and Forecast Section to be included with Project Management Information System (PROMIS) reports for those systems which are likely to be selected to submit SARs. This was published as Chapter 3 of AMCR 11-16. The implementing instructions included sample System Cost Status and Forecast reports for use in training personnel. Nine systems are currently submitting System Cost Status Forecast reports under PROMIS.

(4) Interim written guidance was issued to consolidate existing DOD, DA, and AMC instructions, memoranda, and verbal guidance when new systems were initially reporting or when new procedures were introduced.

(5) The need, in January 1970, for interpretation of regulations, definitions, and instructions was satisfied by on-site training in SAR preparation. The revision of DODI 7000.3 (12 June 1970) required another series of on-site training sessions in June and July 1970. These training sessions, prepared and conducted by the SAR Division, utilized sample

SARs and detailed implementing instructions. The requirement for submission of the 30 September 1970 SAR with escalated estimates required further training which was satisfied by a seminar in September at AMC Headquarters. A total of approximately 500 persons attended these training sessions.

(6) A study was initiated to standardize the method of determining unit costs.

c. Formal Training:

In addition to the orientation and on-site training of Headquarters and project personnel in the selection and compilation of data for preparation of the SAR, formal courses were initiated to provide additional training to project personnel. Courses to be given are: "Managing with Contractor Performance Measurement Data" at the US Army Management Engineering Training Agency (AMETA), "Cost Estimating Techniques for Systems Acquisition" at the US Army Logistics Management Center (ALMC), and "Defense Weapons Systems Management Course" at the Air Force Institute of Technology (AFIT). The SAR Division provided basic documentation, sample SARS, and implementing instructions for use in these courses. A total of 760 man weeks have been scheduled for formal training under PROMAP 70.

d. Comparison of SARs before and after PROMAP 70:

Prior to PROMAP 70 the SAR was considered to fall short of management needs plus it was susceptible to uncontrolled growth. As a result of the recommendations submitted by the SAR Division for improvement of the DOD Instructions and the additional actions taken to improve the quality and effectiveness of the SAR there was a 65% decrease in the number of pages in the SARs while ther pertinent managerial data was increased significantly. Tables I, II, and III provide more detail of these actions.

V. FOLLOW-ON ACTIONS:

The following actions are planned to insure that the high quality of the SAR continues and that further improvements are made:

(1) An AMC supplement to the revised AR 37-200 will be published in 1971.

(2) On-site training and provision of training material to schools as regulations and implementing instructions are revised will be a continuing process.

(3) Probing deeper into estimating procedures and supplemental contractor cost reporting will be done to provide better current estimates in order to obtain earlier indications of cost growth.

TABLE I

SUCCESS OF AMC RECOMMENDATIONS FOR INCORPORATION IN 12 JUN 70 DODI 7000.3

RECOMMENDATION:	INCORPORATED NO	YES	PARTIALLY
1. LIMIT STUB ITEMS (CHARACTERISTICS, MILESTONES & COST GROUPINGS) TO THOSE ESSENTIAL FOR PROPER EVALUATION OF THE PROGRAM		X	
2. STANDARDIZE STUB ITEMS FOR SIMILAR TYPE SYSTEMS		X	
3. SHOW UNIT OF MEASURE WITH STUB ITEMS		X	
4. SPECIFY VARIANCE WHICH CAN BE ACCEPTED WITHOUT EXPLANATION			X
5. ELIMINATE COLUMN 3 (PLANNED COST AT CURRENT QUANTITY) FROM PROGRAM COST SECTION, IF POSSIBLE; AS MINIMUM, DELETE RDTE QUANTITIES			X
6. ELIMINATE COLUMN 6, CURRENT ESTIMATE FYDP PROGRAM, FROM PROGRAM COST SECTION	X		
7. INCORPORATE SUPPLEMENTAL COST DATA INTO PROGRAM COST SECTION	X		
8. IDENTIFY REFERENCE BY LETTER, AND FOOTNOTES BY NUMBER	X		
9. HAVE ONE LIST (PAGE) OF REFERENCES	X		
10. REPORT "QUANTITIES ACCEPTED" IN MILESTONES SECTION		X	
11. ELIMINATE UNIT COSTS	X		
12. OMIT INDIVIDUAL NOTATIONS OF CHANGES FROM PREVIOUS REPORT - INCLUDE SIGNIFICANT CHANGES IN THE FORWARDING COVER.	X		
13. ELIMINATE SEPARATE CONTRACTOR COSTS BREAKOUT FROM PROGRAM COST SECTION		X	
14. ELIMINATE SUPPLEMENTAL CONTRACTOR COST SECTION UNLESS UNDER DODI 7000.2		X	(ELIMINATED COMPLETELY)
15. LIMIT CONTRACTOR COSTS TO CONTRACTS OF $5 MILLION AND OVER			(INFORMALLY APPROVED)
16. PROVIDE ESCALATION INSTRUCTION, INCLUDING FACTORS (INDICES)		X	
17. PROVIDE BETTER COST GROWTH CATEGORIES THAT ARE CLEARLY INDEPENDENT OF EACH OTHER		X	
18. PROVIDE TECHNIQUE FOR INDICATING FUNDS PROVIDED BY OTHER SERVICES		X	
19. PROVIDE A BETTER DEFINITION OF CONTRACT CURRENT PRICE		X	
20. ADD SUMMARY TO PROVIDE PROGRAM STATUS		X	
SCORE	6	11	2

TABLE II

OTHER ACTIONS TAKEN BY SAA DIVISION TO IMPROVE THE QUALITY AND EFFECTIVENESS OF SAR

1. SPECIFIED FORMAT, HEADINGS, BORDERS, SPACING AND FULL USE OF PAGES
2. SPECIFIED USE OF PLUS' AND MINUS' WHERE COST CHANGES ARE BEING EXPLAINED
3. PROMOTED USE OF MATRICES TO ILLUSTRATE VARIANCES
4. PROMOTED USE OF SUMMARY VARIANCE ANALYSIS
5. PROMOTED USE OF PEMA FYDP WORKSHEETS
6. PROMOTED STANDARD WEAPONS SYSTEMS COSTS

TABLE III

REDUCTION IN NUMBER OF PAGES

	SYSTEM	31 MAR 70	30 JUN 70
1.	CHEYENNE	26	12
2.	DRAGON	38	14
3.	GAMA GOAT	32	14
4.	LANCE	36	13
5.	MBT 70	58	18
6.	M60A1E2	32	12
7.	SAM-D	36	17
8.	SHERIDAN	60	15
9.	SHILLELAGH	30	12
10.	TACFIRE	44	13
11.	TOW	49	15
	Totals	441	155

DECREASE = 65%

I. TASK TITLE: AMC Cost Analysis/Cost Estimating Profile

II. TASK OBJECTIVE: To establish an orderly, formalized system for cost analysis/cost estimating in AMC.

III. BACKGROUND DISCUSSION: Cost analysis is receiving priority attention within the US Army Materiel Command. The objective of top level AMC management is to improve and strengthen the Command-wide capability to estimate and analyze Army weapon systems costs. This program is in accord with Secretary Packard's guidance to the Services regarding "Improvement in Weapon Systems Acquisition" in which attention was directed to the DOD capability of cost estimating. In brief, Secretary Packard's guidance gave primary consideration to development of a capability which would respond in a comprehensive and realistic manner to the complex process of estimating the cost of major weapon systems.

In order to better understand the complex system for cost analysis/cost estimating, an extensive review was made of the AMC Cost Analysis Program during July and August 1969. The purpose was to examine the AMC cost analysis/cost estimating environment and to make proposals for improvement. This PROMAP-70 task is directed to a summary of that review entitled, "Profile of Cost Analysis in AMC" with particular attention given to implementation of recommendations. The establishment of an orderly, formalized, responsive, and effective AMC cost analysis system depends heavily upon the successful implementation of those recommendations.

The AMC Cost Analysis Profile Study focused on Department of the Army policy guidance in the 1966 Army Cost Analysis Program Change Request (PCR). This PCR is particularly significant because it led to the formal approval, Program Change Decision (PCD), by the Secretary of Defense for the Department of the Army to establish an Army Cost Analysis Program. In addition to addressing personnel resources which existed in Contract Price Analysis activities and the Cost and Economic Information System (CEIS) Offices, the PCD provided limited personnel spaces for establishment of Cost Analysis Offices at the AMC Headquarters and seven major subordinate commands.

Initially, the review of the cost analysis environment was limited to Headquarters AMC staff offices. In July 1969, the review was expanded to encompass cost analysis activities at all AMC major subordinate commands. In addition to considering the cost oriented functional elements reflected in the 1966 PCR, (i.e., Contract Price Analysis activities, CEIS and Comptroller Cost Analysis Offices) the review also addressed other pertinent functional activities to include the research and development community, materiel requirements activities and selected Project Managers.

IV. ACCOMPLISHMENTS: The PROMAP-70 tasks implementing recommendations of the AMC Cost Analysis Profile Study are summarized below:

a. Manpower

At the time of the Cost Analysis Profile Study, the Command-wide strength of personnel in the Cost Analysis functional organization totaled about 160 spaces. The following table illustrates the relative strength of Cost Analysis Offices with other related functional activities. Note that Contract Price Analysis and CEIS also are reflected in a broad sense within the purview of the Cost Analysis Program.

COST ANALYSIS/COST ESTIMATING RESOURCES: SUMMER 1969

Functional Activity	Spaces
Contract Price Analysis	240
Cost Analysis	160
Cost & Economic Information	130
Project Managers	0
	530

Each of the "Profile" findings either directly or indirectly pointed to the necessity for more, well qualified people to perform essential cost analysis functions. In recognition of this need, the Commanding General personally approved the augmentation of 250 spaces for the Command-wide Cost Analysis Program.* Figure 1 presents a tree diagram detailing the distribution of the 250 spaces - first by functional activity - then by representative areas of application. Of particular significance was the allocation of cost analysts to support selected Project Manager Offices. Prior to this time, AMC Project Managers did not have full time cost analysts assigned to their organizations.

The majority of the new spaces were allocated to the AMC major subordinate commands in October 1969. Of the 190 spaces allocated at that time, 84 spaces were distributed to 8 Cost Analysis Offices, 97 spaces were distributed to 41 selected Project Managers, and 9 spaces were distributed to 3 CEIS Offices. This major allocation in October 1969 was preceded by an allocation of 31 spaces to AMC subordinate commands in September 1969 to respond to the immediate

*(Subsequent adjustments reduced this number to 233).

COST ANALYSIS AUGMENTATION

FALL 1969

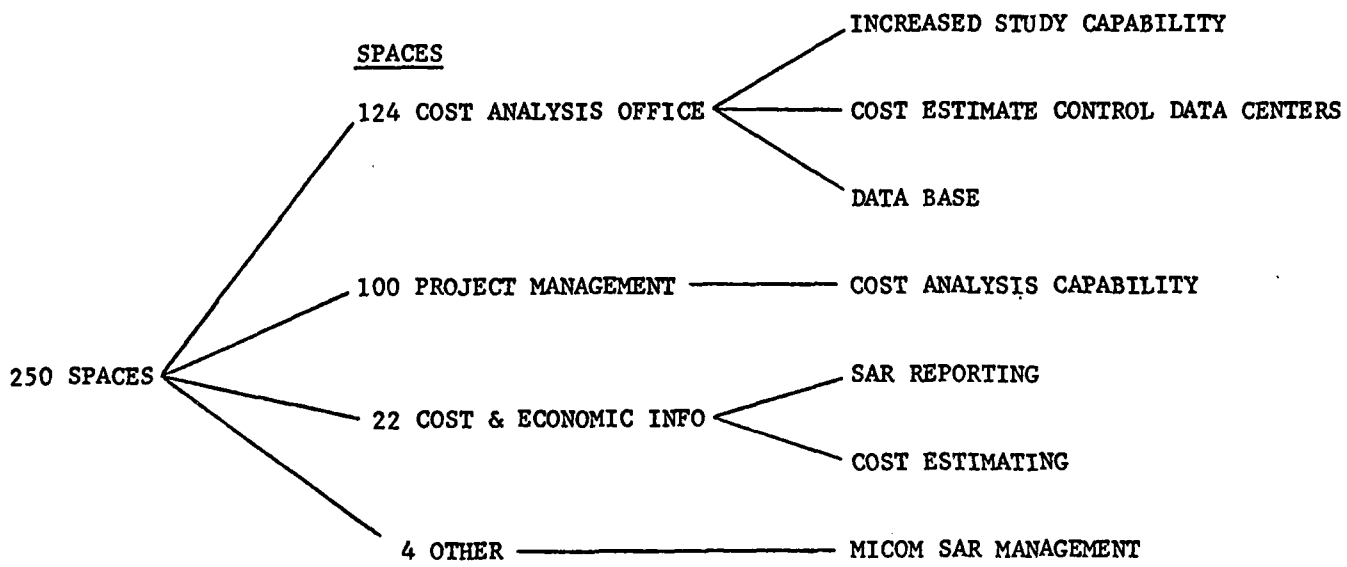


FIGURE 1

requirement for support of Selected Acquisition Reports (SAR's). During March 1970, the balance of the 250 spaces was approved for use in Headquarters, AMC. Figure 2 summarizes the progress of staffing these positions in terms of a time dimension.

With regard to filling these positions, emphasis was given to the screening of potential candidates by AMC as part of the selection process. Hiring of individuals within Cost Analysis Offices at grade GS-12 required approval of HQ AMC while grades GS-13 and above were approved by the Director of Cost Analysis, Comptroller of the Army. For those new cost analysis positions within Project Manager Offices, a special Ad Hoc Committee which included representatives from the AMC Comptroller, Special Assistant for Project Management, and Civilian Personnel established referral lists for use by the respective Project Managers. Each candidate was evaluated in terms of particular work experience and/or educational qualifications with heavy emphasis placed on proficiency in mathematics and statistics.

Figure 3 summarizes some selected examples of cost estimating products which were supported by the AMC-wide manpower augmentation. This figure is directed primarily to efforts which were accomplished by functional Cost Analysis Offices and Project Management Offices in coordination. The majority of the Life Cycle Cost Estimates were completed within the framework of Program ICE (Improved Cost Estimating) which is addressed in detail as a separate PROMAP-70 task entitled "Models for Improved Cost Estimating."

b. Training

Existing cost analysis training within the military at the time of the Cost Analysis Profile Study consisted primarily of three DOD sponsored courses presented by the Air Force Institute of Technology (AFIT). Although excellent to the needs of Air Force analysts, these courses did not address the peculiarities of Army weapon systems cost analysis. Therefore, Headquarters, AMC developed the cost analysis course entitled, "Life Cycle Cost Analysis of Weapon Systems" at the Army Logistics Management Center (ALMC) at Fort Lee, Virginia. The new training course is four weeks in length with emphasis on a workshop approach. Students form study teams, develop a study plan, formulate methodologies, collect data, and perform analyses directed toward a Life Cycle Cost Estimate of a major Army weapon system. The first of four classes annually began on 29 June 1970 with a class size of fiftenn students representing Cost Analysis and Project Management Offices throughout AMC (Figure 4).

A summary of AMC analysts trained in formal cost analysis/cost estimating courses from July 1969 through December 1970 is shown as Figure 5. This includes three DOD courses taught by AFIT and

FIGURE 2

COST ANALYSIS/COST ESTIMATING MANPOWER AUGMENTATION
AUTHORIZED VS. FILLED

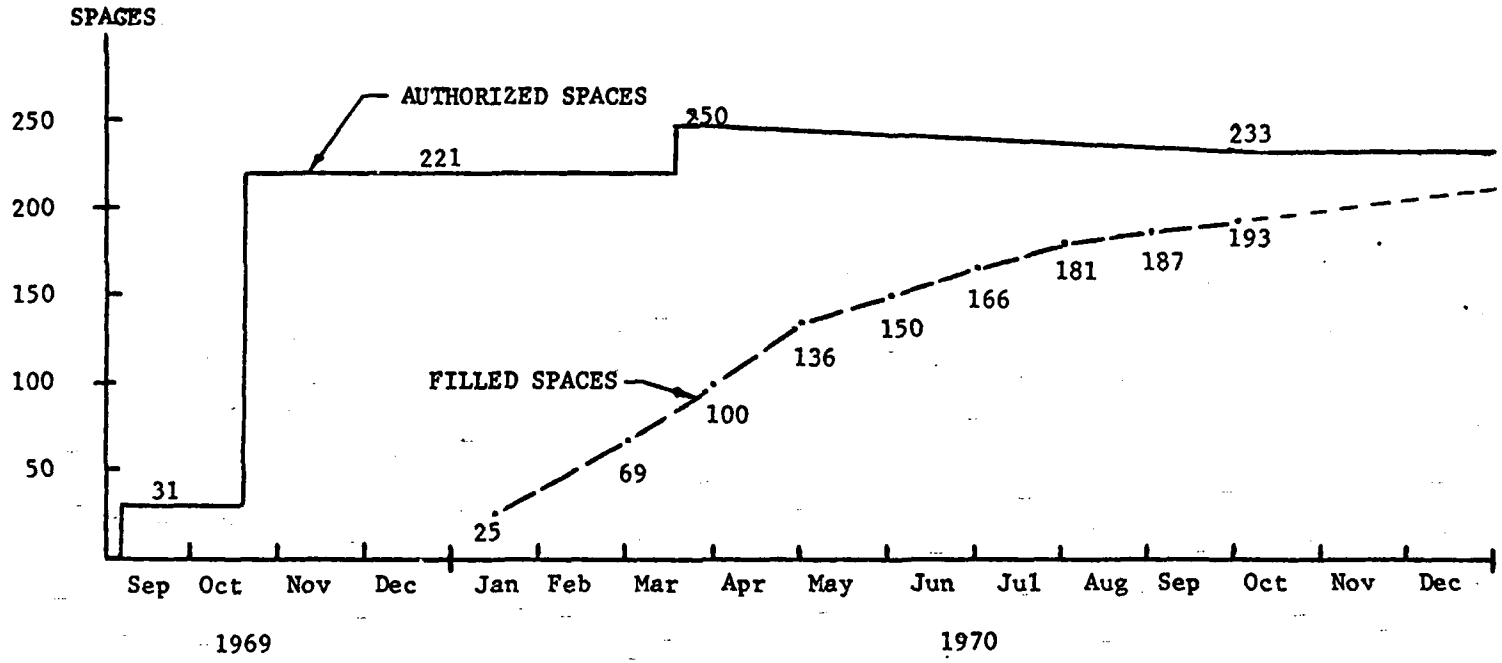


FIGURE 3

SELECTED EXAMPLES OF COST ESTIMATING PRODUCTS

PROJECT MANAGED SYSTEMS	LCCE	SAR
LANCE Missile System	X	X
Armored Reconnaissance Scout Vehicle (ARSV)	X	
Utility Tactical Transport Acft System (UTTAS)	X	
M60A1E2 Tank	X	X
Army Area Communication System (AACOMS)	X	
Heavy Lift Helicopter (HLH)	X	
Vehicle Rapid Fire Weapon System (BUSHMASTER)	X	
Tactical Fire Control System (TACFIRE)	X	X
Improved HAWK Missile System	X	
Mechanized Infantry Combat Vehicle (MICV)	X	
Family of Military Engineer Const Equip (FAMECE)	X	
155MM Selected Ammunition	X	
COBRA Helicopter	X	
Night Vision	X	
Mobile Assault Bridge	X	
TOW Missile System	X	
DRAGON Missile System	X	X
152MM Selected Ammunition	X	
GAMA GOAT	X	X
XM 198 Howitzer	X	
SAM-D	X	X
MBT-70	X	X
SHILLELAGH Missile System	X	X
CHEYENNE Helicopter	X	X

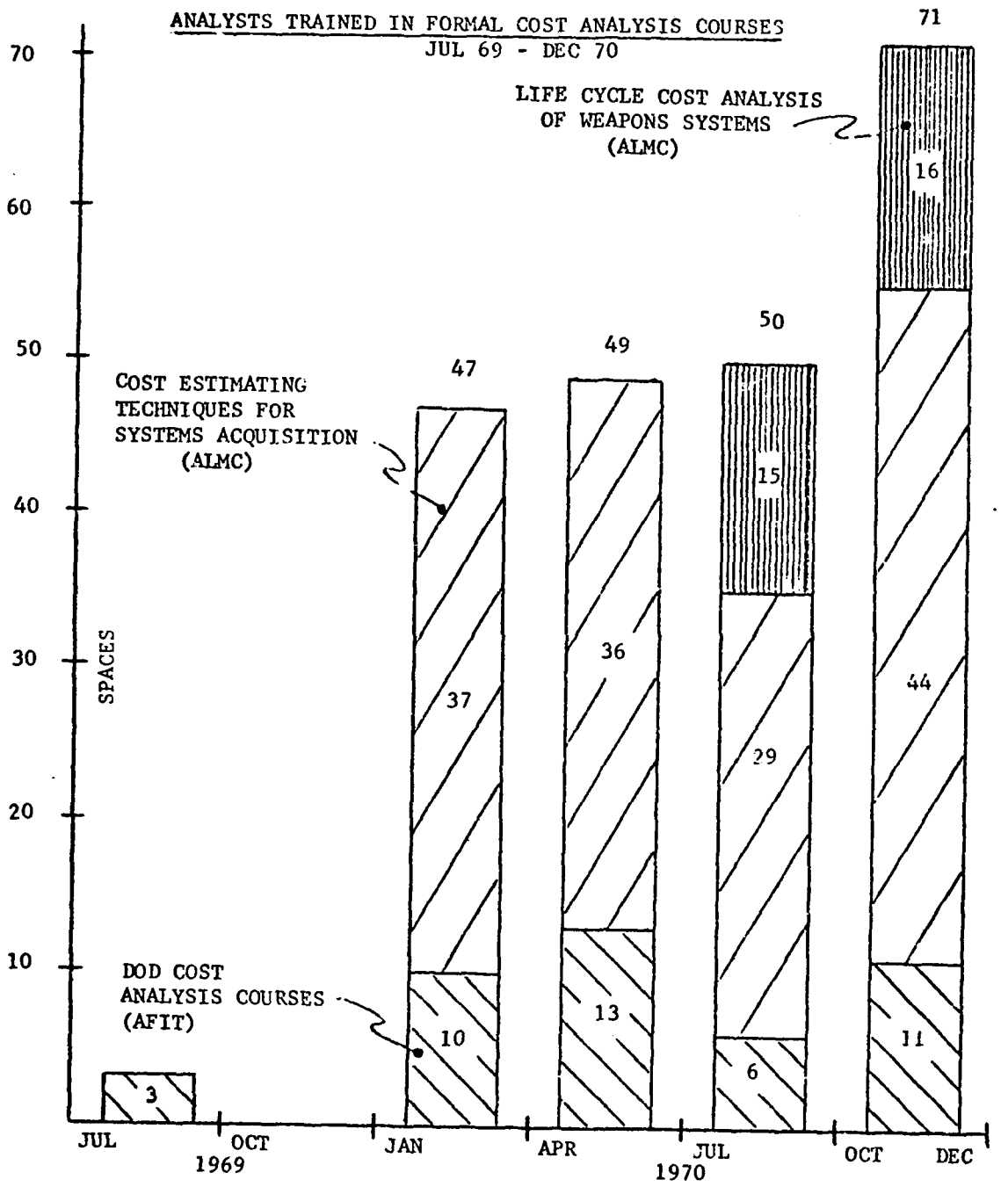
NOTES: Life Cycle Cost Estimate (LCCE)
Selected Acquisition Report (SAR)

FIGURE 4

LIFE CYCLE COST ANALYSIS OF WEAPON SYSTEMS
TRAINING COURSE

COST ANALYSIS OFFICES	ATTENDEES JUL 70	ATTENDEES OCT 70
AVSCOM	1	1
ECOM	1	
MECOM	1	3
MICOM	1	
MUCOM	2	3
TACOM	1	
TECOM	1	
WECOM		3
HQ AMC	1	3
PROJECT MANAGEMENT		
SELECTED AMMO	1	
SHERIDAN	1	1
SHILLELAGH	1	
UTTAS	1	
VULCAN AIR DEFENSE	1	
SENSORS	1	
HAWK		1
SATCOM		1
	15	16

FIGURE 5


ANALYSTS TRAINED IN FORMAL COST ANALYSIS COURSES
JUL 69 - DEC 70
SPACES
70
60
50
40
30
20
10
LIFE CYCLE COST ANALYSIS OF WEAPONS SYSTEMS (ALMC)
COST ESTIMATING TECHNIQUES FOR SYSTEMS ACQUISITION (ALMC)
DOD COST ANALYSIS COURSES (AFIT)
3
47
37
10
49
36
13
50
15
29
6
71
16
44
11
JUL
OCT
1969
JAN
APR
JUL
1970
OCT
DEC

two new courses at ALMC beginning in 1970.

As an extension of the formal training program, AMC is preparing a "Guidebook for Life Cycle Cost Analysis." The purpose of the Guidebook is to provide a definitional framework and procedural guide for conducting life cycle cost analysis studies. Significant objectives of the Guidebook are:

(1) To serve as a textbook for in-house training of new cost analysts.

(2) To provide the cost analysis community including Project Managers with a guidance and reference manual.

(3) To document and apply the lessons learned in the AMC Program for Improved Cost Estimating (ICE) as well as techniques and methodologies developed in other studies.

Headquarters, AMC is initiating and preparing the Guidebook in conjunction with the Army Logistics Management Center and in coordination with the major subordinate commands, with support by study contractors such as the Research Analysis Corporation. The Guidebook is in its early stages of development and initial publication is not anticipated prior to the third quarter of FY71.

c. Cost Estimate Control Data Centers

The Cost Analysis Profile Study identified a serious lack of focal points at each major subordinate command and at HQ AMC to assure that cost estimates funneling upward and downward reflected in various programming and planning documents were consistent, compatible and/or valid. In other words, there was no mechanism to assure the validity of cost estimates appearing in many related documents. Therefore, the recommendation was made to establish formal cost control centers at the major subordinate commands to ensure that estimates submitted to DA were professional estimates representing the command.

Figure 6 schematically depicts the role of Cost Estimate Control Data Centers (CECDC's) in AMC. Decentralized management of the CECDC's will be the responsibility of the MSC Commander with centralized direction and control provided by Headquarters, AMC.

The CECDC's were established throughout late 1969 and 1970 at the major subordinate commands as indicated in the following table. Their principal role is to review and validate cost estimates for consistency, compatibility, and validity. Cost estimates to be

evaluated and cleared by the CECDC's include Life Cycle Cost Studies, Cost Effectiveness Studies, Program Change Requests, System Development Plans, Qualitative Materiel Requirements, Selected Acquisition Reports, and Project Master Plans. In addition, attention will be given to Independent Government Cost Estimates (IGCE's) the Army Materiel Plan, and other cost oriented documents as designated by the MSC Commander. Once established, each CECDC will institute its own procedures to ensure the review of cost estimates, the continual updating of baseline estimates (e.g., life cycle cost studies), or adjustment of derivative cost estimates stated in other cost oriented documents.

ESTABLISHMENT OF COST ESTIMATE CONTROL DATA CENTERS

Command	Established
AVSCOM	DECEMBER 1970
ECOM	DECEMBER 1969
MECOM	AUGUST 1970
MICOM	DECEMBER 1970
MUCOM	JULY 1970
TACOM	JULY 1970
WECOM	MARCH 1970

d. Cost Data Base

The concluding recommendation addressed concerns the development of an automated cost data base for AMC. In the immediate time frame all elements of the Command must rely on a relatively unstructured manual procedure. However, it is recognized that a manual approach does not provide the flexibility, speed, and data access required. High priority, therefore, has been given to the development of an automated cost data base system. The automated system will be an AMC system. Based on an AMC Letter of Inquiry to the Department of Army, AMC has received DA approval to prepare the Data Automation Requirements (DAR).

The development of an automated cost data base will be a Command-wide effort as an integral part of the AMC five year Automated Data Processing (ADP) program and will be planned and conducted with the same degree of deliberation and caution that has characterized other current ADP applications. The layout of the data requirements,

the design of the system, and the detailed specifications will address the needs of each major subordinate command and the commodity classes of materiel represented.

In order to assure maximum economy in meeting the overall AMC need and to achieve the desired degree of uniformity among major subordinate commands in the development of an automated system, the initial thrust of the effort will be the development of a pilot model at the US Army Electronics Command (ECOM). Later, the system will be implemented at each of the remaining major subordinate command. Development of the automated data base is being accomplished by a working task force composed of representatives from Cost Analysis Offices at each major subordinate command and chaired by the ECOM member. Overall guidance for the project is provided by a Steering Committee composed of members of selected Headquarters, AMC Offices.

V. FOLLOW-ON ACTIONS:

a. Training

Personnel within the borad purview of the AMC cost analysis community will be encouraged to obtain supplemental training in the area of cost analysis/cost estimating. Cost analysts within Cost Analysis Divisions and Project Management Offices specifically will be programmed for attendance at the new training course entitled "Life Cycle Cost Analysis of Weapon Systems." The projected training requirements for 1971 to include all formal cost analysis/cost estimating courses available to AMC are summarized in Figure 7.

The "Guidebook for Life Cycle Cost Analysis" will be completed under the direction of the AMC Comptroller in conjunction with the Army Logistics Management Center and in coordination with the major subordinate commands. Target date for publication of the preliminary draft if January 1971.

b. Cost Data Base

Development of an integrated automated cost data base system will proceed as a long term program under the direction of the Cost Analysis Division, HQ, AMC. This effort will be accomplished in coordination with Cost Analysis and Management Information System Offices throughout AMC.

With regard to the time table of development, the current schedule calls for formulation of system requirements and design through the first half of FY71. By the end of FY71 a limited system capability should be under evaluation at the US Army Electronics Command.

FIGURE 6

COST ESTIMATE CONTROL DATA CENTERS

FLOW CHART

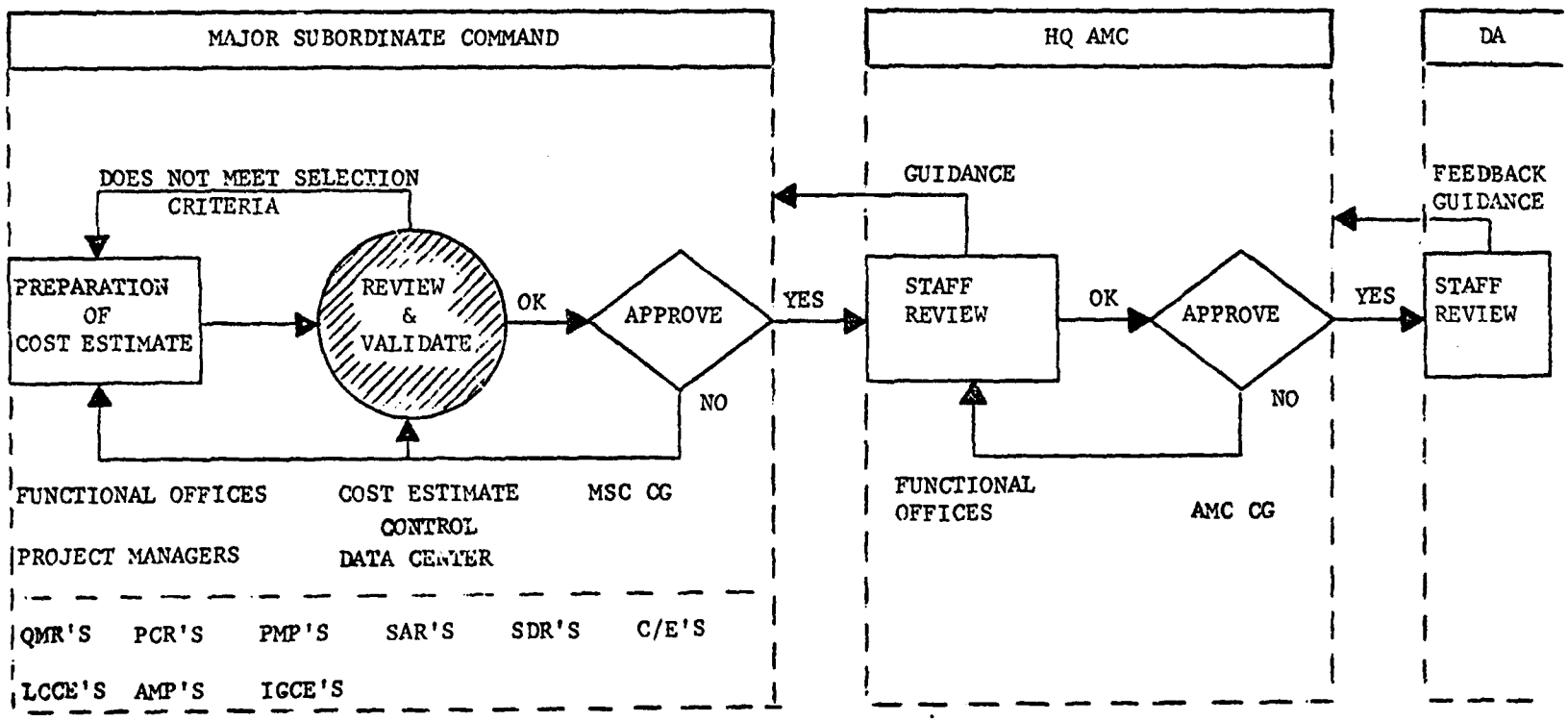


FIGURE 7

PROJECTED TRAINING REQUIREMENTS
1971

FORMAL COST ANALYSIS COURSES	1971 1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	TOTALS
Life Cycle Cost Analysis of Weapon Systems	16	16	16	16	64
Cost Estimating Techniques for Systems Acquisition	70	70	25	50	215
DOD Cost Analysis Courses (AFIT)	6	11	25	25	67
	92	97	66	91	346

I. TASK TITLE: Selection and Stabilization of Project Managers.

II. TASK OBJECTIVE: To improve project management by raising the selection qualifications of project managers and their staff and stabilizing their tours.

III. BACKGROUND DISCUSSION: Subsequent to a briefing of the Vice Chief of Staff, Army, 19 Jun 69, by the Commanding General, US Army Materiel Command, on the subject of staffing key military positions in AMC, the Vice Chief of Staff tasked the Deputy Chief of Staff for Personnel (DCSPER) to conduct a study to determine how to upgrade substantially the quality of officers being assigned to project manager positions in AMC. The study, completed in November 1969, revealed that:

1. High quality officers were being assigned as PMs.

2. Tenure of past PMs had been less than desired. From 1962 to 1969, 32 PMs served three years or more, 29 served over two years but less than three, and 69 served less than two years. Among the group serving less than three years there were 30 retirements and 59 reassignments, 5 of which were selected for attendance at Senior Service Colleges and 6 promoted to general officer.

3. Criteria for selection, assignment, and management had not been documented in OPO.

4. More emphasis should be placed on selecting PMs with high potential for completing a minimum tour of 3 years.

IV. ACCOMPLISHMENTS:

1. Qualifications of Project Managers and Their Field Grade Staff Officers.

a. Upon completion of the aforementioned study, DCSPER issued the following operating instructions to the Chief of Personnel Operations, DA, for use in selection and assignment of PMs to AMC:

(1) System will be nominative. CG AMC will exercise final selection authority.

(2) By-name requests from AMC will be acted upon favorably.

(3) Primary candidates must:

(a) Be a college graduate with a degree preferably in engineering, a basic science, or mathematics.

(b) Possess a graduate degree in business or a related technical field.

(c) Be a Senior Service College graduate.

(d) Have commanded a troop unit commensurate with their grade.

(e) Have received some training in the field of materiel acquisition.

(f) Possess a record of demonstrated outstanding performance and leadership.

(g) Have demonstrated a high potential for advancement to General Officer rank.

(h) Be serving a service obligation incurred as a result of some other personnel action.

(i) Not be within three years of mandatory retirement.

(4) Provide for personnel action to defer attendance of Senior Service College selectees and involuntary retention on active duty when requested by AMC.

(5) Insure full coordination with AMC (to include providing an acceptable, qualified replacement) before any personnel action is taken to reassign Project Managers.

(6) Candidates with lesser qualifications will be considered only:

(a) When requested by-name by AMC.

(b) When no other candidates are available.

b. In Dec 69, this headquarters initiated the practice of forecasting PM requirements to OPO, DA, 18 months in advance of date replacements are needed. This will allow OPO ample time to identify prospective PMs, nominate them to AMC for acceptance, and schedule the nominee for any training deemed necessary prior to assuming command of a project.

c. Also in Dec 1969, Hq AMC developed the following recommended qualifications for future selection and assignment of field grade officers to PM staff positions, and submitted it to DCSPER 31 Dec 69:

		MAJ	LTC	COL	PM
(1)	CIVILIAN EDUCATION				
	BS/BA (Preferably in Engr, Science, Math)	R	R	R	R
	MS/MBA	D	D	D	R
(2)	MILITARY EDUCATION				
	Career Course	R	R	R	R
	Command and General Staff College	D	R	R	R
	Senior Service College		D	R	R
(3)	MILITARY EXPERIENCE				
	Outstanding Performance Record	R	R	R	R
	Potential to Become Project Manager	R	R	R	R
	Materiel Acquisition Experience	D	D	R	R
	Special Career Program Membership	D	D	R	R

(R - Required D - Desirable)

On 30 Jan 70, DCSPER favorably acknowledged the foregoing recommendations and tasked OPO with implementation.

d. During mid-1970, this headquarters made a survey of captain, major and lieutenant colonel TDA positions within the command to identify those most suitable for providing the type of experience necessary in developing future project managers. The objective of this effort was to provide assignment patterns that will insure progression of PM candidates through successively more responsible positions. On 5 Aug 70, a list of 597 positions was forwarded to DCSPER for consideration. A response from DCSPER, dated 10 Nov 70, stated that administrative procedures are being developed to identify prospective PMs, assign them to developmental positions, maintain readily retrievable historical assignment data on such officers and schedule special training to fill education gaps. DCSPER proposed that PM developmental requirements be managed within the framework of the logistics, procurement, and R&D officer programs in view of the close correlation between the list submitted and supporting positions in the three programs.

e. On 30 Apr 70, the Special Assistant for Project Management briefed Army officer students of the Industrial College of the Armed Forces to acquaint them with the vital role of PMs in weapon systems acquisition and to stimulate interest in PM assignments.

2. Stabilization of Project Managers and Their Staff

a. Effective 15 Oct 69, DA officially documented policy on stabilization of PMs and their staff (excluding company grade officers) for indefinite tour lengths through publication of AR 614-4, Stabilization. Twenty-four month stabilized tours are prescribed for enlisted personnel.

b. In Jan 70, a recommendation for stabilization of 40 selected company grade project management staff officers was submitted to DCSPER, supported with the rationale that stabilization would -

(1) Motivate greater involvement and contributions by each officer.

(2) Encourage the PM to give attention to career development of the officers through available training courses.

(3) Improve liaison between military industrial communities, and

(4) Develop a better qualified cadre for future field grade officer requirements in project management. The action produced favorable results for 28 of the 40 officers.

3. Payoffs.

a. Reduction in the turbulence of project managers and supporting staff.

b. Improvement in incentives for candidates for project manager positions.

c. Development of a higher qualified cadre for future project managers.

V. FOLLOW-ON ACTIONS: Personnel requirements for project management offices will be carefully monitored to assure, (1) timely and accurate preparation of requisitions, (2) assignment of qualified people, and (3) retention of key personnel for periods commensurate with project milestones.

I. TASK TITLE: Support of PMs by Commodity Commands

II. TASK OBJECTIVE: To assure the integration of Project Management actions with those of the functional elements of AMC.

III. BACKGROUND DISCUSSION: A universal problem is the need to establish a clear definition of the roles and missions of Project Managers, their relationships with functional directorates at Commodity Commands, and their use of and support by functional organizations, laboratories and other separate activities of AMC. The Project Manager charter and plans, plus regulations setting forth the organization and mission statements of functional organizations provide the orthodox basis for establishing these relationships.

Because of the unique nature of Project Management, however, the unusual assignment of individual responsibility, and the methods of operation which are neither within nor wholly outside of the established hierarchical system, there is a need for a more detailed statement of how these relationships are to be carried out. There is also a need for agreements that clearly identify support required by Project Managers, procedures whereby it will be supplied, and the means whereby Project Managers retain visibility and control of work on their programs.

Several aspects of this problem have been addressed piecemeal in the past without attempting to provide a cohesive framework that would assure integration of Project Management actions with those of the functional elements of AMC. In 1965, in conjunction with a reorganization of Project Management at the Missile Command, the command published a document entitled, "Project Manager/Directorate Functional Relationships." It set forth, on a function-by-function basis, a clear separation of the detailed operational (doer) functions from Project Managers' management functions. Use of the guide enabled the command to transfer execution of the operational details and the people identified with them to the functional staff, and to free Project Managers to execute their management function. Wider use of this concept and approach was established as an objective of the AMC Board in 1967, and re-established as one of the objectives of this PROMAP-70 task because of its applicability to element 1c of the program for Improvement of Weapon System Acquisition established by the Secretary of the Army. The AMC reorganization of Project Management in 1969 increased the need of a guide to re-define relationships under decentralized Project Management.

The Commodity Command guides are general in nature and do not address specific details of time, cost, or performance regarding execution of specific tasks in support of Project Managers. Accordingly, they do not obviate the need for additional agreements between Project Managers and Commodity Commanders. Further, they do not define relationships between Project Managers and other AMC activities called upon for support. AMC

Policy 10-4 requires Project Managers to define their requirements, determine what support is needed from the other elements of AMC and initiate formal intercommand agreements which clearly identify the support required and the procedures for supplying it.

In addition, increased emphasis has recently been placed by the Secretary of the Army on the charter responsibilities of Project Managers to meet performance objectives on time and within the cost levels provided. There is no mistaking this individual responsibility which includes direction and control of the resources identified to the project.

The means whereby a Project Manager is assured that he can remain in control when he tasks an in-house activity to do work on his project are a proper subject for discussion in support agreements, just as their control is provided for by contracts with commercial and industrial firms. The Project Manager can neither abdicate his responsibility to maintain visibility and control, nor may he properly be denied access to data or authority to re-direct activity. There has not been adequate guidance to assist Project Managers in preparation of such agreements. Development of a support agreement concept and execution of necessary agreements by all Project Managers was established as a second major objective of this PROMAP-70 task.

Two additional minor elements were included in this task to round out the actions needed to exploit its full potential. An intensified program to orient incoming Project Managers on the policies of AMC has been initiated to overcome valid criticism voiced during the 1969 Congressional hearings on the Army tank program. This orientation is intended to familiarize new managers with policy and to help them to identify their proper role and project priority in relationship to overall activities of AMC. Also, in order to improve the dialogue between Project Managers and functional staffs, a small percentage, roughly 25 percent, of spaces available for training at the Defense Weapon Systems Management Center was reserved for use by key individuals from the functional organizations.

A major premise underlying every aspect of this PROMAP task is that ways must be found to increase and improve the use by Project Managers of the full capabilities of all organizational elements of AMC. To do this, it is necessary that Project Managers be made fully aware of the capabilities of laboratories, depots, testing activities and other agencies within AMC. There must be a clear and easy means whereby these capabilities can be accessed and exploited in support of project objectives. To improve utilization by Project Managers, these AMC activities need to identify the contributions that they can make toward supporting Project Managers and resolving their problems. They must also stress the need to assure prompt, economical, and adequate response to Project Manager tasks that will engender confidence on the part of the Project Managers.

IV. ACCOMPLISHMENTS: The major accomplishment of this PROMAP task has been to activate and revitalize management practices that have been used successfully in the past, but which were neither uniformly understood nor applied.

a. Project Manager/Directorate Relationships. The current Missile Command document defining these relationships (MICOM Regulation 11-22) was used as a strawman for implementation of this sub-task in the other Commodity Commands. Based on this, each Commodity Command has reviewed its internal regulations governing conduct of Project Management and has developed a single regulation setting forth command policies, including a detailed function-by-function guide that clearly delineates the division of responsibility between Project Managers and supporting functional directorates.

The principal function of the guide is to serve as a broad agreement between the Project Manager and the Commodity Commanders as to how Project Managers are to use the Commodity Commander's staff. They provide the boiler plate for doing work and resolving disputes. Since not all Project Managers have identical requirements or capabilities, additional support agreements with Commodity Commanders will normally be necessary. Using the Project Manager/Directorate guides as the basis for negotiating agreements on specific requirements, these supplementary agreements will be limited to exceptions and additional specifics needed to assure mutuality of understanding, visibility, and control. Supplementary agreements do not duplicate the extensive boiler plate in the guides, and in one Commodity Command, the guide has replaced four voluminous individual support agreements in their entirety. Some of the benefits reported by Commodity Commanders and Project Managers are listed in Table I.

PROJECT MANAGER/DIRECTORATE
FUNCTIONAL RELATIONSHIPS GUIDE

* Clarify Role of Each Functional Element
* Facilitate Tasking Functional Organizations
* Standardize Routine Support Provisions
* PM and Functionals Know What is Expected
  - Reduced Sources of Confusion
  - Reduced Errors of Omission
  - Reduced Overlap and Duplication of Effort
  - Reduced Misapplication of Resources
* Better Morale and Interpersonal Relationships
* Boiler Plate for Supplementary Agreement
* Basis for Resolution of Disputes

TABLE I.

STATUS OF SUPPORT AGREEMENTS
31 December 1970

	REQUIRED	NEGOTIATED
AVSCOM		
LOH	3	3
HLTAS	9	9
UTTAS	7	7
MAVS	2	2
ECOM		
AACOMS	9	9
NAVCON	2	2
SAEFAA	6	6
NV	3	3
SMO	7	7
MICOM		
ADCAT 1/	11	10
HAWK 1/	7	1
TOW 1/	6	3
DRAGON	4	4
SHILLELAGH	13	13
LCSS	2	2
PERSHING	1	1
MUCOM		
SEL AMMO 3/	12	6
SAFEGUARD	11	11
BOMBS 2/	4	4
ROCKETS	4	0

	REQUIRED	NEGOTIATED
TACOM		
M561	5	5
ARSV	9	9
MICV	5	5
GOER	2	2
TECOM		
DESERET	9	9
WECOM		
CSWS	2	2
VRFWS	7	7
RIFLES	4	4
M60	8	8
SHERIDAN	8	8
HQ AMC		
AAWS	5	1
LANCE	19	19
SAM-D	11	11
MEP	14	14
CVADS	7	7
STARCOM	2	2
MALLARD	1	1
MBT	4	4
SATCOM	3	3

PROJECTED COMPLETION DATE:

1/ 15 January 1971
2/ 30 January 1971
3/ 8 February 1971

TABLE II.

b. Support Agreements. A concept for meaningful implementation of AMC Policy 10-4 has been developed taking into account the responsibilities charged to Project Managers by charter. The concept relies entirely upon individual Project Managers to identify the support required from whom. The concept calls for agreements to be reached with each participating organization on the project Work Breakdown Structure but does not stipulate format. A simple tasking directive accepted in writing by signature of a responsible official in the supporting organization will do in many instances. It is the responsibility of individual Project Managers to negotiate support agreements that do not add unnecessarily to paperwork, yet are sufficiently definitive to assure visibility and control over cost, schedule and technical performance. Follow-up to assure performance by the supporting element is a Project Manager responsibility.

There has been a significant improvement in execution of support agreements under this PROMAP task and a baseline has been established for further improvement. Several Project Managers have reported better response from supporting organizations, less wheel spinning, and better coordination of effort. Nevertheless, the progress made has been quite moderate in terms of the need for improvement. For example, all Project Managers now have negotiated support agreements ... some Project Managers prefer to rely on umbrella agreements between Commodity Commands and do not negotiate separate understandings. Some Commodity Commanders encourage execution of support agreements between Project Managers and subordinate elements of the commands. Others do not. Some of the sample of agreements reviewed add nothing to defining relationships or visibility and control of progress. Others pin down specific responsibilities and people. In short, there is still a diversity of opinion and understanding concerning support agreements that is borne out in part by the disparity in the number of agreements considered necessary by individual Project Managers as indicated in Table II. It is clear that a mere numbers game will prove nothing, and that improved understanding and quality of agreements should be the goal.

c. Orientation of Project Managers. This has been a productive effort under PROMAP. Since initiation of this sub-task, a three-volume orientation package designed to acquaint Project Managers designate with the nature of their forthcoming job has been prepared and sent to all currently assigned and designated incoming Project Managers. This orientation package consists of the following material:

Volume I: Policies and Procedures. This pamphlet includes pertinent directives and current command correspondence related to Project Management that places the role of the Project Manager in perspective and is an authoritative source of policy guidance.

Volume II: Presentations Related to Project Management. This pamphlet includes verbatim transcripts of important addresses by the Commanding

General, AMC, and his principal subordinates. These focus attention on the major public concerns of the Command and on the Commander's reaction to them.

Volume III: General Information. This pamphlet includes a brief description of project managed equipment, rosters of Army Materiel Systems Staff Officers (AMSSO), and Department of Army Systems Staff Officers (DASSO), plus a selected bibliography of readings in Systems/Project Management and Part One of the DWSMC correspondence course.

In addition, procedures for orientation of incoming Project Managers have been developed to assure that the new manager has an opportunity to meet key officials involved in management of his project at all levels within DOD. In particular, the procedures will provide an opportunity for the Commanding General, AMC, his deputies, and the directors of functional elements to inform the new Project Manager concerning their views of the problems with which he will be faced and furnishing guidance for his use in management of the project. These procedures have been further refined to relate the reassignment of Project Managers with program milestones and to provide a period of overlap with the outgoing Project Manager prior to assuming command. These refined procedures will also call for a major systems review to be conducted by the outgoing Project Manager so that the new manager will be exposed to program status in detail, and to the command guidance which will result from the review.

d. Training of Functional Personnel. Twenty-five percent of available quota spaces for attendance at DWSMC during CY 1970 was utilized to train 18 key individuals from AMC functional organizations as a means of improving dialogue between the functional organizations and Project Managers. Accomplishment under this sub-task is shown in Table III. This policy will be continued during the remaining two classes at the existing school, but needs to be re-evaluated in terms of the capacity/demand situation for any students at the new school.

DEFENSE WEAPON SYSTEMS MANAGEMENT COURSE
ATTENDANCE BY KEY FUNCTIONAL PERSONNEL

CY 1969	1ST QTR	2D QTR	3D QTR	4TH QTR	TOTAL
GOAL - 18	3	6	5	4	18

TABLE III.

e. Use of In-House Capabilities. This sub-task has fallen short of its objective. Although all activities have published a regulation or other material to define responsibilities in support of PMs, none except the US Army Materials and Mechanics Research Center (AMMRC) has greeted the task with any enthusiasm. AMMRC has published an illustrated brochure and is actively seeking ways in which it can contribute to support PMs.

As a related action not directly attributable to this PROMAP task, but in part derived from it, AMMRC has undertaken an imaginative approach to marketing its capability. The laboratory has identified materiel mission areas in which it has an interest and capability. Within these mission areas it has identified specific systems and sub-systems and the critical materials requirement for each. From these identified problems it has further identified pacing materials problem areas in which the laboratory is splendidly equipped to make a contribution. The laboratory has portrayed these relationships in a series of graphic displays referred to as spider charts that provide a highly visible display of the market potential for their services.

V. FOLLOW-ON ACTIONS:

a. Project Manager/Directorate Relationships. Revise functional relationship guides to conform to the new Commodity Command organization and improve functional statements.

b. Support Agreements. The guidance for preparation of support agreements issued under this PROMAP-70 task will be refined and issued as part of AMCR 11-16. The Project Manager for MBT-70 has been identified under this task and by the Task Director for Implementation of Cost/Schedule Control Systems Criteria (C/SCSC) to undertake a pilot effort to include CSCSC reporting requirements in in-house agreements. The results of the MBT effort should be evaluated in FY 71 for potential wider application.

Command attention in staff visits and as an interest area for Inspectors General should be placed on improvement of the quality of support agreements with the objective in view of assuring that PMs have the necessary agreements in effect to control all important in-house aspects of their program and that the agreements do, in fact, afford them necessary visibility and control.

c. Orientation of Project Managers. The orientation package should be updated at the end of FY 71 and distributed to Project Managers and Commodity Commanders and Commanders of Army Schools.

d. Training of Functional Personnel. Quotas will be assigned for attendance of functional personnel at DWSMC Class 71-A and 71-B. An inquiry will be mailed prior to the end of FY 71 to graduate functional personnel and their supervisors to determine the value of continuing this

approach to improving PM/Functional dialogue. If it is indicated that this practice should be continued, the question of assigning quotas to functional personnel for attendance at the executive refresher course of the new DWSMC will be explored.

I. TASK TITLE: Models for Cost Estimating (Pilot ICE).

II. TASK OBJECTIVE: To improve, significantly, life cycle cost estimating discipline within AMC and provide meaningful cost information for decision making; to provide training to personnel involved with the preparation of cost estimates; and, to establish a data bank of current, approved Life Cycle Cost Estimates (LCCE).

III. BACKGROUND DISCUSSION: Congressional interest in the high cost of defense and particular interest in materiel "cost overruns" had focused attention on cost analysis and the need for better estimates as a tool for management. Response by the Secretary of the Army included an outline of his program which placed a high priority on developing an improved cost analysis capability. He emphasized that the Army must develop a uniform approach; improve cost methodology; expand the data base; and develop the expertise required at all levels of cost analysis. The goals of this PROMAP-70 task are consistent with the program outlined by the Secretary of the Army.

A. The program for Improved Cost Estimating has been conducted in phases and at the completion of the current Phase 3 will have produced LCCE's for 20 major weapon systems. The first phase accounted for five systems which were selected to represent different points along the life cycle of an end item. The studies were conducted by teams, the chairman of each team being from the Cost Analysis Division, Comptroller, HQ, USAMC. In Phase 2, seven systems were selected, each under a different commodity command. Co-chairmanship of each study team was provided by the project manager concerned and a major subcommand. In phase 3, the team chairmen were provided by Project Managers. All phase 3 studies will be completed by the end of Jan. 71. A list of Program ICE studies is at Fig. 1.

B. The application of policies and procedures established in the ICE program has not been confined to studies made under the program. Other LCCE studies have been conducted parallel to Program ICE as requirements have dictated. In most cases, these studies have been conducted according to formats and procedures established in Program ICE.

C. Realization of the objectives of this PROMAP-70 task will result in the production of a single validated basic document for each project-managed system which represents the Army's best estimate of the cost of that system throughout its life cycle. Each study is updated as necessary and, being a complete cost analysis, includes the basic computational framework for all costs of the weapon system. It provides for consistency among cost estimates used in such documents as the DCP, SDP, SAR, AMP, QMR, PROMIS and cost effectiveness studies.

PROGRAM ICE

System	Command	
LANCE	MICOM	Phase 1 Oct 69 - Jan 70
ARSV	TACOM	
UTTAS	AVSCOM	
M60A1E2	WECOM	
AACOMS	ECOM	
HLH	AVSCOM	Phase 2 Jan 70 - May 70
BUSHMASTER	WECOM	
TACFIRE	ECOM	
155MM SEL AMMO	MUCOM	
IMP HAWK	MICOM	
MICV	TACOM	
FAMECE	MECOM	
COBRA	AVSCOM	Phase 3 May 70 - Dec 70
NIGHT VISION	ECOM	
MAB	MECOM	
TOW	MICOM	
DRAGON	MICOM	
152 AMMO	MUCOM	
GAMA GOAT	TACOM	
XM198 HOW	WECOM	

Fig. 1

IV. ACCOMPLISHMENTS: Progress toward improving the overall cost analysis program in the Army is reflected in the accomplishments of the ICE program. Objectives of this PROMAP-70 task have been met in the sense that cost estimating at AMC has been improved, personnel have been trained and the establishment of a data bank of approved life cycle cost estimates has begun. Continued improvement is necessary and LCCE's must be performed on more project managed systems to maintain the quality introduced into the program to date. That plans for an improved cost estimating program have been implemented and the program operated successfully for over a year is a milestone of measurable significance.

A. The initial five studies (Pilot 5 ICE) were first intended to serve as examples, or pilot models, for future studies by all sub-commands. They served as excellent training media and resulted in five useful life cycle cost estimates; however, they served more as

points of departure for progressing to better estimates than as "hard and fast" examples. The two subsequent phases were introduced to insure continuous progress in the cost analysis program.

B. One measure of accomplishment is the extent to which the end product has been used. Program ICE studies and others that have been conducted in parallel, have found numerous uses by managers, staff, and decision makers. They have been used as a basis for SAR's, QMR reviews (cost section), AMC command reviews, input to cost effectiveness studies and other documents. Some examples of ICE study utilization are shown at Fig. 2.

C. Various aspects of the cost analysis program have been considered in assessing specific accomplishments. These are shown in chart form at Fig. 3, depicting conditions before Program ICE and progress through Phase 3. In more general terms measurable achievements have been made toward:

1. Establishing a validated single source for cost estimates for major weapon systems. One major problem in weapon systems management has been the lack of consistency throughout DOD as to what constituted the official cost estimate at any particular time. The lack of a single source of validated estimates in all cost categories was at the root of the problem. Before ICE, there was no standard formal validation procedure required and estimates in increments were often made and quoted without staff coordination or command approval. The policies and procedures introduced incident to Program ICE and the more credible product resulting will assist in solving this problem. It is now policy that cost estimates originating at a project manager or subcommand will be validated by the Cost Estimates Control Data Center (CECDC) under the Comptroller of the subcommand. As each study is received in HQ, USAMC it is reviewed, analyzed and then coordinated among interested staff directorates in establishing a command position. Comptroller of the Army reviews the studies in detail and resolves any differences that arise with AMC before approving for DA Staff use. The many uses of LCCE's and the value of having a single validated source for a cost estimate have become more apparent. As a result, commanders and managers are beginning to use these studies as sources for approved cost estimates for a variety of requirements.

2. Developing a standard LCCE study with standard data format, better organized and easier to track and evaluate. Cost estimates in the past were fragmented and were not developed according to prescribed format or required standard content. Steps toward standardization have been progressive with the application of lessons learned to each new phase. The longest step in that direction was taken with Phase 3 ICE.

ICE STUDY UTILIZATION

ARSV	- SUPPORT FOR AMC RECOMMENDATIONS TO THE CHIEF OF STAFF, ARMY - QMR DECISION BRIEFINGS ACSFOR/AVCS
BUSHMASTER	- SUPPORT FOR AMC RECOMMENDATIONS TO CHIEF OF STAFF, ARMY - AUSTERE VERSION TO SUPPORT DCP
MICV	- AVCS DECISION BRIEFING AND RFP
HLH	- USED IN DRAFT DCP
UTTAS	- INPUT TO COST/EFFECTIVENESS STUDY OF CANDIDATES TO SATISFY QMR
152MM AMMO) 155MM AMMO)	- PROVIDED DATA BASE FOR FUTURE PROCUREMENT OF MUNITIONS
NIGHT VISION	- DA NEED FOR PROGRAM VISIBILITY
AACOMS	- COMMAND REVIEW
TACFIRE	- USE FOR EVALUATION OF REDISTRIBUTION OF TPP CONTRACTUAL FUNDS - SUPPORT OF SAR
GAMA GOAT) LANCE) DRAGON) TOW) IMPROVED HAWK) M60A1E2)	- SUPPORT OF SAR
MAB	- INPUT TO COST/EFFECTIVENESS STUDY
FAMECE	- BASIS FOR INDEPENDENT GOVERNMENT COST ESTIMATE

Fig. 2.

PROMAP-70
MODELS FOR COST ESTIMATING

ELEMENTS OF COST ANALYSIS PROGRAM	BEFORE PROGRAM ICE	PROGRAM ICE		
		PHASE 1	PHASE 2	PHASE 3
LCC STUDY	FRAGMENTED	DEFINED & INTEGRATED	EXECUTIVE SUMMARY ADDED	SUPPORTING DOCUMENTATION ADDED
COMMAND & STAFF INTEREST/ PARTICIPATION	SPORADIC	EMPHASIZED	EXPANDED	
RESOURCES	UTILIZED IN ISOLATION	REQ. DEFINED	AUGMENTATION AUTHORIZED	PROGRESS IN RECRUITING
TRAINING	SPORADIC	REQ. DEFINED	IMPLEMENTED	
COMMUNICATION/ GUIDANCE	ISOLATED/ INFORMAL	LINE & STAFF/ INFORMAL	LINE & STAFF FORMAL, DIRECT	LINE & STAFF/ FORMAL, DIRECT
FORMAT DEFINITION	LIMITED TO AR 37-18	LIMITED TO AR 37-18	RESEARCH	IMPLEMENTATION
METHODOLOGY	PRIMARILY ENGINEERING & EXPERT OPINION	IMPROVED QUANT. TECHNIQUES INVESTIGATED	INCREASE EMPHASIS QUANT. TECHNIQUES	EMPHASIS ON PARAMETRIC ESTIMATES
SUPPORTING ANALYSIS) a. SENSITIVITY) b. VARIANCE) c. TECHNICAL RISK) d. UNCERTAINTY)	NOT NORMALLY INCLUDED	QUALITATIVE ASSUMPTIONS AND RESULTS	QUALITATIVE ASSUMPTIONS & SOME QUANT. RESULTS	QUAL. & QUANT. ASSUMPTIONS & RESULTS
REG. CONFORM. (AR 37-18, MIL-STD 881 AR 37-200)	INCONSISTENT	AR 37-18 PARTIAL SUCCESS	EXPANSION OF REG. COVERAGE	CHANGES INITIATED
DATA STRUCTURE	NOT STANDARD	STRUCTURED	INTERNAL TRACKING	FORMAT & CODE AUTOMATED DATA BASE

Fig. 3.

PROMAP - 70

MODELS FOR COST ESTIMATING

	1969			1970							
TRAINING	PHASE 1 FULL TIME 22 PART TIME 22 LIMITED 25 TOTAL 69			PHASE 2 FULL TIME 53 PART TIME 64 LIMITED 95 TOTAL 212					PHASE 3 FULL TIME 88 PART TIME 107 LIMITED 146 TOTAL 341		
ORIENTATION	32	76	102	317	357	387	427	467	487	497	507
	N	D	J	F	M	A	M	J	J	A	S

Fig. 4

The significant changes w. h this phase were the standardization of definitions and formatting f the cost studies, and the implementation of a standard computer progr. to assemble data. Certain new requirements as to study content wer also imposed as a part of Program ICE. One example is the requirement for supporting analyses of sensitivity, variance, technical risk and uncertainty. As a result of Program ICE, studies have become easier to evaluate by the analyst; and with the introduction of concise executive summaries, they are more useful to supervisors and commanders.

3. Establishing a data bank responsive to the cost analyst's demands, computerized and with a standard cost model. Although cost models had been or were being developed at some subordinate commands, there nevertheless, was neither a standard computerized cost data bank throughout AMC nor a program for establishing one. A computerized standard cost model, when interfaced and coordinated with the efforts discussed in par. 2 above, will facilitate the building of a realistic cost data base; one that is easily updated and readily available for use in succeeding studies. The studies in Phase 3 ICE represent the first attempt at introducing a standard cost model. This model was based on one that had been developed by MICOM, and its application has been evaluated continuously in the conduct of Phase 3 studies. Some refinements will be required for future studies but its use in Phase 3 has been a major step forward.

4. Realizing a quick reaction capability to respond to high level demands for cost data. Historically, high level priority requirements for weapon system cost estimates have generated time consuming exercises that upset established work schedules and force abnormal overtime expenditures. Full realization of a quick reacting capability has not yet been achieved through the influence of Program ICE. This will require current LCCE's on essentially all major weapon systems that presently have none; a more complete data bank than now exists; and the standard computerized cost model functioning at all commands. There are isolated cases of this capability now. An example is the rapid response by MICOM in recent months to a DA requirement for cost data on Improved HAWK.

5. Creating an interest, participation, and coordination among subcommands and all staff elements having responsibilities for specific cost categories. As a general rule, a specific cost category is of interest to a specific staff directorate. Because of this specialized interest, a complete LCCE was seldom performed and unilateral actions on specific category estimates were frequent. At the onset of Program ICE, a review committee was formed, with membership from directorates having staff interest in cost estimates and chaired by the

Comptroller, AMC. The Committee reviewed study plans, study progress and the final study drafts before they were forwarded officially to HQ, AMC. Early in the ICE Program, briefings by the Chief, Cost Analysis Division, Comptroller, AMC, were presented to subcommand commanders and their staff and also to project managers. This served as initial orientation for key officials. Subsequently, program ICE has been on the agenda at commanders' conferences and at conferences with Comptrollers and Cost Analysis Chiefs. In December 1970, the Chief, Cost Analysis Division is again briefing commanders and their staff on the current status of the program and follow-on actions. Command interest has been generated and in turn, command policy which supports continuing the LCCE program.

D. Training: A thorough account of formal training for cost analysts is presented in the PROMAP-70 report on "AMC Cost Analysis/Cost Estimating Profile." The task, "Models for Cost Estimating" provided practical, on-the-job training for personnel associated with this task. The degree of training has been considered in the following categories:

- Full time - principal duty, approximately 75% or more of analysts time during a particular study phase.

- Part time - From 30% to 75% of an analysts time.

- Limited - less than 30% participation, input data, etc.

- Orientation - Association with the program through staff coordination, briefings and command group action.

An estimate of the number of personnel trained in the above categories is tabulated at Fig. 4.

V. Follow-on Actions: A continuation of the Improved Cost Estimating Program is needed in order to take advantage of the progress made to date and to apply lessons learned to further that progress. This would serve as a transition to normal routine functions with the cost analysis program operating under a uniform set of instructions developed out of Program ICE. It has been announced as AMC policy that all project managed systems should have a LCCE. Since there are between 25 and 30 systems on which a LCCE study should be made, if possible during CY 71, a Phase 4 to Program ICE is planned. (This number includes some updating of existing studies.) Problems encountered and lessons learned during the three phases of Program ICE will influence the CY 71 follow-on phase and in fact support the need for it.

Objectives to be sought during Phase 4 include the improvement of methodology; improvement of analyses; a transition to a normal method of operations; and the publishing of directives and regulations that provide guidance and direction to the cost analysis program.

I. TASK TITLE: Training for Improved Materiel Acquisition

II. TASK OBJECTIVE: To improve the quality and quantity of materiel acquisition training.

III. BACKGROUND DISCUSSION: From the outset of PROMAP-70, a need was recognized for new and/or expanded training programs in more than just the two functional areas originally identified for PROMAP training tasks, Cost Estimating and Contract Negotiation. To meet this need, a comprehensive total PROMAP-70 Training Plan was developed. After the training plan was approved and implementation of a PROMAP-70 Training Program was well underway, it became apparent that the objectives for the two original training tasks were too limited in scope. Consequently in May 1970, the Training for Cost Estimating Task was retitled Training for Improved Materiel Acquisition and its objective was expanded to include maintaining cognizance of the total PROMAP-70 Training Program. In doing so, the original objective for the Contract Negotiation Training Task of "...improving the capability of negotiating teams by increased training..." was also included within the purview of this expanded objective.

IV. ACCOMPLISHMENTS:

a. Initial Studies -

(1) Training for Cost Estimating - The requirement for this training was recognized by the CG, AMC before PROMAP-70 began with his directed action of 28 July 1969 to establish a cost estimating course of about four or five weeks duration. The need was also indicated by the AMC Cost Analysis/Cost Estimating Profile Study by the HQ, AMC Comptroller in July and August 1969. A five-week Cost Estimating Techniques for Systems Acquisition Course was developed by the Army Logistics Management Center (ALMC) in conjunction with the HQ, AMC staff. The course is oriented primarily toward project engineer, system analyst and other positions involved in developing cost estimates early in the life cycle process. In addition to this new course, three existing courses at the Air Force Institute of Technology were identified as appropriate for cost estimating training. These courses also provide training in support of the related PROMAP tasks for AMC Cost Analysis/Cost Estimating Profile, Initial Cost Estimates, and Contractor Cost Reports. The courses are:

Basic Quantitative Methods in Cost Analysis
Advanced Quantitative Methods in Cost Analysis
Advanced Cost and Economic Analysis

(2) Contract Negotiation Training - To improve the capability of negotiating teams by increased training in the application of negotiating techniques, related training courses requiring visibility and increased

emphasis were identified. Initially this included eight existing DoD courses (5 Navy - 3 Air Force) which appeared to be sufficient with respect to curricula content and concentration. To the list was later added one Defense course at ALMC, the Defense Procurement Management Course, which is a prerequisite for some of the more advanced courses, as well as for ALMC's Defense Advanced Procurement Management Course. The list was also expanded to include the Navy's Defense Procurement Executive Refresher Course. These courses also provide training in support of the related PROMAP task for Development and Utilization of Procurement Officers. The courses are:

Naval Materiel Command (NMC) Courses

Cost and Price Analysis and Negotiation Techniques
Art and Technique of Negotiating Contract Modifications
Termination Settlement and Negotiation
Procurement Management for Technical Personnel
Defense Advanced Incentive Contracting
Defense Procurement Executive Refresher

Air Force Institute of Technology (AFIT) Courses

Contract Law
Advanced Systems Buying (Discontinued during FY 70)
Cost Reimbursement Incentive Contracting

ALMC Courses

Defense Procurement Management
Defense Advanced Procurement Management

In addition to identifying existing related courses, the need for a new course or courses in this subject area was also examined. It was found that any additional contract negotiation training needs would be satisfied by a new Advanced Procurement Pricing Course under development by the Air Force at AFIT. The Air Force has also developed an intermediate level Contract Pricing Techniques Course to supplement the Advanced Pricing Course.

(3) Training for Improved Materiel Acquisition - In addition to cost estimating and contract negotiation training requirements, PROMAP-70 generated urgent requirements for additional training and/or revisions/expansions of current training programs in a variety of other functional areas. The PROMAP-70 Training Plan developed to meet this need included the following:

(a) Identification of 15 subject areas for planned/proposed development of new courses in the AMC schools. Maximum annual input into these courses was estimated at 3900 students.

(b) Identification of existing AMC and other DoD courses related to PROMAP-70. In addition to the courses described above for cost estimating and contract negotiation training, the following list identifies the other materiel acquisition oriented courses and the related PROMAP tasks for which they provide training support:

Related PROMAP Task	Courses and Schools
Selection and Stabilization of Project Managers	Procurement Seminar for Project Management (ALMC) Modern Analytic Techniques for Executive Decision Making (ALMC) Defense Weapons Systems Management (AFIT)
Use of Prototypes	Research and Development Management (ALMC)
Test/Evaluation Effectiveness	Army Test and Evaluation Seminar (ALMC)
System Engineering	Systems Engineering Top Management Seminar (AMETA)
Integrated Logistics Support Program	Management Statistics (Army Management Engineering Training Agency (AMETA)) Mathematical Programming (AMETA) Probabilistic Methods in Operations Research (AMETA) ADP Appreciation (AMETA) Data Collection and Transmission Appreciation (AMETA) Introduction to ADP Systems Analysis and Design (AMETA)
Contractor Performance Evaluation Program	Seminar for Contractor Performance Evaluation (AMETA)
Contractor Cost and Schedule Performance Measurement	Project Planning and Control Techniques (AMETA) Evaluation of Performance Measurement Systems (AFIT)
Increased Reliability of Systems	Elements of Reliability and Maintainability (AMETA) Reliability Program Management (AMETA) Sampling Procedures for Reliability Testing (AMETA) Quality and Reliability Engineer Intern Program (AMETA)

Related PROMAP Task	Courses and Schools
Initial Cost Estimates Training for Cost Estimating	Economic Analysis for Decision Making (AMETA)
Configuration Management	Defense Configuration Management (AFIT)

(c) The PROMAP-70 Training Plan also included identification of AMC in-house training/orientation programs to be conducted by functional managers or major subordinate commands. Finally it included estimates of the costs to the AMC schools and to the users for the additional training required. These estimates provided a basis for funding action which helped assure the success of the PROMAP-70 Training Program. The plan was completed on 19 December 1969 and approved on 25 February 1970.

b. Training Accomplishments -

(1) New Course Developments - From the 15 subject areas initially identified for planned/proposed new course developments, a total of 12 new courses were developed in the AMC schools; 6 at ALMC, 5 at AMETA, and 1 at the Joint Military Packaging Training Center (JMPTC). Requirements for new courses in the remaining 3 subject areas (Selected Acquisition Reporting, Contractor Cost Reports, Contract Negotiation) were obviated by development of the 12 new AMC and 2 new Air Force courses as well as by increased utilization of appropriate existing courses. The new AMC courses, their lengths and related PROMAP tasks are as follows:

New AMETA Courses	Length	Related PROMAP Tasks
Configuration Management	1 wk	Configuration Management
Managing with Contractor Performance Measurement Data	2 wks	Contractor Cost and Schedule Performance Measurement
Systems Engineering Techniques	2 wks	System Engineering
Numerical Control Part Programming	3 wks	Numerical Control/Computer Aided Manufacturing
Numerical Control Management Orientations (3)	2½ days	Numerical Control/Computer Aided Manufacturing

New ALMC Courses	Length	Related PROMAP Tasks
Cost Estimating Techniques for Systems Acquisition	5 wks	Training for Cost Estimating Initial Cost Estimates
Life Cycle Cost Analysis of Weapons Systems	4 wks	AMC Cost Analysis/Cost Estimating Profile
Risk Analysis	2 wks	Analysis of Risk
"Should-Cost" Seminar	1 wk	In-Depth Procurement Cost Analysis Review Program ("Should-Cost")
Cost Estimating Workshop	1 wk	Initial Cost Estimates
Maintenance Engineering Analysis for Integrated Logistics Support	6 wks	Integrated Logistics Support Program

New JMPTC Course	Length	Related PROMAP Task
Preparation of Industrial Plant Equipment for Shipment or Storage	1 wk	Mobilization Production Base

(2) Personnel Trained - Because of the increased emphasis on training generated by PROMAP-70, AMC attendance in all of the 34 existing acquisition related courses rose from a total yearly average of 2,794 (6,814 man-weeks) for prior fiscal years 66 through 69 to a total of 3,403 (6,733 man-weeks) in FY 70. The projected input for FY 71 in these courses is 4,620 (9,347 man-weeks).

In the nine existing DoD courses (5 Navy, 3 Air Force, 1 ALMC) originally identified as appropriate for contract negotiation training, there has been an increase in the number of AMC personnel trained from a yearly average of 948 (2,617 man-weeks) for prior fiscal years 66 through 69 to 1,230 (2,884 man-weeks) for FY 70. An even bigger increase to 1,622 AMC personnel trained (4,369 man-weeks) is projected for FY 71.

In order to meet the expanded requirements within the PROMAP-70 time frame, a major portion of the increased training was accomplished in on-site classes in the 6 Naval Materiel Command contract negotiation/procurement training courses identified earlier in this report. Training in these on-site classes at each of the major subordinate commands rose from a yearly average of 576 (986 man-weeks) for the prior fiscal years to 949 (1,523 man-weeks) in FY 70 and is projected to increase further to 1,182 (2,194 man-weeks) in FY 71. These dramatic increases in training were accomplished at minimum expense to the users, both in terms of student travel and per diem expenses, and in student absences from their home stations.

For the 12 new AMC courses, the number of personnel trained in FY 70 was 176 (509 man-weeks) in the 4 new courses which were fully implemented during FY 70. In FY 71 all of the new AMC PROMAP courses will be fully implemented with a projected number to be trained of 3,610 (5,852 man-weeks).

c. Payoffs - The most significant impact of PROMAP-70 on the AMC schools has been the development and conduct of 12 new materiel acquisition related courses. Additionally, there has been an infusion of the latest refinements and developments in the acquisition process into related existing courses, further improving the quality of training. For AMC, the immediate payoff has been a tremendous increase in the number of personnel trained in acquisition related courses as reported in the preceding paragraphs. A summary of PROMAP training which reflects this increase appears on the following page. The ultimate payoff from this increased training will be reflected in all other related PROMAP-70 task final reports; that is, an improved weapon systems acquisition process as a result of more trained people doing their jobs differently and doing them much better.

V. FOLLOW-ON ACTIONS: New courses developed by the AMC schools will continue to be presented beyond calendar year 1970 to meet the demand for them. Likewise, these new courses and existing acquisition related courses will continue to be refined and revised when required to make them more educationally effective.

To insure optimum allocation of training resources and utilization of training opportunities, several actions are planned or underway. These actions include the following:

(1) A research project has been initiated to provide a realistic estimate of training needs, independent of the normal survey process used to establish training requirements. This project will base training needs on the organization structure and specific job training requirements, correlated with individuals' qualifications and training availability. It will also account for projected organizational/personnel turbulence and should result in a prediction model capable of keeping the training requirements information current.

(2) Allocation of training resources (manpower and funds) and training opportunities (quotas for attendance) will then be based on the established need.

(3) Development and promulgation of appropriate command goals for utilization of allocated quotas is underway.

(4) To closely monitor AMC input into all courses, an AMC training management information system is being developed.

(5) The training received by individuals will continue to be evaluated in light of subsequent job attitude, ability and accomplishments to measure its effectiveness and redirect its thrust where required.

(6) A dynamic training review program at each of the AMC major subordinate commands is anticipated to insure that: (a) the right individuals are being scheduled for and are receiving the training, (b) training requirements estimated and quotas received correlate with individual training profiles and performance/career appraisal reports, (c) appropriate feedback is provided the schools on the value and effectiveness of specific courses in terms of student needs for effective job application.

PROMAP-70
TRAINING ACCOMPLISHMENTS
IN NEW AND EXISTING MATERIEL ACQUISITION RELATED TRAINING COURSES

Course	FY 66-69 Yrly Avg Nr Trnd	FY 66-69 Yrly Avg Mn-Wks	FY 70 Nr Trnd	FY 70 Mn-Wks	Prog FY 71 Nr to be Trnd	Prog FY 71 Mn-Wks
Total, 34 Existing Courses	2794	6814	3403	6733	4620	9347
New PROMAP Courses						
Life Cycle Cost Analysis			15	60	50	200
Cost Estimating Tech for Systems Acquisition			72	360	280	1400
Cost Estimating Workshop					240	240
Risk Analysis			54	54	180	360
Integrated Logistics Support					120	720
Should Cost Seminar					100	80
Prep of Indus Plant Equip for Stor or Shipment			35	35	320	320
Configuration Management					780	780
Systems Engineering Techniques					300	600
Managing with Contractor Performance Measurement Data					120	240
Numerical Control Mgt Orientations (3)					1020	612
Numerical Control Part Programming					100	300
Total, New PROMAP Courses			176	509	3610	5852
Grand Total	2794	6814	3579	7242	8230	15199

I. TASK TITLE: Project Management Management Information System (PROMIS)

II. TASK OBJECTIVE: To develop a more meaningful Project/Product Manager status report and to develop a library of analytical models to assist Project/Product Managers in the decision process.

III. BACKGROUND DISCUSSION: The Project Management Management Information System (PROMIS) is being developed on a priority basis within the US Army Materiel Command. The US Army Management Engineering Training Agency (AMETA) was chartered to develop PROMIS in September 1969 under the sponsorship of the Director of Management Information Systems, HQ, AMC.

Prior to the development of PROMIS, the PMs were inundated with reporting requirements. Consequently, the staff and command group were receiving a variety of reports containing varying degrees of detail which did not necessarily provide management information. Because of the volume of information that was provided and because perusual of these reports was time consuming, it was considered necessary to design a system that would provide management information to the AMC Command Group in a summarized form. To do this PROMIS is being developed in two phases.

Phase I was developed and implemented in the second and third quarters of FY 70. Phase I is a manual reporting system that requires the PM to report specific information monthly relating to cost, schedule, and technical performance. The reporting formats are standardized and are designed so that the PM has the ability to track progress and also to predict problems that may arise in the future. This reporting system is consistent with performance measurement requirements spelled out in various DODI's, e.g., 7000.2, 7000.3. In addition, this reporting system is designed so that progress is portrayed graphically and numerically.

The graphic displays are for quick scanning and the numeric tables back up the graphics if a problem is evident.

When PROMIS I was first implemented, a certain amount of confusion and apprehension existed, however, to date PROMIS is in use and is generally accepted as an improvement over the previous methods.

PROMIS, Phase II is a semi-automated system that is oriented to the decision analysis process of the Project/Product Manager. This phase of PROMIS will consist of the development of a library of decision/simulation models that will be available for the Project/Product Manager's use. Required analytical techniques are separated into two categories; system planning and control.

IV. ACCOMPLISHMENTS: Nine separately identified models comprise the system planning techniques. They are: Reliability Models, Dependability Models, System Design Models, Support Models, Life-Cycle Cost Models, System Effectiveness Models, Effectiveness Trade-Off, System Economy Models, and Economy Trade-Off. The System Design Model is unique to a system, however, these models have an integrating capability. These models, used during the period from concept formulation through contract definition, determine trade-offs relating to state of the art, effectiveness, cost, deployment time and user requirements. During engineering development and production these models determine trade-offs relating to high impact changes, mission change, threat change, failures, program change, and user utility. Through use of predetermined decision points manipulation of these models may determine the need to enter a replanning cycle.

Another set of models relating to assessment or control of progress have also been identified. They are ECP Analysis, Risk Analysis, and the Integration Model. The Integration Model integrates schedule, cost, and technical achievement information. Use of these models provides trade-offs relating to technical achievements or failures, engineering change proposals, configuration changes, schedule slippages, cost growth, scope changes and quantity changes. Re-evaluation of contractor performance or adjustment of the PM program may occur at predetermined decision points.

The models described briefly above have been identified as necessary for PROMIS II. Some of these models are available off-the-shelf. Models that are not available will be developed contractually or in-house. Preliminary development and modification work on the models has already been started. Efforts are now underway to have a storage and information retrieval module in the form of an assessment model, a risk analysis model, a maintainability model, a PERT-LOB model and PMS 360 implemented on pilot projects by 31 December 1970. Implementation of these models is dependent on the relative status of the pilot projects, successful tests and availability of equipment.

As a result of PROMIS, Phase I, PM reporting requirements have been reduced. Complete figures are not available; however, PROMAP 70, PROMIS reports from PMs indicate a substantial reduction. Further, managerial information is available that allows for quicker more positive response to PM problems and provides greater visibility of PM operations.

V. FOLLOW ON ACTIONS: PROMIS, Phase I has been successfully implemented. PROMIS, Phase I will be re-evaluated for additional improvements. PROMIS, Phase II requirements have been identified and Phase II is progressing on schedule. Certain models are now available for use - others are

available but must be modified and documented before thay can be implemented. Models not available off-the-shelf will be developed. Preliminary contractor proposals are being evaluated prior to issuance of a formal RFP.

I. TASK TITLE: Information Plan

II. TASK OBJECTIVE: To provide a balanced and full account to personnel throughout AMC, DOD, and industry-related activities, of the development and results of AMC's Program for the Refinement of the Materiel Acquisition Process. To instill pride among AMC employees and to improve management incentive in accepting and initiating required changes in the system.

III. BACKGROUND DISCUSSION: Although PROMAP-70 was essentially a managerial program, the Information Task was developed for two main reasons. One was to keep all personnel informed as to the importance of the program and its implementation which would affect almost every segment of the work force. The other reason was to motivate the employees to do things differently and better despite funding and personnel austerity.

The Deputy Commanding General for Materiel Acquisition - the head of the PROMAP-70 effort - estimated from the beginning that publicizing the program would account for about 15% of its success (and training about another 30%). A thorough and persistent information effort was imperative on the part of the HQS AMC Information Office and the Information Offices of each of the major subordinate commands.

It was decided that the information thrust throughout AMC would be an internal one initially, ie, limited to local and internal media and service-connected periodicals. At the completion of the program, the achievements were also to be presented to those outside AMC.

IV. ACCOMPLISHMENTS:

a. HQS AMC

(1) Twenty-six press releases were given command-wide distribution for use in installation publications and other Command Information media. In the Washington area, the releases were also provided - and many published - in service-connected periodicals such as the Army Times, the Army Logistician, the Army Research & Development Newsmagazine, Armed Forces Journal, Armed Forces Management, Ordnance, etc. Subordinate installation Information Offices published the AMC releases in 36 different AMC newspapers, in whole or in part, and always in prominent fashion.

(2) A Fact Sheet on the background of PROMAP-70 was dispatched to all IOs and published in depot and major subordinate command papers or reproduced and distributed as a flyer to all personnel. "SHOPTALK" - an informal publication of items of professional interest to AMC IOs - was also utilized to highlight various aspects of PROMAP-70.

(3) Five display boards at Hqs AMC featured color photos of all PROMAP-70 Task Directors at Hqs and also highlighted the objectives of the program. Arrangements were also made for each of eight commodity commands to feature a special PROMAP-70 exhibit at the AUSA national convention in Washington, D.C.

(4) Special letters were sent to the IOs at ALMAC and AMETA to give particular "coverage" to employees of AMC attending PROMAP-70 courses. Arrangements were made for both schools' staffs to write a series of articles for the Defense Industry Bulletin on the PROMAP-70 subjects being taught at the schools. And the IO wrote a letter to the Commandants of the Service Schools spurring student interest in the program.

(5) A television/kinescope address by the DCGMA was filmed at Hqs dealing with PROMAP-70, and prints were sent to all IOs for showing to all personnel.

b. MAJOR SUBORDINATE COMMANDS

(1) The eight commodity commands' IOs published - in their respective media - the AMC releases 120 different times, and printed their own original stories 146 times. Local community newspapers also printed many subordinate command accounts of PROMAP-70, such as the 39 different articles in WECOM's Quad-Cities and Watervliet areas. In some cases local radio stations interviewed PROMAP-70 task directors.

(2) Editorials were published in MSC newspapers about the program, as well as in the form of a flyer signed by the Commanding Officer and distributed to all personnel. Some papers publicized PROMAP-70 in the form of special messages by Commanding Generals, while other installations used their Daily Bulletin as conveyer belts to personnel. Many Commands solicited ideas and support from the work force through their official publications.

(3) Posters were one of the most effective audio-visual methods used. Thirty-seven different posters were made for a total of 1,109 copies.

(4) Contests were held for the best "logos" (emblems) with which to attract the attention of employees, while one Command held a contest for the best poster with suitable awards. Other installations used the quiz approach, which - along with symbols and slogans-accounted for 26 different such eye-openers.

(5) Exhibits and special billboards were used on 26 different occasions. And 585 bulletin boards throughout the subordinate installations featured 128 different displays on PROMAP-70.

(6) In addition to special flyers, some Commands used desk cards and other desk attention-getters to the program, such as WECOM's three-sided foldout type of brochure. In addition, ECOM came out with a revised orientation brochure which included one page on PROMAP-70.

(7) Other Command Information tools and techniques used were briefings by Information Officers to personnel, original stories written for the Defense Industry Bulletin, and "Command Information Capsules" by the MUCOM Information Office in which the Command's Daily Bulletin for six straight weeks (300 copies each) carried photos of PROMAP-70 Task Directors and stories about the program. TACOM even wrote a song about PROMAP-70 with its own "Barbershop Quartette" singing the lyrics. And TECOM IO personnel conducted an information class for each class of the TECOM College, also holding 24 different Commander's Calls on an average of four a month on PROMAP-70.

V. FOLLOW-ON ACTIONS: Now that the channels of communication have been opened between the Information Officers at HQS and at the major subordinate commands and the PROMAP-70 task directors, a sustained Information program will continue in the 70's to highlight pay-offs in the materiel acquisition process.

Early 1971 will see special articles and features written about PROMAP-70 in "wrap-up" form by IOs at HQS and in the field. In the future, "hard" news will continually deal with new ideas, new ways of doing a job. Such stories - accompanied by audio-visual media and CI tools and techniques - will be published in the command newspapers on an average of one a month.

To accomplish this, the Information coordinators at HQS and in the field will be alert for the accomplishments of the program. Follow-ups will be publicized both internally, and where appropriate, externally to the public news media.

JAN - DEC 70

MAJOR SUB-COMMANDS	AMC PRESS RELEASES PUBLISHED	MSC ORIGINAL STORIES PUBLISHED	POSTERS	EXHIBITS -- BILLBOARDS	DISPLAYS ON BULLETIN BOARDS	EDITORIALS & MESSAGES BY CO	QUIZES -- SYMBOLS SLOGANS	DESK CARDS - FLYERS
AVSCOM	4	2	4(16)	0	2(1)	1	6	0
ECOM	25	34	6(24)	2	15(12)	6	1	1
MECOM	7	15	6(19)	2	10(19)	1	9	1
MICOM	11	39	5(300)	5	24(300)	12	1	0
MUCOM	25	15	2(200)	2	24(4)	0	4	1(300)
TACOM	18	25	5(50)	7	4(37)	1	3	1(550C
* TECOM	20	6	5(300)	2	3(12)	24 (CMDRS) (Calls)	1	2(500)
** WECOM	10	10	1(200)	6	46(200)	0	1	1(250)
TOTAL	120	146	37(1109)	26	128(585)	45	26	7(655C

* TECOM INCLUDES:
Aberdeen Proving Ground
Deseret Test Center
White Sands Msl Range

NO. OF COPIES EACH

** WECOM INCLUDES:
Watervliet Arsenal
Rock Island Arsenal

I. TASK TITLE: Reduction of Nonessential Reporting in AMC.

II. TASK OBJECTIVE: To evaluate essentiality of materiel acquisition reports and to eliminate nonessential reporting in the Requirements and Procurement Directorate and the Research, Development, and Engineering Directorate, AMC.

III. BACKGROUND DISCUSSION: The reduction of paper work was identified initially by the U.S. Army Materiel Command as one of the key areas of improvement sought through PROMAP-70. The ultimate objective was not in the reduction in the number of reports alone, but in the resultant savings in manhours and dollars expended in the preparation, processing, and managerial use of duplicative or nonessential data.

The task was in integral part of USAMC's program at its inception. However, in subsequent discussion between the Commanding General, USAMC, and the Deputy Secretary of Defense, added emphasis was placed on the reduction of excessive reporting of unnecessary data by USAMC to DA and DOD. Secretary Packard invited recommendations to reduce the level of detail in reports required by DOD. Emphasis was also placed on the elimination of the requirement at DA and DOD for submission of reports and on decreasing the frequency of submission, with the Deputy Secretary indicating receptivity to acceptance of USAMC recommendations.

This emphasis provided incentive and a continually high level of interest and stimulation to personnel at all levels participating in this task. Further emphasis was added at a later date, during presentation on the accomplishments of PROMAP-70 by the CG, USAMC to the Chief of Staff, Army. Impressed with USAMC progress in the reduction of nonessential reports, the Chief of Staff expressed the opinion that further reductions in reports might be accomplished through joint DOD, DA, and USAMC action. As a result, USAMC action was inititated to go beyond evaluation of reports and to study reduction of staff layering and revision of procedures to minimize staff interference and eliminate unnecessary paperwork.

IV. ACCOMPLISHMENTS: The actions taken, reports eliminated, and savings are summarized below:

a. Initial Studies

172 reports were evaluated during execution of this task,categorized as follows: 59 USAMC; 51 DA; and 62 DOD. Of these, 21 reports were prepared in Headquarters USAMC and therefore were not critiqued by commands in the field. 151 reports were assigned to 8 subordinate commands, 5 depots, 5 Project Managers, and 11 special activities for critique as submitting commands. Three appropriate commands were identified to critique each report to insure thorough evaluation of essentiality without excessive expenditure of resources. Each command, however,

was requested to submit costs of all reports which each submitted. Upon receipt of each detailed critique which reflected command recommendation to continue or terminate the report, the Survey Team of AMC Logistic Systems Support Agency under operating control of Director, Management Information Systems, USAMC, analyzed the critiques and Headquarters requirements to establish a survey team position. Analysis was then made by representatives of the functional directorate to establish the directorate position as to essentiality of the reports. Based on the foregoing analyses, decision to terminate or recommendation to continue a USAMC report was then made by the Director, with final decision by the Director and approval by the DCG for Materiel Acquisition on reports to be continued. Recommendations to terminate DA and DOD reports were processed in like procedure and submitted for the DCGMA for approval at those levels.

In late 1970, an additional 31 reports, consisting of 15 DA and 16 DOD, were recommended by USAMC for termination, based on the study to reduce staff layering and to revise procedures to minimize staff interference and eliminate unnecessary paperwork.

b. Orientation

The approach for conducting this task was presented by the Headquarters USAMC Task Director and approved. Very detailed instructions, milestone schedules, critique assignments, and a comprehensive questionnaire were distributed to all commands and Headquarters elements participating in the evaluation survey. Daily communication between field commands and survey team insured standard implementation of instructions.

c. Training

The high level of technical capability and proficiency of Reports Management personnel throughout USAMC precluded any requirement for training to effectively evaluate essentiality.

d. Before and After Comparison

(1) Primary accomplishment is reflected in the following summary of results attained, with monthly progress in report reduction illustrated in inclosure:

	Reports Continued	Reports Cancelled No.	%	Estimated Dollars Saved
AMC	48	11	19.0	$ 70,700
DOD	53	9	14.5	19,500
DA	37	14	27.4	89,600
Total	138	34	19.8	$179,800

(2) Dollars saved in the preceding paragraph were estimated projections; additional savings by USAMC subordinate commands alone have increased this savings to $263,200. In addition, evaluation of internal data processing reports by subordinate commands has resulted in further savings of $202,200. All savings are being processed as Cost Reduction actions.

(3) Further reduction in the number of DA and DOD reports and related savings may result from approval by higher authority to terminate 31 additional reports as recommended by USAMC.

(4) Additional savings will result from revision of directives requiring continued submission of certain reports for which data or frequency have been recommended for reduction.

(5) Increased Command emphasis on reports management by the Headquarters USAMC Command Group and higher levels, and the results of this task have triggered initiation of comprehensive review for essentiality of internal reports and local reports management programs by commanders in many installations and activities. Savings from internal reports eliminated remain to be developed and reported. The savings from this task have also contributed to activation of a similar approach to elimination of nonessential reporting in another DCG area, with other Headquarters elements to follow a like approach or initiate their own program immediately.

(6) A change to AMCR 335-1, Reports Management, to be published in January 1971, will set forth more stringent procedures for internal review for essentiality by directorates of Headquarters USAMC prior to submission to the AMC Reports Control Officer for approval and assignment of reports control symbol. The change also will provide a more effective procedure for identification and termination of unauthorized reports.

V. FOLLOW-ON ACTIONS:

a. By Directors, Chiefs of Staff Offices, and Project Managers, Headquarters USAMC:

(1) To sustain high level of emphasis in insuring essentiality of current and new reports and identification and elimination of unauthorized or nonessential reports.

(2) To appoint an individual in his organization to identify and curtail unnecessary reporting requirements.

(3) To update reporting directives recommended for revision.

(4) To approve initiation of PROMAP-70 approach to reports for which responsible.

b. By USAMC Reports Management Office:

(1) To continue collecting and reporting reductions in reports and savings resulting from PROMAP-70.

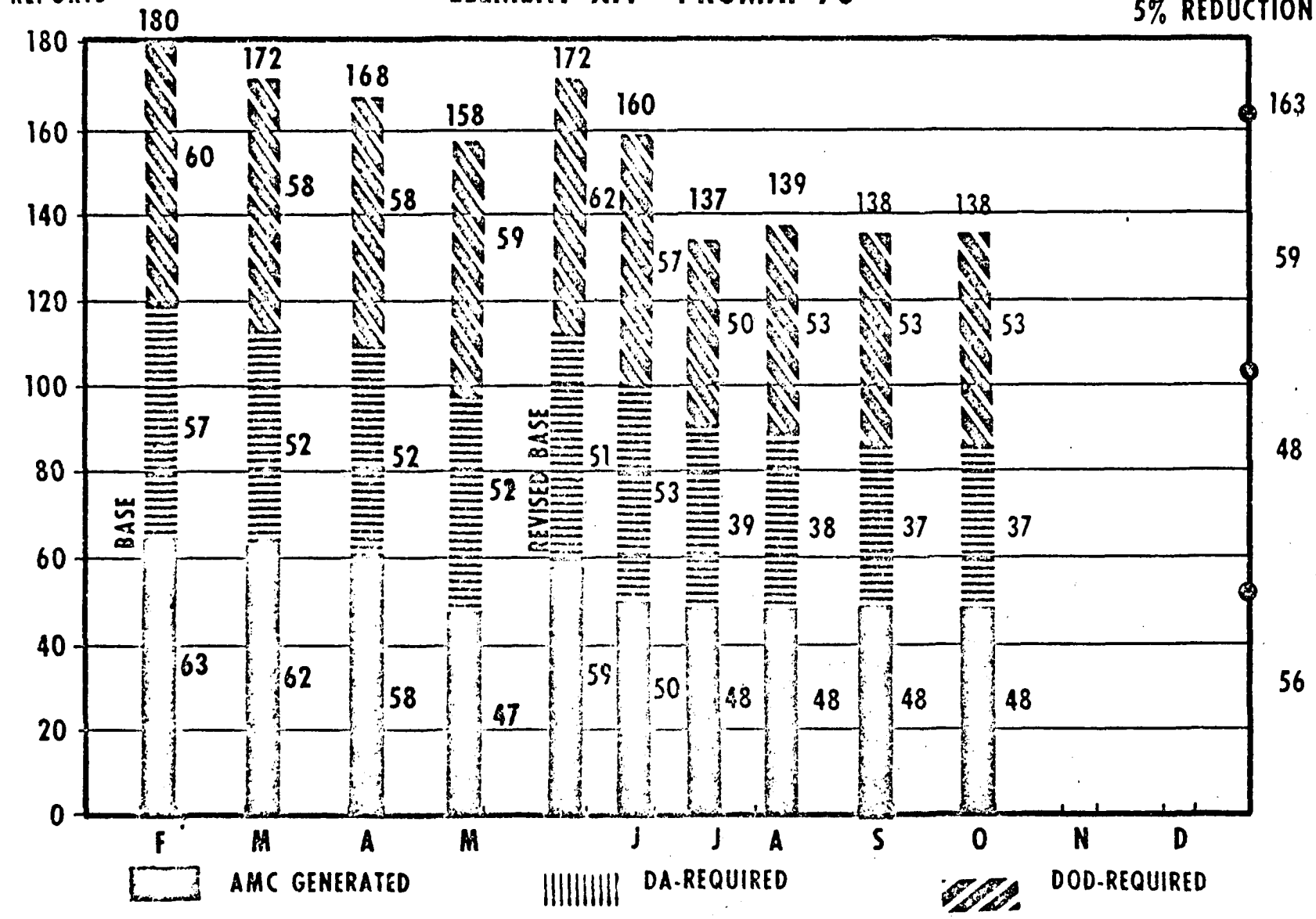
(2) To continually review all reporting requirements on a scheduled basis.

(3) To initiate a program for more comprehensive review of ADPE outputs.

(4) To provide sound and responsive technical advice, guidance, and assistance to reports proponents in the preparation of new or revised reporting requirements, while adhering to sound criteria for essentiality of the report.

(5) To perform PROMAP-70 approach for reduction of nonessential reporting in other directorates and staff offices of USAMC.

REDUCTION OF NON-ESSENTIAL REPORTING IN AMC
ELEMENT XIV PROMAP-70



I. TASK TITLE: Improved Aircraft Engine Acquisition

II. TASK OBJECTIVE: To investigate the development and procurement acquisition process for aircraft engines for the purpose of defining procedures leading to increasing engine life at time of introduction into inventory, minimizing modifications to in-service engines required to achieve desired performance and to reduce pipeline requirements.

III. BACKGROUND: The Department of Defense Logistics Performance Measurement and Evaluation System (LPMES) Year End Report, FY 1969, contained the following recommendations:

"That the Assistant Secretaries (I&L) of Army, Navy, and Air Force, provide comment and recommendations to ASD (I&L) on the desirability of a joint service review of the current aircraft engine acquisition process which seemingly results in introduction into inventory of engines with a low time between overhaul necessitating extensive modification to achieve an acceptable performance over time. Information of any current efforts in this area should be provided."

As a result, General Palmer, Vice Chief of Staff, DA, informed ASA (I&L) that AMC would take the following actions concerning the LPMES recommendation:

a. Ask the Joint Materiel Commanders to consider the feasibility of a joint review of the current aircraft engine acquisition process, and

b. Give priority attention to aircraft engines in the program for improvement in weapons systems acquisition.

AMC initiated this task on 12 January 1970, to study the engine acquisition problem. In addition, a study group consisting of representatives from each of the Joint Materiel Commands was formed to make recommendations on the desirability of a joint service review. The study group's recommendations for further investigations were accepted by the Joint Commanders and a charter for an Aircraft Engine Acquisition Panel was issued by the Commanders on 3 March 1970.

IV. ACCOMPLISHMENTS:

a. An investigation was made into the engine development cycle for the purpose of introducing changes, if appropriate, into the acquisition process to achieve the stated objectives of this task. A report on the results of this investigation was prepared and utilized as the primary Army input into the Joint Materiel Commander's Aircraft Engine Panel Study. It contains, in addition to AVSCOM comments, recommendations from each of the major engine manufacturers. Among the recommendations were:

(1) Revise the Turboshaft/prop general engine specification to update requirements, and

(2) Improve engine design margin at introduction for added durability.

Actions taken thusfar include the preparation of a draft revision of MIL-E-8593, General Specification for Turboshaft/prop engines. Figure 1 illustrates the substance of the changes. This draft is being used as the basis for the Utility Tactical Transport Aircraft System (UTTAS) engine system specification. It will also serve as the Army recommendations during the interservice and industry coordination actions required prior to release of an official revised specification. In addition, the guidelines established in the report concerning durability are being given full consideration in the preparation of the UTTAS engine request for quotation.

b. The review of management procedures for Product Improvement/ Component Improvement resulted in several regulatory and procedural changes for AVSCOM. These are listed in Figure 2. Their preparation and implementation will provide increased visibility in the Component Improvement Program technical effort and speed management analysis of the program effectiveness.

c. The engine buy requirements for the T63, T55, and T53 engines were reviewed with the objective of reducing the pipeline to seven months to minimize the number of engines and spares needed to support the field. Figure 3 shows the effect of the reduced pipeline on engine buys and approximates the cost savings that resulted.

d. The turbine engine analysis program was monitored under this PROMAP task. Field tests of the Turbine Engine Analysis Check (TEAC) and Daily Engine Record (DER) concepts were completed in three major commands (US Army Europe, US Continental Army, and US Army, Vietnam). Figure 4 summarizes the results of the evaluation which tend to confirm the feasibility of the concept. The TEAC/DER program will be implemented Army-wide through incorporation in engine publications at their next scheduled revisions.

e. A review was conducted of present collection and analysis procedures for engine spare parts usage. It was found that better visibility into the engine life cycle and traceability of critical components can be obtained through proper use of the current data system. A pilot computer program for utilizing these data was developed but has been delayed because of higher priority assignments of computer programmer personnel.

f. The support of the Joint Commanders Panel for Aircraft Engine Acquisition as required from this task was provided on schedule with both

the AVSCOM and AMC Task Directors participating in the formation of a final panel report. The findings of this report were presented to the Joint Commanders by the Panel Chairman, Colonel DuBois, USAFSC, on 15 December 1970. Two interim reports of the status of the Joint Panel and PROMAP 70 investigations were forwarded to the Vice Chief of Staff, DA, during the pursuit of the program.

V. FOLLOW-ON-ACTIONS:

a. The coordination of a revised general specification, MIL-E-8593, with the other services and industry will extend beyond the completion of this task.

b. Application of PROMAP-70 generated procedures and principles will be continued on the UTTAS engine development procurement and will be applied when required on other engine developments, such as the Heavylift Helicopter.

c. The engine spare parts usage data collection program will be tested and implemented as soon as computer resources are available to proceed on this effort.

CHANGE IN DOCUMENTATION

DOCUMENT	NATURE OF CHANGE
MIL-E-8593	REVISION

SUBSTANCE OF CHANGE	OLD	NEW
LAST REVISION 1954	X	
REVISED MQT TO MATCH ARMY REQUIREMENTS		X
LOW CYCLE FATIGUE TESTING		X
EXTENDED ENVIRONMENTAL TESTING		X

(Figure 1)

MANAGEMENT PROCEDURES FOR CIP/PIP

NEW DOCUMENTATION/PROCEDURES

AVSCOM REG	- PROCUREMENT OF PRODUCT IMPROVEMENT PROGRAMS FOR AIRCRAFT ENGINES
AVSCOM SOP NO 750	- PRODUCT IMPROVEMENT PROGRAM SUMMARIES FOR AIRCRAFT ENGINES
ECP EVALUATION PROGRAM	- PROCEDURE FOR EVALUATING EFFECTIVENESS OF PROPOSED ECP'S

(Figure 2)

REVIEW ENGINE BUY REQUIREMENTS

ENGINE	PIPELINE - MOS. 1969	1970	EFFECT
T63	9	7	REDUCE T63-A-700 ENGINE BUYS - 240 - $4.1 M
T55	9	7	REDUCE T55-L-11 ENGINE BUYS - 72 - $5.6 M
T53	9	7	

(Figure 3)

TURBINE ENGINE ANALYSIS PROGRAM

REPORT CONCLUSIONS (PARTIAL):

A. LIMITED DATA RETURNED RESTRICTS EFFECTIVENESS EVALUATION.

B. USARV TEST UNIT SHOWED STEADY IMPROVEMENT IN OPERATIONAL READINESS FOR TEST PERIOD.

C. ALL TEST UNITS EXPRESSED SATISFACTION WITH THE SYSTEM.

RECOMMENDATION:

ARMY-WIDE IMPLEMENTATION OF THE TEAC/DER SYSTEM.

(Figure 4)

I. Task Title: Enhance Procurement Officer/Civilian Careers

II. Task Objective. (Civilian). To improve the quality of the procurement career field and procurement careerists.

III. Background Discussion. The average age of the procurement workforce is 48 years and the percentage with college degrees is 22%. Thus, there is need to improve the quality of the procurement career field by reducing the average age and increasing the educational level of procurement careerists.

Each year AMC elements report their needs for journeyman careerists in each career field for each of the five succeeding years. This forecast of journeyman needs is based on:

1. Losses due to retirement

2. Losses due to resignation, transfer and other turnover

3. Gains and losses from anticipated expansions, retrenchments, mission changes and projected workload.

In conjunction with AMC career program coordinators, Dir/PT&FD converts these journeyman requirements into career intern input so that career staffing needs will be met when required.

The D/PT&FD in conjunction with AMC Career Program Coordinators also identify AMC Training Sites at which career interns will be trained. This identification is based on the quality of the employee development officer staff and quality in the functional area in which the career intern will be trained.

Information as to the number of career interns required by career field at AMC training sites and locations where the journeyman requirements exist are furnished AMC Technical Placement Offices for the recruitment of quality interns from among the best qualified of those found within the workforce or obtained through registers prepared by the USCSC.

Resources in support of career intern training are provided by HQ, AMC for the period of time they are in training. When they graduate, they are absorbed into the workforce at the permanent duty location, where the need was initially identified.

IV. Accomplishments. The accomplishments relating to PROMAP-70 tasks are summarized as follows:

1. Determine intern intake needs, complete survey of intern needs annually. AMC elements on 1 July 1970 reported Procurement needs as

follows: 119 in FY 72, 128 in FY 73, 126 in FY 74 and 124 in FY 75. These needs have been adjusted downward because of forecast limitations on resources to 102 in FY 72, 111 in FY 73, 111 in FY 74 and 107 in FY 75.

2. Recruit quality interns, quarterly goals utilized. The present goal is to have 1485 career interns in training for all DA career fields by 30 June 1971. The quarterly goals established to meet this objective are 1200 for 30 September 1970, 1250 for 31 December 1970 and 1300 for 31 March 1971. The quarterly goal for 31 December 1970 will be surpassed with 1294 career interns in training. Two hundred and forty of these will be procurement career interns.

3. Update program of instruction for interns. The program of instruction for Procurement has been updated on target and is being reviewed in this headquarters. Issuance of the program to AMC Training Sites is scheduled for 31 December 1970.

4. Monitor training of interns by means of ALMC visits to training sites. Monitorship of the program of instruction will be undertaken following its issuance to and application by AMC Training Sites. Revisions and updating will be made as necessary based on evaluations of the career interns progress and accomplishments.

5. Monitor Referral Actions for Key Procurement Positions. The age and education of procurement careerists placed (GS-12 and above) in CY 69 against the procurement career field population is shown as follows.

PROCUREMENT

COMPARISON AGE AND EDUCATION

	CY 1969 PROMOTIONS			CAREER FIELD POPULATION		
GRADE	NO. OF ACTIONS	AVG AGE	PERCENT W/DEGREES	PROC. TOTAL	AVG AGE	PERCENT W/ DEGREES
GS-12	129	44.7	33.3	1023	49	28.8
GS-13	50	46.0	20.0	520	50	34.0
GS-14	12	46.3	41.7	179	51	49.7
GS-15	3	47.0	66.7	60	52	53.3
COMPOSITE	194	45.2	32.3	1782	49.6	33.2

The above shows that the average age of careerists placed in procurement positions GS-12 and above during FY 69 is significantly lower than that of the procurement population at those grade levels (45.2 years/49.6 years). The percent with degrees placed in GS-12 positions is also higher than the GS-12 population indicating that recent quality graduates of the AMC career intern training program are moving up the procurement career ladder through the AMC career referral system. Placements at the GS-13 and 14 levels were somewhat less well educated than the career field population at those grade levels. Placements at these grade levels are made from DA (GS-13) and DOD (GS-14 & 15) referral lists indicating the somewhat lower educational level of candidates referred and selected.

6. Encourage Trial Retirement (Counsel Employees on Benefits of Retirement Program.) The following shows the number of employees (44 or 2.4% of those retiring in the 3rd and 4th quarters of FY 70) participating in the AMC Trial Retirement program:

RECAP USAMC TRIAL RETIREMENT
3RD & 4TH QUARTERS FY 70

	NUMBER		PERCENT	AGE & YEARS OF SERVICE
TOTAL RETIREMENTS	1850			
Male	1488		80.4	
Female	362		19.6	
		TOTAL	100.0	
TOTAL TRIAL RETIREMENTS	44		2.4	
Male	31			
Female	13			
TOTAL OPTIONAL RETIREMENTS	477		25.8	
TOTAL DISABILITY RETIREMENTS	675		36.5	
TOTAL DISCONTINUED SERVICE	602		32.5	
TOTAL MANDATORY RETIREMENTS	52		2.8	
		TOTAL	100.0	
TOTAL WAGE BOARD	1005		54.3	
TOTAL GENERAL SCHEDULE	845		45.7	
			100.0	
AVERAGE AGE RETIRING				56.9 Yrs
AVERAGE YEARS OF SERVICE				23.6 Yrs

The counselling of employees on the benefits of trial retirement is a continuing responsibility of managers and supervisors. A significant increase in trial retirements is not anticipated at any time in the foreseeable

future because retrenchments at AMC elements prevent otherwise eligible employees from participating in the program. AMC elements which are reducing their strength cannot make the required commitment to reemploy if trial retirement proves unsatisfactory and are therefore precluded from participating in the program.

With regard to training for professional and sub-professional personnel engaged in Integrated Logistics Support (ILS) a letter was sent to AMC elements on 19 November 1970 furnishing guidelines for determining needs for 19 AMETA and ALMC courses that relate to ILS. A complete report on needs based on the established guidelines will be furnished the Director of Maintenance by 31 December 1970.

On 14 May 1970, approval was requested from the Chief of Staff, Army, to support the upgrading of key procurement positions in the major subordinate commands. Specifically, the request included Deputy Directors of Procurement at grade GS-16, Chiefs of Contract Pricing at grade GS-15, and Special Negotiators/Contracting Officers at grade GS-15 and Colonel for all commands except Weapons and Mobility Equipment Commands which called for one grade lower. By letter of 14 June 1970, the Vice Chief of Staff, Army, indicated strong support of efforts to improve procurement but stated that no quota supergrade spaces were available for this purpose and that any quota spaces required would have to come from AMC resources.

During the TDA review of major subordinate commands under the Standard Commodity Command Structure (September - November 1970), special attention was given to the grade structure and military-civilian mix. As a result of this review an improved civilian grade structure and military-civilian mix has been developed to assure appropriate career progression for both civilian and military procurement personnel. As a result of this review five of the seven Deputy Directors of Procurement will be reflected as supergrade GS-16's, one military position will be converted to civilian (GS-15), and six civilian positions will be converted to military (LTC). These letters require that Commodity Commanders prepare the necessary justifications for the positions to be submitted for Department of the Army and US Civil Service Commission approvals.

V. Follow-On Actions.

a. Continue to recruit quality career interns for the procurement career field to meet future staffing requirements.

b. Monitor career intern training and update programs of instruction as necessary.

c. Monitor referral and selection actions for key procurement positions.

I. TASK TITLE: Enhance Procurement Officer Careers.

II. TASK OBJECTIVE: To improve procurement by evaluating officer procurement requirements to determine proper mix of officers and civilian TDA positions, broadening the professional knowledge of procurement officers through attendance at training courses and rotation among varied duty positions, and obtaining better qualified officers for assignment to procurement positions.

III. BACKGROUND DISCUSSION: A review in November 1969 of the qualifications of officers assigned to procurement positions within US Army Materiel Command indicated that many officers lacked the background required to perform procurement functions. Numerous officers had not attended formal procurement training and had little or no prior procurement or logistics experience. It was concluded that this situation must be improved both to increase the effectiveness of procurement within AMC and to train a base of highly qualified officers who will be available for future assignments to AMC, Department of the Army and Department of Defense procurement positions.

IV. ACCOMPLISHMENTS.

a. Initial studies/actions.

(1) During January-February 1970 an on-site survey of all major subordinate commands (except SAFLOG) and procurement agencies was conducted concerning the shortage of qualified procurement officers (MOS 4319 and 4320) in the grades of lieutenant colonel, major and lieutenant.

(a) Significant Findings and Observations of the Survey:

1. All officers, with two exceptions, were performing procurement duties.

2. Officers were assigned to procurement duties with limited qualifications: 29 percent had no prior experience, 37 percent had not attended a procurement course and only 19 percent were members of the Procurement Officer Program.

3. Twenty-three percent of the positions were vacant.

4. Forty-one percent of officers filling captain and major positions were 'eutenants.

5. ysis indicated that the major procurement work load is carried by civilian work force.

(b) As a result of the survey the following recommendations were made to the Deputy Commanding General, Army Materiel Command:

1. That Directorate of Personnel, Training and Force Development apprise OPO of the shortage of qualified procurement officers.

2. That the officer procurement requirements of each command be evaluated to determine the proper mix of officer/civilian procurement positions.

3. That major subordinate commands be directed to establish a procurement training program for officers.

b. Major Actions Taken:

(1) Major subordinate commands were directed to:

(a) allocate more spaces to procurement and fill them with qualified officers or trainees, and

(b) send all officers requiring training to the procurement courses at The Army Logistics Management Center as rapidly as possible.

(2) Officer procurement requirements were evaluated to determine the optimum mix of officer/civilian procurement positions.

(3) The Commanding General, Army Materiel Command wrote a letter informing Deputy Chief of Staff for Personnel, Department of the Army, of the shortage of procurement officers within the Army Materiel Command and recommended that the Procurement Officer Program be revised. The following specific recommendations to improve the program were included with the letter:

a. Establish a two-step Procurement Officer Program.

1. Base Development Program:

- Screen and select captains and majors attending branch career courses for procurement assignments. Upon completion of branch career courses, selectees should be placed in the Procurement Officer Program.

- Establish a civilian schooling (advance degree) program in the field of procurement, similar to the current Army Comptrollership Program at Syracuse University, available to officers who have completed a procurement assignment.

2. Senior Procurement Officer Program.

- Key positions. Develop a program for officers (lieutenant colonels and colonels) with diversified procurement background and who have demonstrated exceptional performance of duty in procurement assignments.

- Give greater weight to procurement experience during selection process for senior service schools.

b. Assure that sufficient procurement training is included in the curricula of branch career courses and that the Procurement Officer Program is publicized.

c. Increase formal procurement training of officers as appropriate; schedule training TDY enroute to procurement assignments.

d. Establish a stabilized tour for those officers assigned to procurement positions in the grade of captain and higher.

e. Provide for successive procurement assignments.

f. Give greater weight to procurement experience during selection process for schooling, assignment and promotions.

g. Strong consideration should be given to submission of officer nominees to major commands prior to final assignment to key procurement positions.

h. Require officers to maintain qualifications/high manner of performance or be removed from the Procurement Officer Program.

OPO briefed the Commanding General, Army Materiel Command on 28 August 1970 concerning the procurement letter and stated that the recommendations were helpful in OPO's effort to improve the Procurement Officer Program. However, results achieved will not be immediate but on a long term basis.

(4) Military Personnel Division, Directorate of Personnel, Training and Force Development is working closely with OPO to obtain better qualified officers for procurement. Desired and required qualifications have been provided OPO for each procurement position. While considerable improvement is expected, it is too early to report significant results because OPO's program to acquire additional qualified officers for procurement assignments has not materialized to the point where it is producing the number of officers needed to support the procurement training base.

c. Results:

(1) Upgrading of military/civilian procurement positions. An Army Materiel Command Procurement Officer Improvement Program has been developed to strengthen the training base of procurement officers and to provide a sufficient number of junior officers for key procurement positions. This program has been approved by the Commanding General, Army Materiel Command for implementation on/about 1 February 1971. It will be executed through changes in the new standard commodity command TDA and spaces will be generated from within each major subordinate command by eliminating less essential jobs. The main thrust of the program is as follows:

a. An increase in the number of officers in the lower grades to establish a career progression. The objective is to provide for 25 percent more captains than majors, 25 percent more majors than lieutenant colonels and 25 percent more lieutenant colonels than colonels/generals. In addition, some lieutenant spaces have also been included in the program to permit assignment of potential procurement officers early in their military careers. The purpose of this progression ladder is to assure a steady input of procurement qualified and experienced officers to fill key procurement positions at the lieutenant colonel and colonel level.

b. Establishment of a general officer position in each procurement and production directorate. This is to increase the career opportunities and stature of procurement officers.

c. It is proposed to increase the grade of the Deputy Director of Procurement and Production at AVSCOM from GS-15 to GS-16. This would result in five of the seven major subordinate commands with procurement positions being authorized grade GS-16 for that position. Approval by the Department of the Army will be required for the increased grade level and the additional super-grade allotment.

d. Provision for the realignment of vacant supervisory positions to assure officer and civilian career progression and accommodate changes in the grade structure.

e. Allignment of the procurement officer structure with the procurement work load. This will reduce imbalances in the number of procurement officers in relation to the work load of each command.

g. Changes in the procurement military structure of major subordinate commands are as follows:

BG	COL	LTC	MAJ	CPT	LT	TOTAL TDA INCREASE	(PROPOSED TDA	PRESENT TDA)
+6	-7	+10	+13	+27	+29	78	220	142

(2) Procurement training for officers.

a. As a result of the lack of procurement background of some officers assigned to procurement positions, intensified programs have been initiated in the major subordinate commands to provide procurement training. All officers requiring this training have been sent to a procurement course at the Army Logistics Management Center, Fort Lee, Virginia. The total number who have attended is 28.

b. As a means to better prepare officers for procurement duties, three major subordinate commands, AVSCOM, ECOM and MICOM, have established internal training programs. These programs provide the necessary training and experience on a phased basis. For example, in the typical program the first phase is an orientation consisting of informing the officer of all aspects of the processing of a requirement from initiation through contractual execution. The second phase is the Defense Procurement Management Course conducted at the Army Logistics Management Center. The final phase includes assignment of the officer to a procurement division as a negotiator-trainee under the supervision of a senior individual who will monitor the officers' progress. After completing these phases of training, the officer assumes a procurement position and later receives rotating assignments to various procurement tasks to insure that he becomes experienced in all aspects of procurement. These programs will provide a good base of training and experience for officers newly assigned to the procurement field.

V. FOLLOW-ON ACTIONS:

a. Procurement officer training. The training programs of the major subordinate commands will be monitored to ensure that officers requiring procurement training are sent to procurement courses at the Army Logistics Management Center.

b. Improvement of the Procurement Officer Program. OPO is working on a program to increase the quality and quantity of procurement officers. Directorate of Personnel, Training and Force Development will maintain close liaison with OPO to assist in the improvement of the procurement officers program and to see that the aims of the recommendations of the Commanding General, Army Materiel Command made to OPO are achieved.

I. TASK TITLE: Articles on Acquisition Management.

II. OBJECTIVE: To disseminate case studies, lessons learned, and new management techniques developed during PROMAP-70 and give recognition to the originator of new ideas in materiel acquisition management.

III. BACKGROUND: It was recognized that many articles, case studies, monographs, and lessons learned would be generated in AMC during 1970 which would pertain to acquisition management. There was no existing machinery to catalog this type of documentation and insure that the Army schools and AMC major subordinate commands had benefit of these studies.

Under PROMAP-70 it was decided to collect all case studies and lessons learned generated in 1970 in the area of acquisition management and disseminate them to interested schools and field units. There were three major ends to be served thru this effort. First of all, the Army logistics schools would be provided real life cases to use as training tools in acquisition management courses. Secondly, AMC major subordinate commands could learn from the successes and failures of other commands thru this exchange of information. Finally, recognition would be given to the originator of case studies and new ideas.

IV. ACCOMPLISHMENTS: A total of 58 articles, case studies, and lessons learned papers were collected during the year and disseminated to appropriate schools and commands. A summary of the documents involved is as follows:

Disseminated to ALMC, AMETA, ICAF, MSCs, and PMs

PAPERS/CASE STUDIES	SOURCE
A Profile of Management	Util Acft PM
Procurement Mgmt Techniques	WECOM
Data Management at AVSCOM	CG AVSCOM
Competitive Data Right to the AN/GRC - 103 Radio	ECOM
PM Operations Plan	BUSHMASTER PM
ALPHA	AVSCOM

PAPERS/CASE STUDIES	SOURCE
Computerized Model for Logistics Mgmt Analysis	2.75" Rocket PM
Product Improvement vs New Development	DCGMA
A Management Paradox	HLH PM
Utilization of Math Models to Determine Cost in Definitizing Engr Changes	Mobile Assault Bridge PM
Specification & Demonstration of Reliability & Maintainability Requirements	Scout PM
Incentive Contracting	ASA(I&L) Proc Rev Team

Disseminated to ALMC and AMETA Only

PAPERS/CASE STUDIES	SOURCE
Sample Size Determination in Test/Evaluation	TECOM
70 Hot Days in the Summer of 1969	Gen Purpose Veh PM
Quality Assurance/Quality Control of Maintenance	HAWK PM
XM-35 Case Study	Util Acft PM
Procurement Strategy for 2.75" Rocket	2.75" Rocket PM
Value Engineering Missile Batteries BA-472/485	Nike Hercules PM
Warranties for Stalker	ARSV (Scout) PM
Reconnaisance Vehicle	Scout PM
Planning for Observer CD Effort	Scout PM
Life Cycle Costing Case	Scout PM

PAPERS/CASE STUDIES	SOURCE
The HT/MT Award	SATCOM PM
Expedited Procurement	SMO PM
Planning for Bidders Conference	ARSV (Scout) PM
Procurement Strategy	Night Vision PM
R&D vs Premature Procurement	Night Vision PM
Quality Assurance	Night Vision PM
DOD Mobile Electric Power Project	Mobile Electric Power PM
AN/TSQ-87 Fire Distribution System	ADCAT Proj Ofc
Breakout Procurement of Magazines and Butt Stocks for M16 Rifle	WECOM
Shift to Competitive Procurement of XM28E1 Subsystem	WECOM
Value Engineering of Quadrant Sight, XM203 Grenade Launcher	WECOM
S-Curve/Learning Curve Relationships	MECOM
Permanent Mold VECP's	SHILLELAGH PM
Documentation Maintenance	SHILLELAGH PM
Project SWAP	PERSHING PM
Data Converter Case Study	MICOM
ILS as Affected by total Contractor/ Govt Support	AVSCOM
Application of SE to AAV Programs	Advanced Aerial Wpns Sys PM
Analysis of Multi-year Procurement	155mm Close Spt Arty Wpn Sys
Action Teams	Selected Ammo PM
40mm Ammo Production Buildup	Selected Ammo PM

PAPERS/CASE STUDIES	SOURCE
The Expedited Development Process	Special Mission Opns PM
Impact of high bids on PEMA Facility Projects	Safeguard Munitions PM

Disseminated to HQ, AMC Only

PAPERS/CASE STUDIES	SOURCE
Concurrency in the Dragon Devel Prog	MICOM
Simplified SAR	MICOM
Know your Cobra Mods	Advanced Aerial Wpn System PM
PM Funding Paper	Sp Asst/PM/DCGMA
"Cheyenne" - Designed to Survive	Cheyenne PM
Chaparral Risk Analysis	Chaparral Mgmt Office
SLAE--Lessons Learned	HQ, AMC
Should Cost Analysis Technique	Dir RD&E, HQ, AMC
LANCE Risk Analysis	LANCE PM
In-House Developments	MUCOM
Ballistics Computer, M16	WECOM
M16 Rifle Negotiations	WECOM
Vulcan Air Defense System	Vulcan Mgmt Office

V. FOLLOW ON ACTIONS: The schools and MSCs have indicated that these articles have been valuable. The schools especially have trouble getting real life cases from the field and do utilize these types of studies in training courses.

This action should continue during CY 71. The collection and dissemination of studies should be made by DCGMA's office and a goal of 1 such document a week (on the average) should be set.

I. TASK TITLE: Standard Integrated Support Management System (SISMS)

II. TASK OBJECTIVE: To reduce duplication in and among the services by development and use of common logistic procedures and thereby avoid duplicative cost in multiservice programs.

III. BACKGROUND DISCUSSION:

Standard Integrated Support Management System (SISMS) was developed by the Joint Materiel Commanders of AMC/NMC/AFLC/AFSC to accomplish the above stated objective. It was also their intent to provide one face to industry through a standard system of management guidelines for application to jointly managed aeronautical systems being utilized by more than one service.

As early as 1958, the McCormack-Curtis Amendment to the National Security Act gave the Secretary of Defense authority to "provide for the carrying out of any supply or service activity common to more than one military department by a single agency or such other organizational entities as he deems appropriate . . . .". Therein lie the basic philosophies upon which the SISMS objectives were based.

In 1966, the Assistant Secretary of Defense (Installations & Logistics) proposed a DOD study to attack interservice management problems for the F-4 Aircraft System. Subsequently, ASD(I&L) approved an alternate proposal by the services and the study was executed under the aegis of the Joint Commanders.

The F-4 study report, approved at the OSD level in July 1967, did include consideration of the management of the F-111, A-7, OV-10, H-53 and H-1 systems. In the report it was recognized that the then current integrated support system for each multiservice aircraft was tailored differently from that of the others. Since the study had not dealt with (but did recognize) the whole problem, a new panel was established to create a standard integrated support management system for multiservice aeronautical systems.

This panel, under the direction of the Joint Commanders, developed the Standard Integrated Support Management System (SISMS):

> A consolidation of tri-service Joint Operating Agreements and related contract and data requirements providing standard policies and procedures for use in management of multiservice aeronautical systems.

- Incorporating the concept of single service management through application of IWSM.

- Delineating the management responsibilities of the executives and the participating services.

- Providing methodology, directly or by reference, in all disciplines required to assure system support throughout the life cycle.

This system of management was approved by the Joint Commanders on 18 March 1969, and forwarded to OSD thru the individual service's Secretaries. It is currently listed on the Management Control System List (MCSL).

Although not directly cited in Secretary Packard's guidance to the services, SISMS is in fact an "Improvement in Weapons Systems Acquisition" and consequently included as a task under PROMAP-70.

IV. ACCOMPLISHMENTS:

a. General

Since the SISMS effort is one involving all the services, no one service can claim credit for the total accomplishment to date. However, inclusion of SISMS in PROMAP-70 has provided the impetus within the Army (directly) and within the other services (by example) to permit the present level of achievement. The Army has clearly established itself in a position of leadership through the emphasis being placed on multiservice management by PROMAP-70.

b. Quantitative

(1) Training/Orientation: Those personnel most affected by application of SISMS will be members of the Project Managers' staffs. In view of this, formal SISMS orientation briefings have been presented to the Defense Weapon Systems Management Course (DWSMC) at Wright-Patterson AFB, Ohio.

To date, the total number of DWSMC students briefed on SISMS is 426. Further, the SISMS Control Panel has reviewed and analyzed current curriculum of all school activities within DOD for applicability of SISMS training to determine:

(a) Service school/classes/courses that should include SISMS indoctrination.

(b) New classes/courses that should be established.

(c) SISMS parts that should be used in specific classes/courses.

(d) Actions that are necessary to assure SISMS is included in current school curricula.

(e) Arrangements that should be made with appropriate DOD school authorities.

The results of this study will be presented to the Joint Commanders along with recommendations for inclusion of SISMS as an integral part of existing schools' curriculum.

(2) Ground Support Equipment (GSE) Handbook: Prior to the development of SISMS each service maintained its own handbook for GSE. Using Air Force Mil-Handbook 300 as the baseline, SISMS personnel are successfully incorporating all the services' GSE requirements into one tri service coordinated document.

(3) Impact and Implementation Planning: Prior to Joint Commanders approval of SISMS, multiservice programs had been managed in accordance with the procedures of the executive service with little or no understanding of the impact on either the participating services or the executive service.

To clarify the situation the SISMS Control Panel established a sub-panel to:

(a) Effect a review and analysis of current operations within AMC/NMC/AFLC/AFSC to assess the impact of SISMS within each of the commands considering the effect on management, procedures, and total resources (manpower, materiel, and facilities) as compared with present methods and procedures.

(b) Develop an overall implementation plan for application of SISMS including the results of the review and analysis accomplished per (a) above.

The Army's portion of this study was conducted under PROMAP-70 and concludes that SISMS, in fact, is not a radical departure from already accepted systems of management. It can be fully implemented

with minimal impact on the affected commands, provided it is done on an evolutionary rather than revolutionary basis.

A preliminary implementation plan was developed to reflect this evolutionary application.

The above information will be included in a tri service report to be presented to the Joint Commanders at their December 1970 meeting for approval.

(4) SISMS Applications: SISMS provides a standard way of accomplishing Integrated Weapons Support Management (IWSM). Prior to SISMS, multiservice systems were managed under the concepts of IWSM. Each system was handled in a somewhat different manner resulting in as many different management approaches as there were systems.

SISMS is being applied as far as practical to the H-1/T53 programs. In development of the Joint Operating Procedures (JOP) and Joint Support Lists (JSL) for these systems, SISMS was utilized as the baseline.

SISMS application was directed on the Utility Tactical Transport Aircraft System (UTTAS) to allow a progressive evaluation of SISMS in addition to assuring the Army's role as executive service should the other services decide to procure this system.

c. Qualitative

PROMAP-70s incorporation of SISMS has provided certain accomplishments that are not measurable. Most notable of these is the improved relationship with our sister services. Through the joint atmosphere experienced during SISMS development and application efforts the Army has been able to come to the front as a true leader in innovative approaches to multiservice management. Mutual problems have been shared; as a result better understanding between the services has resulted.

SISMS ACCOMPLISHMENTS

	BEFORE	CURRENT	PROJECTED
TRAINING/ORIENTATION	N/A	426	As required
GSE HANDBOOK	3 (Army/Navy/Air Force)	Consolidation in progress	1 Coordinated tri-service handbook
IMPACT ON AMC	Unknown	Identified	Definitize thru progressive evaluation
IMPLEMENTATION: APPLICATION TO SYSTEMS	None	3(H-1/T53, UTTAS)	Additional assignments as deemed appropriate to include HLH
JOINT OPERATING AGREEMENTS/PROCEDURES	None	40	As required
JOINT SUPPORT ITEMS	Unidentifiable	Identified and listed on Joint Support List	Expand to identify JSI's for other systems
INCORPORATION OF SISMS IN ARMY DOCUMENTS	N/A	In progress	Complete inclusion of SISMS concepts at normal revision cycle of affected directives/regulations

V. FOLLOW-ON ACTIONS:

a. Training/Orientation: The quarterly briefing to DWSMC will continue throughout the coming year. In addition, action will be taken to incorporate formal SISMS training into the various Army schools' courses in accordance with the SISMS training final report when approved by the Joint Commanders.

b. Ground Support Equipment Handbook: Follow-on conversion of Army GSE data sheets to the Mil Handbook format will continue through most of the coming year. The first publication of the fully coordinated combined handbook is scheduled for March 1971.

c. Impact & Implementation Planning: In December 1970 the final report of the impact and implementation study will be presented to the Joint Commanders for approval. The outcome of this presentation will largely dictate the detail follow-on actions that will be required. However, the general trend of these actions will be to follow the recommended implementation plan devised by the SISMS Control Panel (i.e., evolutionary incorporation of SISMS methods into each service's procedural documents). This will initiate the necessary actions to fully implement SISMS as a "way of life" system of management for all aeronautical systems.

d. SISMS Application: Application of SISMS concepts on a system by system basis will continue until the above addressed full implementation is completed. Action will be taken by AMC in the immediate future to direct the use of SISMS on the Heavy Lift Helicopter (HLH) System. This will further strengthen the Army's position as executive service for this multiservice (Army/Navy) aeronautical system.

I. TASK TITLE: Automation of R&D Data

II. TASK OBJECTIVE: To determine the current general status of automation of R&D data, in the form of a profile; identify the additional R&D data that should be automated for decision-making at AMC level; and to determine future general actions required to automate these R&D data.

III. BACKGROUND DISCUSSION: The initial thrust of the PROMAP Task was to identify and develop a register of the current automated R&D reports. This action resulted in the establishment of a register of 13 currently approved reports consisting of those data elements that remain constant; i.e. Project/task title, CDOG reference, budget code, etc; and those data elements being reported, or variable; i.e., type classification date, in-process review points, resources, etc. Based upon this initial action a matrix was developed to protray the relationship of all data elements to each other for the thirteen reports analyzed. From this graphical portrayal the following conclusions were drawn:

a. That there were variable literal sizes for the same data element, and

b. There was a duplication of data elements

The data element register and matrix was published early in June 1970, after which the document was coordinated with the Major Subordinate Commands, six project managers and nineteen selected PROMAP task directors located at AMC headquarters. Summarizing all comments received through this coordination seventeen showed no interest or gave negative replies; eight suggested that either editorial corrections or refinement to the register was necessary, and eight recommended additional data to be automated.

IV. ACCOMPLISHMENTS:

a. Reduction of Reporting Requirements: Through the elimination of planned phase scheduling from the Command Schedule and only having this reported quarterly in the RDTE Phase and Review Point Scheduling Report (AMCRD-104) 200 man-days effort has been saved. This is estimated on the basis of eliminating approximately 7000 transcripts required for input to punch cards for updating the master tapes at the Logistics System Support Agency at Letterkenny Army Depot. In addition, and based upon the requirement of CMS 67-62 dated 13 February 1967, subject: "Army RDTE Information System (ARDIS)", the formerly required seven (7) card types (input to the Command Schedule) has been reduced to four (4) for a reduction of 56% effort. Quantitatively the only measurement that can be derived is the reductions in errors that are caused in preparation of transcript sheets for inputs to the computer.

b. Automation of New Data: The RDTE Phase and Review Point Scheduling Report has been expanded to include program category 6.3, Advanced Development, items that required Advance Development Reviews and Expedited Non-Standard Urgent Requirements for Equipment (ENSURE) items. This implements that section of AMCR 11-19, RDTE Phase and Review Point Scheduling Report previously submitted by hard copy.

c. New Management Reports: The Logistics Systems Support Agency (LSSA) at Letterkenny Army Depot, the DMIS activity responsible for the computer programs for AMCRD financial management reports, has been requested to develop six (6) new management type reports from existing mechanized data. These reports are by Installation, AMCRD Division or total AMCRD. They reflect the program category or functional area and show:

(1) Number of projects and tasks for the CFY and CFY plus one.

(2) Actual resources both in-house and out-of-house for the CFY.

(3) Planned resources both in-house and out-of-house for CFY plus one and CFY plus two.

(4) Planned resources for CFY plus three thru CFY plus six.

(5) Actual deferred funds released to AMC but not released to the field.

(6) Total planned funds for the activity over the seven (7) year period.

V. FOLLOW-ON ACTIONS:

a. Finalization of AMCR for updating the mechanized input to the Command Schedule by subordinate activities. Estimated time frame February 1971.

b. Use of Prototypes - Recommended by a PROMAP Task director indicates automation of data relative to his project. Definitive requirements are to be identified and appropriate automated requirements and reports developed.

c. In consonance with the concern of the CG AMC relative to the actual cost for testing an item from conception (birth) until obsolescence (death), develop a program that will meet the requirements of identifying total test(s) costs. A study to determine the cost of testing during the RD phases of development will be undertaken. This study will be coordinated throughout the command for inclusion of all types of costs applicable to testing.

I. TASK TITLE: Program Timing (Milestones) and Reviews - In-Process Reviews (IPR) and System Status Evaluations (SSE)

II. TASK OBJECTIVE: To improve major project/system reviews held at specified milestones during the development cycle by (1) reducing the number of reviews to the necessary minimum, (2) insuring the integration of all functional areas, and (3) reducing the time between initiation of the review action and obtaining approval of the review results by the Department of the Army.

III. BACKGROUND DISCUSSION: The weaknesses in the Army formal review procedure were recognized by Secretary of the Army Resor in his letter of 2 October 1969 to Deputy Secretary of Defense Packard. In this letter he expressed concern over the lack of integrated reviews; that is, he felt that reviews tended to be compartmentalized into functional areas. He revealed that review decisions in one area could lead to cost growth in other areas. He indicated the urgent need for integrated reviews at all levels to insure coordination of the functional areas involved.

In late 1969 the Commanding General, AMC, during a briefing for him on the status of this PROMAP-70 Task, expressed his concern over the length of time that was being taken in the Army to complete the formal review process. He felt that decisions on the results of reviews that were made many weeks, and in some cases, more than eight months following the review were completely ineffective, created waste in time and other resources, and were made too late to impact on the course of the project.

It was determined that the Army formal milestone review (In-Process Reviews (IPR) and System Status Evaluation (SSE) policy and procedures needed major revisions if they were to be responsive to the desired change in review quality and timeliness expressed by the Secretary of the Army and the Commanding General, AMC.

IV. ACCOMPLISHMENTS: Before corrective action could be taken to improve the formal review procedures it was necessary to make a close examination of the current policies, procedures, requirements and regulations to determine their deficiencies. Specific actions taken were as follows:

(1) Current Army Regulations and administrative procedures were examined and both were found to contain either provisions or customary practices that unnecessarily lengthened the formal review process and the time required to obtain a Department of Army decision on review results. See Figure 1.

(2) A study was made of the total processing time for IPRs and for IPRs followed by SSEs -- review initiation to DA decision -- for IPRs and SSEs conducted in FY 1969 and the first half of FY 1970. These processing times compared with the times authorized or specified by regulation are shown on Figure 2.

(3) Completion of the initial studies under this Task led to the eight specific recommendations for improvement in the IPR procedure made by the Commanding General, AMC, to the Department of the Army on 10 July 1970 that are listed in Figure 3. Figure 3 also shows the degree of acceptance by DA of the AMC recommendations. The Department of the Army implemented the revised IPR policies and procedures by Change 3 to AR 705-5, Army Research and Development, which was disseminated by DA message on 31 August 1970 for immediate implementation. This change was published in regulation form dated 24 September 1970.

(4) AMC implementation of the new IPR policy and procedures was accomplished by revising AMCR 70-5, In-Process Reviews, which was published on 27 October 1970.

b. Orientation: During the period 27 October - 20 November 1970, the PROMAP-70 Task Director visited AMC commands and installations to brief personnel on the revised IPR policy and procedures. Approximately 800 personnel were briefed during these visits. In addition, briefings were held in AMC Headquarters for approximately 175 people.

c. Training: No training courses were held nor are any required for personnel engaged in the conduct of IPRs. Training was accomplished by means of the orientation briefings.

d. Changes in Program Timing (Milestones) and Reviews as a result of Task Figure 4 shows a comparison of the time taken to prepare for, conduct, and obtain a DA decision on an IPR under the old IPR procedure compared with the time taken to complete IPRs that were held in September, October, and November 1970. This chart shows that the time to obtain a DA decision following an IPR is now approximately 40% of the time required under the old procedures. It should be noted that most of the IPRs measured during the three months indicated were initiated under the old procedures; therefore, the time shown for their completion is not optimum and is greater than that expected for future IPRs.

Figure 5 contains a before and after comparison of the various

Regulatory Provisions and Administrative Practices Under the Old Procedures That Caused Delays in Review Processing Time and Obtaining Decisions on Review Results

1. Review preparation time was not specified or limited.

2. Review results (IPR/SSE minutes) were not the sole basis for DA decision. Comments of review participants submitted separately to DA following the review were also considered. Time allowed for submitting these comments was thirty days following the review.

3. Formal reviews (IPRs and SSEs) resulted in recommendations not decisions. DA representatives did not participate in the review.

4. Time for DA to arrive at a decision following a review was not specified or limited.

5. SSEs for major systems were required within 30 days following an IPR.

6. SSEs covered essentially the same material as IPRs but by a different group of review personnel.

7. Chairman of SSE was given 30 days to forward SSE minutes to DA.

8. IPR chairman was required to brief AMC approval authority on IPR results before IPR minutes were sent to DA. AMC approval authority signed the transmittal letter to DA.

9. No provision was made for IPR approval by DA at IPR conclusion.

10. IPR participants were not authorized to deviate from previously established agency position. This lack of flexibility frequently resulted in unresolved positions on recommendations.

11. IPR participants were not required to arrive at IPR conference with typed position statements that could readily be appended to the IPR minutes.

12. Separate comments to DA by IPR participants following IPR conference frequently exceeded the 30 days authorized by regulation thus delaying initiation of approval action by DA.

FIGURE 1

FORMAL REVIEWS - ACTUAL VS AUTHORIZED PROCESSING TIME
PRIOR TO ADOPTION OF NEW PROCEDURES

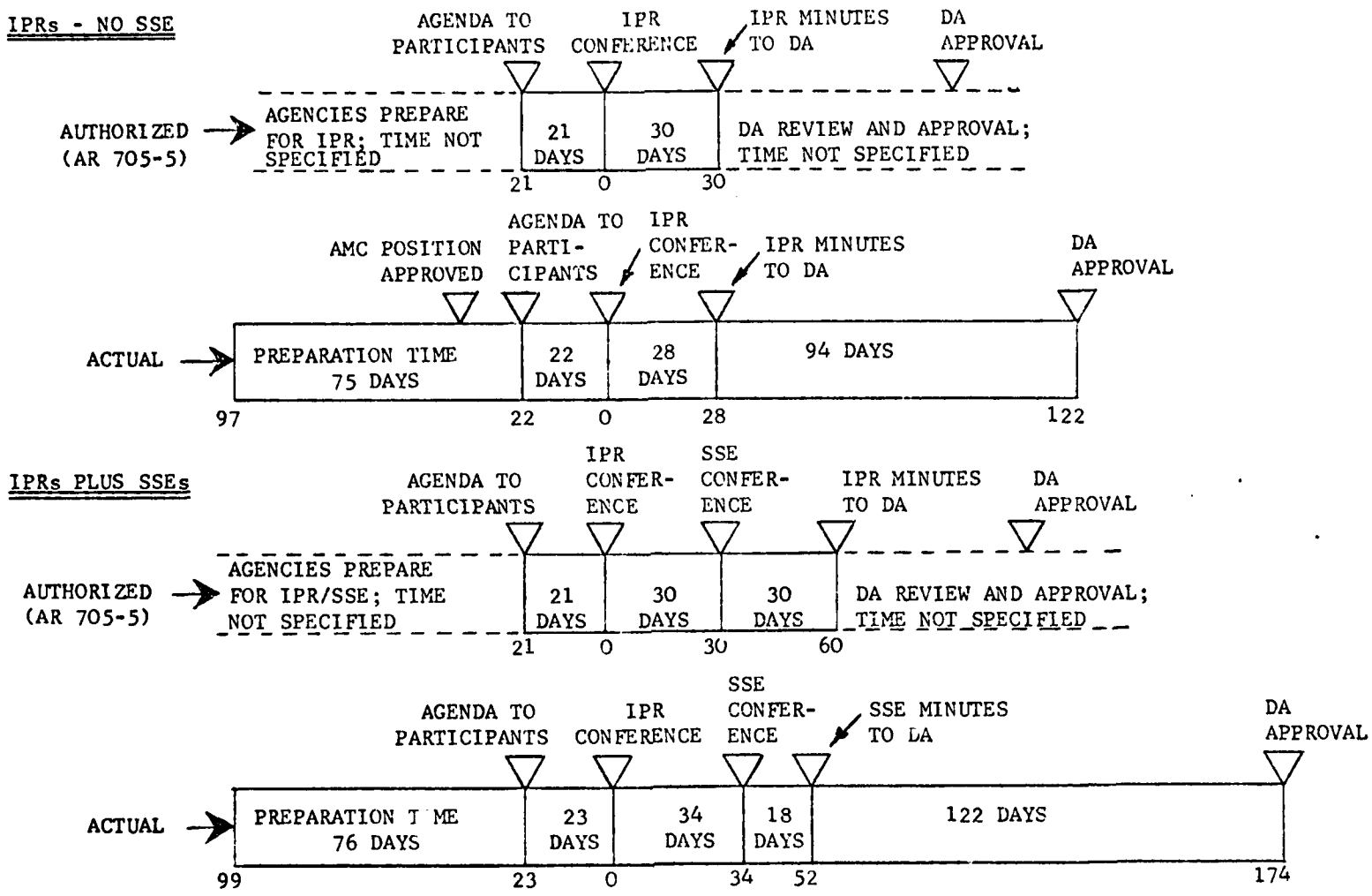


FIGURE 2

TASK 1X - PROGRAM TIMING (MILESTONES) AND
REVIEWS - IPR, SSE and ADR
DA Actions on AMC Proposals to
Improve IPR Procedures

*AMC Proposal	**DA Position
1. Consolidate IPR and SSE into one review.	Accepted
2. IPR participants have authority to negotiate.	Accepted
3. Rank or grade of chairman to vary with size of project.	Accepted
4. Development agency approve IPR resulting in agreement.	Not accepted. A DA staff representative at the IPR will approve IPR (for Non-PM projects only) for DA under this condition. IPRs on all PM projects will go to DA staff for approval.
5. IPRs resulting in disagreement sent to DA for resolution.	Accepted
6. Minutes of all IPRs sent to DA for review.	Accepted
7. a. IPR participants have 14 days to review agenda.	Not accepted. Changed to 21 days as at present.
b. Participants have 15 days to resolve differences following the IPR.	Not accepted. Unresolved differences to DA immediately.
c. DA staff take 15 days to review and approve IPR.	Changed to 14 days.
8. IPR procedural changes be reflected in documents concerning materiel need and other documents.	Accepted (not specifically stated, but is understood).

* In letter CG, AMC to VCOFS, 10 July 1970
** In DA message 311524Z Aug 70

FIGURE 3

COMPARATIVE TIMES FOR CONDUCT OF IN-PROCESS REVIEWS
OLD VS NEW PROCEDURES

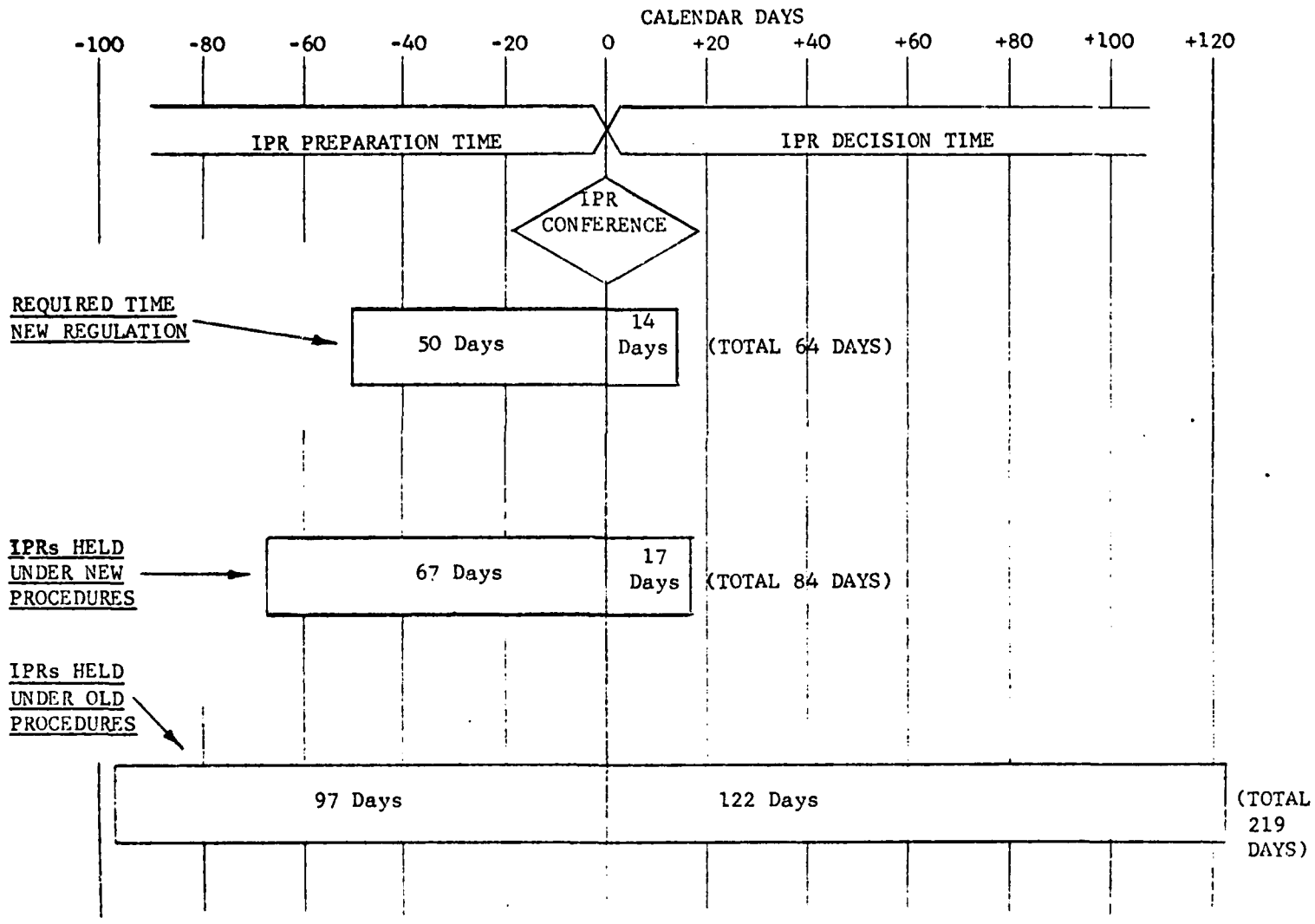


FIGURE 4

In-Process Review Procedures

Substance of Changes	Old	New
Total processing time for IPRs including preparation time and decision time was 219 days.	X	
Total processing time on IPRs initiated under the old procedure and completed under the new procedure has averaged 84 days. Optimum time prescribed is 64 days.		X
Voting member representatives not authorized to negotiate position changes.	X	
Voting members may negotiate position changes.		X
Voting members submitted separate comments to DA following IPR.	X	
DA did not staff the results of IPRs until receipt of all the voting members' comments.	X	
SSEs followed IPRs within 30 days, the results of which had to be staffed and approved before a milestone decision was made by DA.	X	
DA approval time following an IPR averaged 94 days.	X	
DA approval time required by AR 705-5 is 14 days.		X
Chairman of IPR (AMC member) required to obtain approval of AMC approval authority before IPR minutes went to DA. This took an average of 28 days.	X	
Chairman and other voting members sign minutes of IPR at IPR conclusion which are then handed to the DA representative.		X
Preparation time for IPR was not specified. It averaged 97 days.	X	
Preparation time for IPR is specified as 50 days in AMCR 70-5.		X
Agenda contents were stated in general terms.	X	

FIGURE 5

In-Process Review Procedures (cont'd)

Substance of Changes	Old	New
Agenda contents specified in detail (App. C to AMCR 70-5).		X
Required IPRs for each project are specified by DA in project initiation document.		X
Other voting members provide IPR chairman with the name of their representative within seven days of receipt of the IPR agenda.		X
IPR conference date is established through negotiation of voting members.		X
Overseas theater commander representatives to be invited as IPR observers (optional with chairman).		X
Procedures for STANO IPRs contained in AMCR 70-5.		X
Documentation to accompany IPR minutes specified.		X
IPR policy includes requirement for integrated reviews.		X
Procedure covers requirements for assessment of risk analysis and review of use of competitive prototypes at IPRs.		X
Responsibilities of IPR chairman, AMC HQ staff elements, major subordinate commands and project managers are listed in detail in AMCR 70-5.		X
Provisions for obtaining waivers to requirement for holding an IPR or for having a correspondence IPR in lieu of a conference IPR are contained in AMCR 70-5.		X

FIGURE 5 (cont'd)

procedural requirements for the conduct of IPRs. The following statements cover the major changes in Army IPR policy and procedures that make the new procedures such a significant improvement under the old in terms of administrative requirements, action time, manpower requirements and development lead time.

(1) SSEs have been eliminated--It was determined that the SSE made no significant contribution to arriving at a decision at a major milestone. Some provisions of the SSEs have been incorporated in the new IPR procedures.

(2) IPR voting representatives are authorized to negotiate position changes at the IPR. This change in policy will assure the success of most of the future IPRs by allowing the IPR voting members to adapt their views to changing situations.

(3) A Department of the Army representative participates in IPRs as a non-voting member. He is authorized to approve the IPR for the DA at the IPR conclusion provided that the IPR:

a. Is not for a project managed project.

b. Does not result in disagreement among the voting members.

c. Does not recommend significant changes in the requirement for the item underdevelopment.

(4) The Department of the Army will provide a decision on the IPR recommendations within 14 days following the IPR.

(5) The chairman signs the minutes of the IPR and the letter of transmittal of the minutes to DA and hands both to the DA representative at the IPR conclusion.

(6) IPR voting members are not required to forward separate comments to DA following the IPR as they did under the old procedure.

(7) Type classification proposals are part of the minutes of an IPR and are forwarded to DA as a concurrent action. The old procedure required the type classification proposal to be forwarded to DA as a subsequent action following approval of the IPR by DA.

(8) IPR voting members arrive at the IPR with prepared, authenticated statements printed in final form, which are appended to the IPR minutes. This results in a great reduction in administrative effort since the only paper work involved at the IPR is to keep minutes, type them, and distribute them on the same day as the IPR conference.

(9) The rank of the voting members at an IPR will vary with the importance or significance of the project or of the decision required. Voting members for major projects will be general officers or colonels.

(10) AMC approval of the IPR results is not required before the results are forwarded to DA by the IPR chairmen.

(11) The chairman of the IPR has significantly more responsibilty and authority under the new procedure.

e. It is estimated that IPRs under the new procedures will be conducted in 30% - 40% of the time to those conducted under the old procedures. Translated to real time the average savings in time for each IPR should be between four and five months. Major systems, which require four IPRs during the development cycle, should realize a total savings in IPR processing time of between 16 and 20 months under the new procedures. This is not directly translatable into savings in development time since it does not necessarily follow that development effort ceases while an IPR is being processed and waiting for a DA decision.

V. FOLLOW-ON ACTIONS: A formal reporting requirement (Reports Control Symbol AMCRD-123) has been established to obtain data on the length of time it is taking to complete the various procedural steps in the IPR process. All AMC elements that are responsible for holding IPRs are required to forward this type data to AMC Headquarters (AMCRD-PT) for use in compiling statistics for managing the IPR procedure. This information will also be used in providing a weekly report for the DCGMA which was established on 14 November 1970. The data obtained will be evaluated and will serve as a basis for further improvement actions should the information received so dictate.

To assure the success of IPRs, actions and procedures that must be followed are as follows:

a. Expeditious action by AMC Headquarters in processing requests for appointments of IPR chairman and approval of AMC positions prior to an IPR.

b. New and better procedures for staffing System Development Plans, Type Classification proposals, etc., in AMC Headquarters.

c. A willingness in AMC Headquarters (AMSSOs, SAPM, RDE Directorate Commodity Divisions, project managers) to accept responsibility for staffing actions and vigorously pursue them.

d. Willing, capable, knowledgeable IPR chairman who have a better than average capability to manage and "to get things done," and who will accept the authority they have under the new procedure.

I. TASK TITLE: Increased Use of Prototypes.

II. TASK OBJECTIVE: To increase the use of competitive hardware demonstration as a means of insuring that (1) feasibility studies are sound, (2) the system is reasonably well-defined, and (3) cost proposals are credible-all before the Army commits itself to full-scale development.

III. BACKGROUND DISCUSSION: Experience has shown that Contract Definition based solely on paper studies does not insure the defining and costing of systems in developing a reasonable and valid proposal prior to commitment to Engineering Development. The Deputy Secretary of Defense, Mr. Packard, highlighted this situation in his 3 July 1969 letter to the Secretary of the Army, Mr. Resor. Mr. Packard felt that benefit could be derived from increased dependence on hardware demonstration and competition with a corresponding decrease in dependence on paper analysis. The Army already was reacting to the risks of entering Engineering Development based on paper studies by adding competitive prototype fabrication and testing in the early phases of system development, a process known as Expanded Contract Definition. Mr. Resor's 2 October 1969 letter to Mr. Packard reviewed the Army's activities and implemented this task directed toward increased use of prototypes. It is interesting to note that the Blue Ribbon Defense Panel shared the DOD and DA concerns in their recommendation II-5 which emphasized, in part, the independent development of selected subsystems and components, as well as greater use of competitive prototypes and less reliance on paper studies.

IV. ACCOMPLISHMENTS: Significant progress towards greater use of competitive prototypes is summarized below:

a. Initial Studies--A study conducted as a team effort by HQ AMC and Major Subordinate Command (MSC) task directors concluded that Expanded Contract Definition came too late in the development cycle, placed undue emphasis on full system prototyping, invited difficult and costly development recycle, and made no provision for low-risk backup development. The study team recommended the extension and refinement of hardware model development currently used in Advanced Development. The team recommended that the newly fashioned concept, to be known as Validation Prototyping, should have the following features:

1. Validation prototypes are to be fabricated and tested during Advanced Development for test and experimentation purposes in order to provide prerequisite information needed to enter Engineering Development.

2. Competitive prototyping--two or more developers working in parallel--is to be emphasized as a part of Validation Prototyping.

3. Low-risk backup prototype development is to be considered, based on risk and decision analysis.

4. Risk analysis is to be undertaken to determine the optimum development strategy for initiating Engineering Development.

5. Full-system competitive prototyping will be the exceptional case.

The principal policies resulting from these Validation Prototyping features are enumerated on Chart 1.

b. Orientation--AMC policy on Validation Prototyping was prescribed in AMC Regulation 70-50, Validation Prototyping, 24 August 1970. Orientation on this policy for key staff personnel at HQ AMC and AMC major subordinate commands was accomplished by their respective PROMAP task directors. The AMC Pamphlet on Validation Prototyping is in final stages of preparation. The pamphlet provides detailed guidance in prototype selection, decision analysis, and project management of a validation prototyping project.

c. Training--The Army Logistics Management Center has been provided in-depth material suitable for use in teaching the concept and application of Validation Prototyping and will commence treatment of Validation Prototyping in all appropriate material management courses early in 1971.

d. Before and After Comparisons--Sixteen months ago formal competitive prototyping was almost unheard of. Currently, sixteen significant procurement projects, listed in Chart 2, are using this procurement approach. Three major procurement projects were authorized to utilize Expanded Contract Definition; however, thus far, only one has even reached the final RFQ approval stages (Armored Reconnaissance Scout Vehicle).

V. FOLLOW-ON ACTIONS: In order to maintain the benefits from this tasks the following actions must be taken in 1971:

a. Quarterly up-dating of projects undergoing validation prototyping.

b. Semi-annual policy review with representatives of Major Subordinate Commands.

c. Monitor training course at Army Logistics Management Center.

CHART 1

PRINCIPAL POLICIES OF VALIDATION PROTOTYPING

- Defines Validation Prototypes
- Applies to Advance Development and Exploratory Development
- Requires Risk Analysis
- Emphasizes Component Competitive Development
- Allows for Full-System Competitive Prototyping
- Minimizes Paper Studies and Documentation In Favor of Prototype Hardware
- Provides for Low Risk Backup Prototype Development
- Requires Prototype Testing to Prove Technical Feasibility

CHART 2

PROJECTS STARTED UNDER COMPETITIVE PROTOTYPING PROCEDURE

- ADVANCED TECHNOLOGY COMPONENTS FOR HEAVY LIFT HELICOPTER
- ULTRA RELIABLE AREA RADIO
- TACTICAL RADIO COMMUNICATION SYSTEM
- LORAN C/D AIRBORNE NAVIGATION SYSTEM
- FORWARD LOOKING INFRA RED SENSOR
- CARGO CONTAINERS
- FAMILY OF POWER CONDITIONERS
- 5 & 10 KW GENERATOR SETS
- RANKINE CYCLE POWER PLANTS
- DIAGNOSTIC TEST EQUIPMENT UH-1 AIRCRAFT
- 155M BINARY PROJECTILE
- AMMO FOR GENERAL PURPOSE MACHINE GUN
- HIGH PERFORMANCE FUZE
- UNDERWATER VEHICLE MINING SYSTEM
- REMOTE AERIAL MINE
- ANTI-PERSONNEL MINE

I. TASK TITLE: Adequate Technical Data Packages and Request for Proposals

II. TASK OBJECTIVE: To assure provision of adequate Technical Data Packages and Requests for Proposals to support and production, and to insure suitability/acceptability of the final product.

III. BACKGROUND DISCUSSION:

Improving the quality of technical data packages (TDP) is basic to improving materiel acquisition. Better engineering, more successful capture of engineering into the technical documentation, more thorough audits of documentation at strategic points in the life cycle and assured updating of TDPs based on feedback from tests and operating experience are the essentials for TDP improvement. Under this PROMAP task selected actions were undertaken to demonstrate how some of these essentials can be accomplished. The Major Subordinate Commands initiated numerous complementary actions appropriate to their local conditions and objectives.

The study of Requests for Proposals included in this task resulted from a meeting in Nov 1969 between Secretary Robert L. Johnson and representatives of HQ, AMC during which Mr. Johnson expressed his concern that the Army was including RFPs requirements of questionable value.

IV. ACCOMPLISHMENTS:

a. As a basic requirement to meet the task objective, new AMC regulation AMCR 70-46 was published 28 May 70 accomplishing the following:

(1) The establishment of one authoritative directive controlling TDPs throughout the life cycle and concentrating in one document guidance previously scattered in 29 instructions, regulations, and manuals.

(2) The definition and assignment of responsibilities for TDPs both at HQ, AMC and field level-responsibilities heretofore vague and unassigned.

(3) The establishment of systematic procedures for developing TDPs with the aim of achieving competitive procurement.

(4) The issue of new or revised directives at each major subordinate command for acquisition, controlling and maintaining TDPs.

The payoffs resulting from the availability of a technical data package suitable for competitive procurement are exemplified in Tables I and II.

TABLE I

EXAMPLES OF PAYOFFS DUE TO
AVAILABILITY OF TDP FOR COMPETITIVE PROCUREMENT

ITEM	UNIT COST		VALIDATED NET SAVINGS (MILLIONS) 1ST PROC
	SOLE SOURCE	COMPETITIVE SOURCE	
RANGE-ONLY-RADAR VULCAN AIR DEFENSE SYSTEM	$ 53,435	$31,219	$5.5
XM 28E1 HELICOPTER ARMAMENT SUBSYSTEM	$ 33,311	$16,011	$2.9
KIT TO ADAPT M114 VEHICLE FOR M139 GUN	$ 5,626	$ 3,825	$2.4
MAGAZINE (M16 RIFLE)	$ 1.16	$ 0.65	$1.0
PERSHING ERECTOR-LAUNCHER	$124,757	$74,760	$4.1
TOW MOUNTING KITS, XM233	$ 15,633	$ 2,915	$1.6
CYLINDER ASSY	$ 296	$ 270	$ .372

TABLE II

EXAMPLES OF PAYOFFS DUE TO
AVAILABILITY OF TDP FOR COMPETITIVE PROCUREMENT

ITEM	UNIT COST		UNIT SAVINGS
	SOLE SOURCE	COMPETITIVE SOURCE	
COMPRESSOR 217	$ 280.	$ 258.	$ 22.
TRACTOR - 106	$ 18,929.	$ 15,462.	$ 3,467.
TELETYPEWRITER MD-522/GRC	$ 2,950.	$ 1,275.	$ 1,675.
POWER SOURCE PP 4763/GRC	$ 1,095.	$ 461.	$ 634.
RADAR AN/UPM-98	$ 9,130.	$ 5,150.	$ 3,980.
RADIO SET AN/ARC-131	$ 2,975.	$ 2,132.	$ 843.
ANTENNA AT-1108/ARC	$ 89.	$ 70.	$ 19.

b. Under this task, the use of the Preproduction Evaluation Contract Concept was greatly expanded. Under this concept, the Contractor shows the responsibility for detecting errors omissions, and minor deficiencies in TDPs prior to full production. Further this concept:

(1) Encourages better qualified bidders.

(2) Discourages unethical "buy-ins".

(3) Expedites contractual implementation of routine changes.

(4) Reduces ECP's for producibility in quantity procurement.

AMC installations have applied this concept to over 40 contracts. This technique was used to achieve competition in procurement of test equipment for the Vulcan Air System. This shift from sole source to competitive procurement achieved a validated saving of $1.7 in FY 70. Under the PPE concept, producibility changes are introduced into the contract at no cost, thus avoiding the administrative costs of negotiating, and pricing each change. In seven PPE contracts, TACOM estimates it has avoided in-house administrative costs of $3.54 million.

c. Under this task, a series of studies of product/production engineering and the development, control and maintenance of TDPs have been initiated at the major subordinate commands. The ECOM study has been completed. Recommendations of the report relating to TDPs have been implemented at ECOM with the following accomplishments:

(1) Use of independent "Third party" drawing reviews has been extended by awarding of a contract for review of 15000 drawings. Another contract is in planning stages.

(2) Complete review and consolidation of present instructions and procedures on product/production engineering and TDPs is scheduled for completion by 31 Dec 1970.

(3) The new ASPR contract data warranty clause has been investigated for possible application to contracts.

(4) Utilization of the Preproduction Evaluation Contract Concept has been expanded by application to 20 contracts.

(5) Configuration Management implementation has been strengthened by command emphasis and issue of directives.

(6) Guidance has been issued and applied to the FY 71 production base program that all APE measures include a requirement for a

pilot run of sufficient quantity to prove out the technical data package.

The review of product/production engineering and TDPs at MUCOM and its subordinate installations has been completed except for visits to contractors using MUCOM TDPs and preparation of the final report.

d. Under this task, the use of critical reviews of TDPs prior to application in procurement has expanded. Additionally new concepts or techniques have been introduced at several installations. As indicated above, the independent "Third party" review has been extended at ECOM. Through an extraordinary task force review involving over 4600 manhours, WECOM was able to correct contractor - delivered technical data for the XM 28E1 Helicopter Armament Subsystem making possible competitive procurement. The unit cost of the competitively placed contract was less than one-half the cost from the original sole source. A similar task force is reviewing and correcting the TDP for the 30 MM XM 140 Automatic Gun.

A similar massive Technical Data Audit involving 44 engineers on a crash basis was conducted by TACOM on the M151A2, ¼ Ton Truck. This review concluded that the TDP was satisfactory for competitive procurement. A Technical Data Audit has also been completed on the TDP for the GOER Vehicles with a result that discrepancies and corrections are being made prior to the Step II procurement phase.

A review of representative TDPs was conducted at the AMC Logistics Intern Training Center for WECOM, and has resulted in changes in the organization and make up up on procurement packages for improved useability.

APSA has introduced the Zero Defects concept into the final review of TDPs prior to procurement use.

e. Data requirements in Requests for Proposals and Initation for Bids are reviewed and challenged with respect to need, use, and cost by field Data Review Boards to eliminate "gold plating". Cost avoidance of over $2 Million has resulted during CY 70. The review of RFPs for three major systems conducted under this task is being evaluated.

The Army Data List has been revised under this task and reissued as DOD Authorized Data List (TD-3). This revision resulted in an 18% reduction of items for the list, but even more importantly better definition of item application, clarification of item interrelationships, and reduction in overspecification and duplication of data requirements.

f. Automated or Mechanized Technical Data Centers are being installed at the MSCs. The Center at TACOM has been selected as the test-bed site for testing and evaluation of an Automated Storage and Retrieval System prior to standardization at other commands. Approximately 70% of all procurement requests at TACOM can now be supported with computer generated Technical Data Package Lists. Operation of the Automated Storage and Retrieval System Modules now being installed at TACOM for the assembly of Technical Data Packages is scheduled to begin 31 January 1971.

g. Orientation and Training has been performed at the initiative of the individual commands. At WECOM approximately 290 technical personnel have been given training in TDP structure and processing. TACOM has accomplished orientation of 90 management personnel and training of over 110 technical TACOM and contractor personnel in "Engineering Data File Maintenance".

V. FOLLOW-ON ACTIONS:

a. Feed-back of field experience in application and use of directives issued and new concepts introduced will be evaluated at end of FY 1971 to determine policy or procedural changes required and extent of usage and cost-effectiveness of techniques applied.

b. Exploitation of additional concepts and techniques will be undertaken as developed and extended AMC-wide as proven to contribute to the objectives of this task.

I. TASK TITLE: Initial Cost Estimates

II. TASK OBJECTIVE: To improve RDTE Cost Estimating capability through courses of instruction and personal awareness.

III. BACKGROUND DISCUSSION: This task was established in accord with Secretary Packard's guidance to the services calling for improvement in Weapon Systems Acquisition. The guidance to the services gave primary consideration to development of a capability which would respond in a comprehensive and realistic manner to the complex process of estimating weapon systems development costs.

To improve the Headquarters Research, Development, and Engineering cost estimating proficiency, as well as bolstering this capability at the Army Materiel Command subordinate commands and installations having an R&D mission, a comprehensive five week "On Campus" course of instruction in Cost Estimating Techniques for Systems Acquisition was established at the Army Logistic Management Center, Ft. Lee, Virginia.

The course requirements and the curriculum were developed by the Cost Estimating Training Evaluation Steering Committee established as one of the scheduled milestones of the task. Membership of the committee consists of the task director, representatives from the Comptroller Office, directorates involved in the materiel acquisition process, the course director from the Army School for Logistics Management, and the AMC Chief Mathematician who is the committee chairman. As a follow on action the committee is also charged with maintaining surveillance over the training prospectus to insure adequacy, appropriateness, and revision where necessary.

To provide maximum coverage of the training program a five day "Off Campus" Orientation Course (Abbreviated version of the formal five week course), to be presented at each major subordinate command was developed. This course was intended to reach second echelon managers and subordinates

who could not be spared to attend the formal course of instruction.

Further efforts, by the Steering Committee included staff visits to the Ft. Lee School for Logistic Management. These visits were made for the purpose of monitoring training techniques, obtain student reaction, and to recommend improvements, where necessary, to the course director.

To complement the actions of the Steering Committee, an independent evaluation of the course was solicited from selected members of the Army Scientific Advisory Panel. Among the members contacted were:

Dr. R. D. O'Neal - President, Bendix Aerospace Electronic Co.

Mr. Willis M. Hawkins - Vice President, Lockheed

Mr. Martin Goland - President, Southwest Research Institute

Comments offered by this select group were constructive and have been blended into the on-going curriculum at the Army Logistic Management Center.

At the outset of PROMAP 70, the AMC Personnel and Training Office was requested to canvass the AMC for the purpose of determining the number of personnel needing training in major weapon system Cost Estimating Techniques. The results revealed an immediate requirement for training 360 engineers and technicians in these techniques.

IV. ACCOMPLISHMENTS: In view of the training requirements, surfaced by the Personnel and Training Office survey, nine classes with a quota of 40 students for each class were established. Classes were scheduled to be held from 15 March 1970 through May 1971. For the first two classes in FY 70, the quota of 80 was easily met; however, 8 of the students

nominated did not complete the course. The drop outs were by reason of sickness (2), Academic difficulty (4), Reduction in Force (2). Quota fulfilment for classes scheduled in FY 71, August - December, dropped to 59 percent as only 71 out of a quota for 120 students were nominated to attend these classes. This drop is primarily attributed to recent RIF actions and fiscal restraints.

With reference to the supplementary "Off Campus training and Indoctrination program" 240 personnel were trained in these skills.

This program encompassed a comprehensive and abbreviated version of the formal "On Campus" course conducted at the Army Logistic Management Center, Ft. Lee, Virginia. The "On Campus" course consists of 192 hrs formal classroon training and the Off Campus course 28 hrs of classroom lectures.

The significant accomplishment resulting from this task under PROMAP 70 was the establishment of an up-to-date Army Cost Estimating Training program for materiel acquisition which was not previously available. Other significant accomplishments are reflected in reports from the field, i.e., WECOM reports that "Immediate Supervisors have observed changes in the employees performances that can be attributed to the training received, that the training received has people doing their job better and has resulted in more reliable cost estimates."

The USATACOM reported, in their accomplishments, this remark concerning cost analysis training. "Although difficult to define quantitatively, initial cost estimates have improved in the techniques used."

V. FOLLOW ON ACTIONS: Although PROMAP 70 ends on 31 Dec 70, objectives of the task will continue to be:

1. Evaluation of the adequacy of the training program.

2. To encourage continued participation, in the

course, by individuals charged with estimating weapon systems development costs.

I. TASK TITLE: Analysis of Risk

II. TASK OBJECTIVE: To improve the quality of analysis of cost, schedule and technical risks by optimizing the trade offs among these variations and to provide an improved basis for decision.

III. BACKGROUND DISCUSSION: The need for analysis of risk was pointed out in Deputy Secretary of Defense Packard's 31 July 1969 Memorandum to the service secretaries. He specifically directed that, during concept formulation, areas of high technical risk be identified and fully considered, that formal risk analysis be made on each program, and that summaries of these analyses be made a part of the backup materiel for the program. In his 28 May 1970 Memorandum, he enumerated two methods to minimize risk in the concept formulation phase which directly relates to this task:

1. Risk assessment - assessment of problems, consequences of failure, and "low risk" program elements, judgment of effort in finding a practical solution.

2. Trade-offs (risk avoidance) - continual risk/cost trade-offs between stated operating requirements and engineering design throughout development stage.

Risk analysis is defined as the disciplined process, involving the application of a broad class of qualitative and quantitative techniques for analyzing and quantifying the uncertainties associated with the realization of cost, time, and performance goals of Army materiel programs.

Heretofore, risk was considered only superficially and on an intuitive basis, if at all, during the materiel acquisition process. When risk was considered, the analysis was adjectival in nature; i.e., limited to classifications of high, medium, and low risk.

At the onset of this task, it was apparent that a method was needed to tie together all the uncertainties present in large developments. It was known that many useful techniques, such as probability theory, network theory, decision trees, monte carlo simulation, and utility theory were available at universities and elsewhere. However, on one, to the best of our knowledge, had sat down and decided which techniques were most applicable to acquisition management and how they should be applied.

IV. ACCOMPLISHMENTS: The PROMAP-70 task accomplishments are summarized below:

1. Analytical Concept and Techniques

A broad concept for the application of analytical techniques to materiel acquisition was developed during a 3 day seminar last spring at AMC Headquarters. Dr. Gordon Kaufman, a leading authority on decision theory from MIT's Sloan School of Management, briefed and worked with the AMC task directors on applying risk analysis to weapon systems acquisition. Out of this seminar came the initial general concept for risk analysis, that is, to use the decision tree as the basic framework for laying out acts and events (as well as alternatives) in the acquisition process. The decision tree can be used to great advantage in displaying complex projects which involve a long sequence of decisions. A "tree" is constructed by tracing thru from start to finish the consequences of each possible decision that could be made at decision points in materiel acquisition. The payoff of each route thru the decision tree is calculated. The performance risk is assessed first, then the resulting impacts on cost and schedule are determined and the three are combined into total project risk. The final product is a broad planning model for the entire system, not just the individual components, which can be used for decision making under uncertainty.

2. Policies on Risk Analysis

The following five policies have been established for the application of risk analysis as a part of the decision making process.

a. Risk analysis will consider the entire life cycle of the system.

b. Technical risk and its interrelation with cost and schedule will be calculated and traded off. All aspects of system risk will be considered, not just technical risk.

c. Risk analysis will be a continuous process. The size and complexity of the program, stage in the life cycle, and urgency of the requirement will dictate the depth and formality of the risk analysis to be performed. (1) For project managed systems there will be 3 points in the life cycle where risk analysis will be formalized:

(a) At the end of concept formulation.

(b) At the end of contract definition. (if applicable)

(c) Prior to the decision point on whether to proceed into production.

(2) Assessment of risk will be an agenda item at all Advanced Devel-

opment Reviews and In-Process Reviews and will be used to support Development Concept Papers.

d. By its very nature, risk analysis must encompass all pertinent aspects - both technical and managerial - of the program to be successful. This necessitates a multi-disciplined team approach for complex systems since it is unlikely that any single individual will have a sufficiently broad spectrum of expertise. Members of the team may include the project engineer for the system, a risk analyst, a procurement specialist, a representative of the user, a cost analyst, an integrated logistic support specialist and a test specialist.

e. Where appropriate, risk analysis will be used as an evaluation factor to determine the need for validation prototyping.

The above policies are incorporated in AMC Regulation 70- , Risk Analysis for Materiel Systems, which is scheduled for publication by the end of December 1970.

3. Application of Risk Analysis to Materiel Programs.

a. The application of risk analysis to active programs consisted of 2 phases. The first phase, 9 pilot system risk analyses (figure 1), has been completed. The methodologies used and problems encountered on these pilot studies were discussed at a second task director's conference which was held in August 1970. The lessons learned in Phase I are being applied to Phase II in which 17 additional risk analyses will be conducted by the end of FY 1971. One of the lessons learned is that the key to risk analysis is the collection of valid data and probability assessments. Since the outputs can be no better than the inputs, quality data will continue to be stressed.

b. In order to process efficiently and effectively the large volume of data, computer support is needed for all but the simplest studies. Two computer programs, MATHNET and GERT, have been developed, debugged, and are in operational use.

4. Orientation and Training

a. 66 top and middle-management personnel were oriented in risk analysis techniques during 11-15 May and 8-12 June at the Army Logistics Management Center (ALMC).

b. 157 engineering and other technical personnel have been trained in a two-week course on risk analysis held at all major subordinate commodity commands. During the first week theory and background of risk analysis were discussed. The second week's instruction included real life case work so that all graduates would have actual

PILOT SYSTEM RISK ANALYSES

CHEYENNE
LORAN AIRBORNE NAVIGATION SYSTEM
27.4M ARMORED VEHICLE LAUNCHER BRIDGE
MINE, AT, SUBSYSTEM - XM56
ARMORED RECONNAISSANCE SCOUT VEHICLE
155MM HOWITZER, TOWED, XM198
10KW TURBO-ALTERNATOR
FORWARD LOOKING INFRARED
CHAPARRAL

TECHNICAL AUDIT GROUPS (TAGs)

UNIVERSAL ENGINEER TRACTOR
AN/PRS-7 MINE DETECTOR
IMPROVED HAWK
LANCE
DRAGON
ADCAT
TACTICAL SURVEY METER AND VEHICULAR RADIAC SYSTEM
POSITION AND AZIMUTH DETERMINING SYSTEM

Figure 1

experience in doing risk analysis. 314 man-weeks of training were accomplished in 1970 versus 0 before PROMAP since this was a new course established this year. In addition to formal ALMCinstruction, seminars and on-the-job training programs were conducted by some commodity commands to augment the ALMC course.

5. Improved Technical Audits.

Experience with projects in engineering or operational systems which have encountered technical problems leads to the conclusion that early in-depth objective technical surveys are valid means for determining appropriate effective corrective action. Although technical audits have been conducted in the past under several names e.g. audits, design audits, and review boards, no standard procedures have been established. AMC regulation 70-48 was published on 14 July 1970 in order to prescribe the criteria for the establishment of Technical Audit Groups (TAGs) on an ad hoc basis and to standardize procedures for their operation. TAG's were completed on 8 systems (figure 1).

6. Current Formulation.

The established thresholds for contract definition prerequisites (concept formulation package) were reviewed by a panel of task directors which recommended a further in-depth study (see Para V).

7. Procedures for Low-risk Back-up Development.

Procedures were developed for using low-risk backup development when high risk components are not likely to meet performance requirements. Low-risk back up development is one of the alternate strategies of validation prototyping delineated in AMCR 70-50 - Validation Prototyping.

8. Study of Cost Growth Problem.

Use of the Technical Committee to monitor cost growth during development was investigated. Although this did not prove feasible, the study did provide information for effective use of the Technical Committee with reduced manpower.

9. Pre-Materiel Need Considerations.

An AMC Seminar on Planning for Exploratory Development was conducted to surface management and technical problems and prepare solutions to provide effective progress in the QMDO area. AMC and CDC formed an Ad Hoc Working Group to work on the surfaced problems and their proposed solutions and to prepare joint command recommendations for improving the 6.2 and 6.3 efforts in response to QMDO's.

Follow-on work was conducted under a new PROMAP Task, Refinement of Requirements Documentation (QMDO/QMR) which supported the AMC contribution to the development of the Materiel Need (MN) Concept.

10. Criteria for Evaluating Product Improvement vs New Development.

Criteria and factors were developed which evaluate the economic worth of increasing the useful life of an item by product improvement against the alternative (cost) of long-range development of a replacement item. These criteria and factors have been utilized in the following studies:

MICV vs M113
Bushmaster vs XM-139
SAM-D vs Present Air Defense Systems
UTTAS vs HUEY TUG and other variants of the UTTAS

11. Technical Publications on Risk Analysis.

Twelve (12) technical papers and notes were published on the analysis of risk.

In summary the task payoffs to acquisition management are:

1. Better realization of system risk

2. Improved concept formulation process

3. More assured success through parallel development

4. Better control of cost/schedule/performance changes

5. Additional information for budget allocation

6. More trained personnel

V. FOLLOW-ON ACTIONS:

1. Regulatory Documents.

a. An ad hoc study group has been established to revise AMCR 70-30, "Concept Formulation - Prerequisites to Initiating Engineering or Operational Systems Development Support" to provide improved management, control and thresholds for the Concept Formulation Package. Said regulation to be in consonance with newly approved MN Concept and the recent guidance from the Under Secretary of the Army

relative to increased emphasis on design trade-off and cost-effectiveness analyses.Action - HQ, AMC Target - 1 February 1971.

b. Implement AMCR 70-50, "Validation Prototyping and AMCR 70- , "Risk Analysis" by developing a systemic procedure and guidance linking the two areas. Action - USAWECOM - Target - 4th Quarter FY 71.

c. 120-160 additional AMC personnel will be trained by ALMC in CY 1971.

d. Technical audits will continue on an ad hoc basis. MSCs have been requested to submit schedules for 3rd and 4th quarters of FY 71.

e. A risk analysis procedure, "Minirisk", is being developed by USATACOM for quantifying uncertainties in subsystem and component development and all typical hardware development below a large scale system level. No target for completion has been established by USATACOM.

VI. GENERAL:

1. It is important to ask whether or not this PROMAP task is contributing to the acquisition management efforts, and that "things" are done differently and better. First, risk analysis provides information for decision makers, sharpens decision maker's intuition, and gives better visibility of program progress. Secondly, from a qualitative standpoint, more trained personnel and better realization of system risk would improve the concept formulation process, give more assurance for system success, and afford better control of cost-schedule-performance changes. Furthermore, it can be utilized to support budgetary requests and allocations.

2. Despite the progress that has been made to date, more work is needed in the methodology area-particularly in tieing technical performance uncertainty to cost and time in a more realistic manner than can be done today.

3. The PROMAP-70 year provided an opportunity to innovate, to use imaginations and to apply the expertise to resolve some very exciting and challenging problems in the materiel acquisition process. This year signifies the beginning of this analysis of risk concept; the following years are the years of true implementation and realization of payoffs. The building blocks will be developed further.

I. TASK TITLE: Configuration Management

II. TASK OBJECTIVE: To improve configuration management by establishing tighter control over the approval of engineering change proposals (ECP's) and insuring a total impact evaluation.

III. BACKGROUND DISCUSSION: In July 1969, the Deputy Secretary of Defense promulgated new policy guidance to improve the DOD system acquisition process. One of the key concepts he suggested to improve this management was the implementation of the new DOD policies and procedures on configuration management. In addition to a DOD directive and implementing instruction on the procedural methodology of configuration management, DOD had published military specifications and standards on configuration identification, change control and status accounting which could be invoked on Government contracts. The Army implemented these DOD policies and procedures in AR 70-37, Configuration Management, effective 1 June 1969. In order to assess the AMC posture in implementing configuration management, the Commanding General, AMC directed that a short-range investigative effort be conducted during the period of June-September 1969. This study confirmed the past reports of government auditing agencies that the AMC configuration management program was not being administered effectively within AMC. As a result of these findings, this PROMAP-70 task was established to develop an improved configuration management system and an adequate training base to support it.

IV. ACCOMPLISHMENTS: Improvements in three functional areas of AMC configuration management program are summarized below:

a. Improved policies and procedures.

(1) The use of Military Standard 480 for processing engineering change proposals was established under this PROMAP-70 task to provide a common Department of Defense/Industry interface in prescribing the appropriate data and format to be utilized in the functional engineering change proposal (ECP) total evaluation process and the necessary cost information for life-cycle cost estimating.

(2) As a result of an intensive review of AMC configuration management practices conducted by an AMC Configuration Control Working Group (CCWG), revised policies and procedures were incorporated into the USAMC Supplement 1 to AR 70-37, Configuration Management, 25 June 1970. Figure 1 contrast and compares the differences of the old configuration management program with the improved system. In addition to the AMC Supplement, AMC Memorandum 15-28, dated 28 May 1970, established the first Headquarters, AMC configuration control board. The board is assigned centralized responsibilities for approving ECP's, product improvement programs and proposed modification work orders (MWO's) surfaced to HQ, AMC for approval.

CHANGES IN DOCUMENTATION

DOCUMENT	NATURE OF CHANGE	DATE
USAMC Supplement 1, AR 70-37, Configuration Management	New Regulation (Superceding AMCR 11-26, Configuration Management	25 June 1970

SUBSTANCE OF THE CHANGE

	OLD SYSTEM	NEW SYSTEM
Permissive implementation of engineering control and status accounting	X	
Functional Configuration Management (CM) responsibility assigned Director, Research, Development and Engineering		X
Mandatory use configuration control board for Class I Engineering Change Proposals (ECP's)		X
Total impact - life cycle cost determination for ECP evaluation		X
Common Department of Defense industry ECP procedures - Military Standard 480/481		X
Cross-feed of cost reduction value ECP's to determine potential benefits to other items		X
Configuration status accounting elements prescribed		X
Establishment of standardized engineering documentation release system		X
CM training base identified/supported		X

FIGURE 1

(3) Another significant change manifests itself in the release of engineering documentation. Heretofore, the major subordinate commands were using former Technical Service procedures to perform this function. The new procedures prescribed in the new AMC supplement standardizes the release of technical documentation such as engineering drawings, specifications, parts and drawing lists. The use of Engineering Release Record (AMC Form 1724R) now provides for the standardized release of the engineering documentation throughout the AMC complex.

(4) By the end of the 2nd Quarter FY 71, three major subordinate commands had published implementing supplements to AR 70-37, two had published interim policy guidance documents, and the remaining commands had final draft supplements awaiting approval and publication.

(5) Integration of the new procedures cited above were incorporated into the new DOD Authorized Data List, TD-3, which is a compendium of data items that can be procured contractually.

b. Improved Configuration Management System. Implementation of AMC Supplement 1 to AR 70-37 has resulted in reorganization and regrouping of functions to strengthen configuration management as follows:

(1) It highlights responsibility for configuration management at Headquarters, AMC and at the major subordinate commands by centralizing the configuration management function in the Research and Development staff element to provide top management control of engineering changes. Four commands have restructured their organization to accommodate this supplement, two commands are awaiting Headquarters, AMC approval of their major reorganization plans, and one command had already located this function in its Directorate of Research and Engineering.

(2) Configuration control boards have been established at the headquarters and major subordinate commands to provide a total impact evaluation and life-cycle cost estimate on engineering change proposals.

(3) Additionally, all of the major subordinate commands have established dollar thresholds for stratification of approval authority of ECP's and to effectively provide guidance for operation of their configuration control boards (CCB's). These are indicated in Figure 2.

(4) Greater attention to the preparation and execution of configuration management plans for providing individual system guidance on change control throughout the life cycle has resulted from this task. Under the improved configuration management procedures, a total of 65 individual system configuration management plans have been approved, 6 plans are currently being staffed within HQ, AMC for approval, and an additional 16 plans will be presented for approval in the remainder of FY 71. This amounts to a 35 percent increase in configuration management plan usage.

THRESHOLDS FOR [illegible] APPROVAL AUTHORITY

COMMAND	APPROVAL AUTHORITY	NUMBER OF CCB's	DOLLARS (1000) Production Aircraft	DOLLARS (1000) Other Aircraft
AVSCOM		2		
	Deputy Commander/Project Manager		1000K	200K
	Commanding General		2000K	500K
ECOM	Chief, Commodity Div	6	50K	
	Chief Engineer		150K	
	Commanding General		Above 150K	
MECOM	CCB	2	50K	
	Commanding General		Above 50K	
MICOM	Project Manager*	11	None@	
MUCOM	Conf Mngr	115	50K	
	Conf Mtrl Review Bd		500K	
	Commanding General		2000K	
TACOM	Jr Conf Bd	10	50K	
	Sr Conf Bd		500K	
	Commanding General		2000K	
WECOM	Director Lab	15	10K	
	Director, RD&E/PM		50K	
	Commanding General		Above 50K	

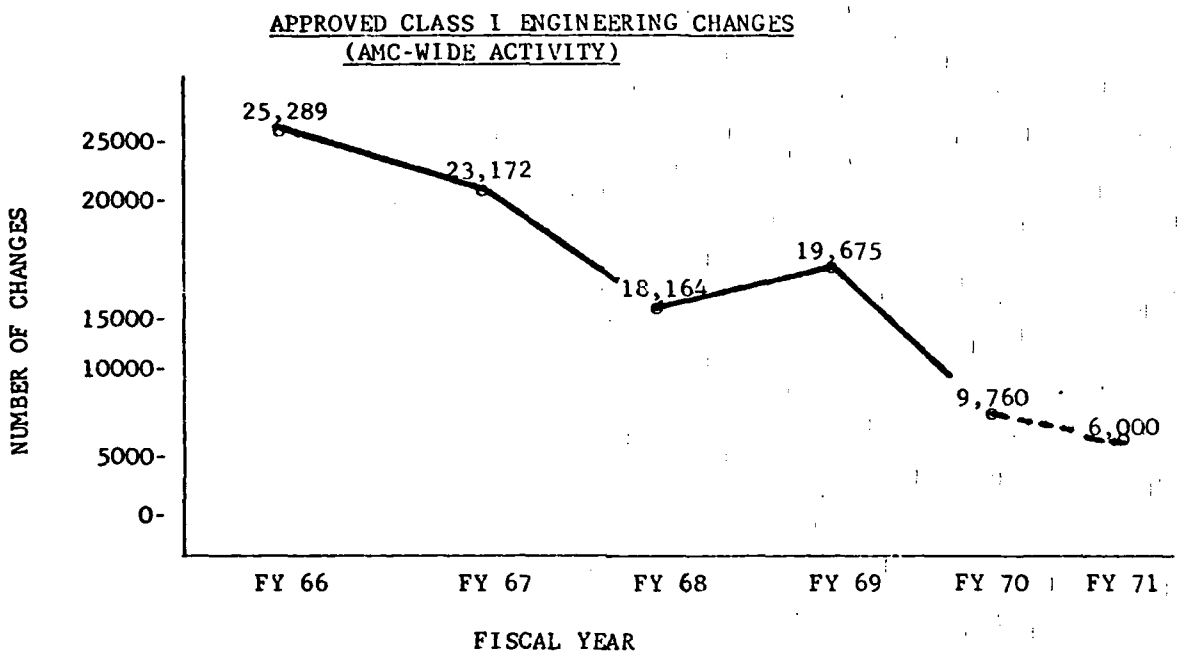
NOTE: * Based upon MICOM functional directorates' concurrence.

@ Changes in excess of $100K reviewed by CG prior to decision.

FIGURE 2

(5) As a corollary action to that described in paragraph IVb(4) above, the number of configuration audits have significantly increased. The major subordinate commands and project/product managers have scheduled 110 audits in FY 71. This is an approximate three-fold increase over FY 70 when only 48 configuration audits were conducted.

(6) Approval of engineering change proposals have also significantly decreased as a result of this PROMAP-70 task as shown in Figure 3, and the trend is downward.



LEGEND

____ ACTUAL
----- PROJECTED

FIGURE 3

(7) The major subordinate commands of AMC have actively contributed to the success of this task in an outstanding manner. For example, AVSCOM has reduced the number of outstanding modification work orders (MWO's) in CY 70 by 255 or approximately one-third of their outstanding backlog. ECOM is able to identify system cost growth due to engineering changes in FY 70 to less than 1/3 of 1%. These and other accomplishments of the major subordinate commands are shown in Figure 4.

SIGNIFICANT ACCOMPLISHMENTS - MSC's

AVSCOM	- Reduced outstanding MWO's in CY 70 by	255
ECOM	- FY 70 ECP cost growth only	Less than 1% (0.32%)
MECOM	- Production end items placed under configuration management	2200
MICOM	- Approved ECP's rate reduced from 350/mo to 90/mo	400% reduction
MUCOM	- Reduction of ECP activity in CY 70	20%
TACOM	- Reduction in ECP's received	50%
WECOM	- Centralization of configuration management responsibility and CCB usage	Positive control

FIGURE 4

c. Training. An inadequate training base was identified for this task at the onset of PROMAP-70. Augmentation of the 100 Army students output per year from the Defense Weapons System Management Center Configuration Management Course was provided by the US Army Management Engineering Training Agency (AMETA). Supplemental training in configuration management was developed for on-site training throughout the AMC complex. Additional orientation-type training was also initiated at the AMC commands. In all, approximately 3800 personnel have participated in configuration management training resulting from this task since its initiation as indicated in Figure 5.

V. FOLLOW-ON ACTIONS:

a. Improved policies and procedures. An inherent weakness in the old system was a failure to actively staff supervise configuration management. Quarterly scheduled command staff visits at the major subordinate commands will assure compliance with the improved AMC configuration management system. Measurement of effectiveness in implementing these improved policies and procedures will be measured by an AMC team utilizing a comprehensive check list. In this manner, continuous audit for compliance with the new AMC configuration management system will be assured.

(1) Aggressive action continues on completing the implementation of the Configuration Control Working Group report. The report contains approximately 43 recommendations approved by the CG, AMC for implementation by the appropriate directorates of HQ, AMC. Fourteen recommendations have been completed, 25 are in the process of completion and 4 are inactive or deferred pending completion of one or more of the previous incomplete recommendations.

(2) In addition, a PROMAP-70 AMC configuration management working group was established to provide continued integration and improvements to the new AMC configuration management system. Each of the major subordinate commands has representation and it is chaired by the PROMAP-70 task director. The initial meeting was conducted on 9 November 1970 and the next meeting is scheduled in May 1971.

(3) A configuration management effectiveness reporting system has been drafted for inclusion into the Planning, Programming, and Budgeting and Management Information System (PPBMIS). A trial run of the system is scheduled in January 1971 using data furnished by the Missile Command.

(4) Delegation of approval authority for engineering change proposals has been developed and is being refined. It will be released by January 1971.

CONFIGURATION MANAGEMENT TRAINING

APPLICATION		CM TRAINING APPLIES TO ALL SYSTEMS						
		FY 70	FY 71					
Training			Jul	Aug	Sep	Oct	Nov	Dec
DWSMC (2 weeks)	Target	270	20	20	20	20	20	20
	Accomplished	260	18	18	16	20	20	20
AMETA	Target		30	60	60	60	60	60
	Accomplished		30	60	59	99	64	60
Orientation								
MSC's	AVSCOM	175	86	80	-	20	17	30
	ECOM	55	-	-	15	40	20	40
	MECOM	300	275	130	150	-	-	15
	MICOM	266	26	18	36	-	-	7
	MUCOM	25	200	95	120	235	8	48
	TACOM	100	50	10	15	10	25	7
	WECOM	200	57	6	-	-	10	9

NOTE: Training Accomplished - Man Weeks
Orientation Accomplished - Number of Personnel

FIGURE 5

b. Improved Configuration Management System. Action will be taken by the AMC Configuration Management Ad Hoc Committee to provide substantive recommendations to continuously improve the AMC configuration management system to assure that the improved system remains viable and effective.

c. Training. A vigorous training program is scheduled through FY 72 to assure the improved AMC configuration management system will be supported by trained personnel. Following that period, the training will be directed to new employees and reorientation of personnel previously trained in configuration management. In this manner, a proper balance of trained personnel will be maintained to assure an effective operating configuration management system.

VI. ADDITIONAL COMMENTS: Review and analyses of the major subordinate commands' organization confirms the conclusion that a model standardized organization is feasible to perform the administrative functions in support of configuration management. The AMC Configuration Management Ad Hoc Group will report its initial findings on this concept in January 1971. Follow-on action will be taken in February 1971 at Headquarters, AMC to implement their recommendations and test this concept.

I. TASK TITLE: System Engineering

II. TASK OBJECTIVE: Apply System Engineering to the development of weapon systems.

III. BACKGROUND DISCUSSION:

1. Program managers often lack sufficient control of resources. Increasing complexities of new materiel development programs dictate the need for improvement in technical and managerial areas, such as:

a. Control of the design interfaces.

b. Use of trade-off analysis.

c. Assurance of performance specifications.

d. Assured cost controls.

2. This improvement can be realized through the application of Systems Engineering concepts and methods. System Engineering is the selective application of scientific, engineering and management techniques to:

a. Transform an operational need into a description of system performance parameters and a system configuration through the use of an iterative process of definition, synthesis, analysis, design, test, and evaluation.

b. Integrate related physical, functional, and program interfaces in a manner which optimizes the total system definition and design.

c. Integrate reliability, maintainability, safety, human, and other such factors into the total engineering effort (i.e., growth potential).

3. Formal System Engineering approach to major AMC projects was initiated as a part of PROMAP-70. Appropriate projects of approximately $10,000,000 or more RDT&E funding have been included in the application.

4. The Army staff responsibility for System Engineering was transferred from DA to AMC on 5 December 1969.

IV. ACCOMPLISHMENTS:

1. Training

a. An orientation for top management presented at each MSC, AMC HQ, CDC and CONARC, was the first effort toward training in System Engineering. Orientation was conducted from October 1969 through January 1970. The original estimate of attendance was 500. Actual attendance was 849.

b. The initial practitioner's two week course in System Engineering started 28 September 1970. Courses are scheduled every two weeks through the 2d Quarter FY71.

c. Plans for the practitioner's course call for approximately 50 students per month or 600 through 1972, and in 1973-74.

2. Application of System Engineering to Major Systems:

a. System Engineering is being applied to the development of more than 34 major systems by the Major Subordinate Commands. The initial directive for this activity was given 6 January 1970. For each project involved a copy was required of the in-house System Engineering Management Plan (SEMP) plus a copy of the contractor's SEMP when it becomes available. The SAM-D project is expected to offer the first breakthrough in terms of contractor effort.

b. The two attached charts show:

(1) The systems to which System Engineering is being applied at each command. (Chart 3)

(2) The time frame during which the systems became candidates for System Engineering. (Chart 4)

(3) Those systems for which an in-house SEMP is available.

3. Establish Organization to Support Application of System Engineering

a. Commodity commands have modified their organization in order to facilitate the application of System Engineering to their projects. TACOM has established an office, reporting to the technical director, to supervise the special management programs such as System Engineering. At MICOM, the System Development Division is assigned responsibility for the System Engineering process. Future Missile Systems Division is assigned responsibility for System Engineering management. These assignments are for new System Engineering applications.

b. MUCOM and ECOM have plans to establish separate staff elements to manage and monitor application of System Engineering. Under the impetus of PROMAP-70, System Engineering has received close Command attention which is expected to continue.

c. The other Major Subordinate Commands are now determining the need to make organizational changes to emphasize System Engineering.

4. Improve Policies and Technical Procedures

a. Guidance for the preparation of System Engineering Management Plans was provided to AMC developer commands and Project Managers on 1 May 1970.

b. AMCR 70-52 System Engineering was published 7 October 1970 and has been distributed.

c. The initial draft of the Guide to System Engineering (TM 38-760) was completed in April 1969. Comments were received and a revision to the manual was made. Revised copies have been distributed to members of the System Engineering Project Advisory Board (PAB) for review. After consideration by PAB, changes will be made as recommended and a newly rewritten draft will be staffed with HQ AMC and submitted for publication. Publication of both TM 38-760 and TM 38-760-1 is planned for early 1971.

5. Improved Management of Engineering Design Handbooks

a. During July 1970, Engineering Design Handbooks (EDH) were placed in this task. The adequacy of the coverage provided by existing EDH's and those being prepared was to be reviewed. The effort was to result in proposals for:

(1) Updating of EDH's.

(2) Identifying new EDH's needed by AMC and Army.

(3) Elimination of those EDH's not now needed.

b. The following was accomplished during the PROMAP-70 period

(1) Six NEW Engineering Design Handbooks have been completed.

(2) Seven OLD Engineering Design Handbooks have been updated, revised and reissued.

(3) Three OLD Engineering Design Handbooks have been recommended to be dropped as obsolete and related scientific knowledge has been incorporated in NEW Handbooks.

(4) 28 Engineering Design Handbooks are in various stages of preparation.

(5) Four NEW Engineering Design Handbooks have been added to the program.

6. Before and After:

a. To determine the overall impact of the formal System Engineering established by this PROMAP task, questions were asked of the Major Subordinate Commands relative to the effects of System Engineering. Thirteen major objectives of System Engineering were considered with the following questions asked:

(1) Were they done prior to requirement for formal System Engineering?

(2) Did System Engineering bring about any change in the way they were being done?

(3) Did System Engineering cuase any additional requirements?

b. Attached is a tabulation of the responses received.

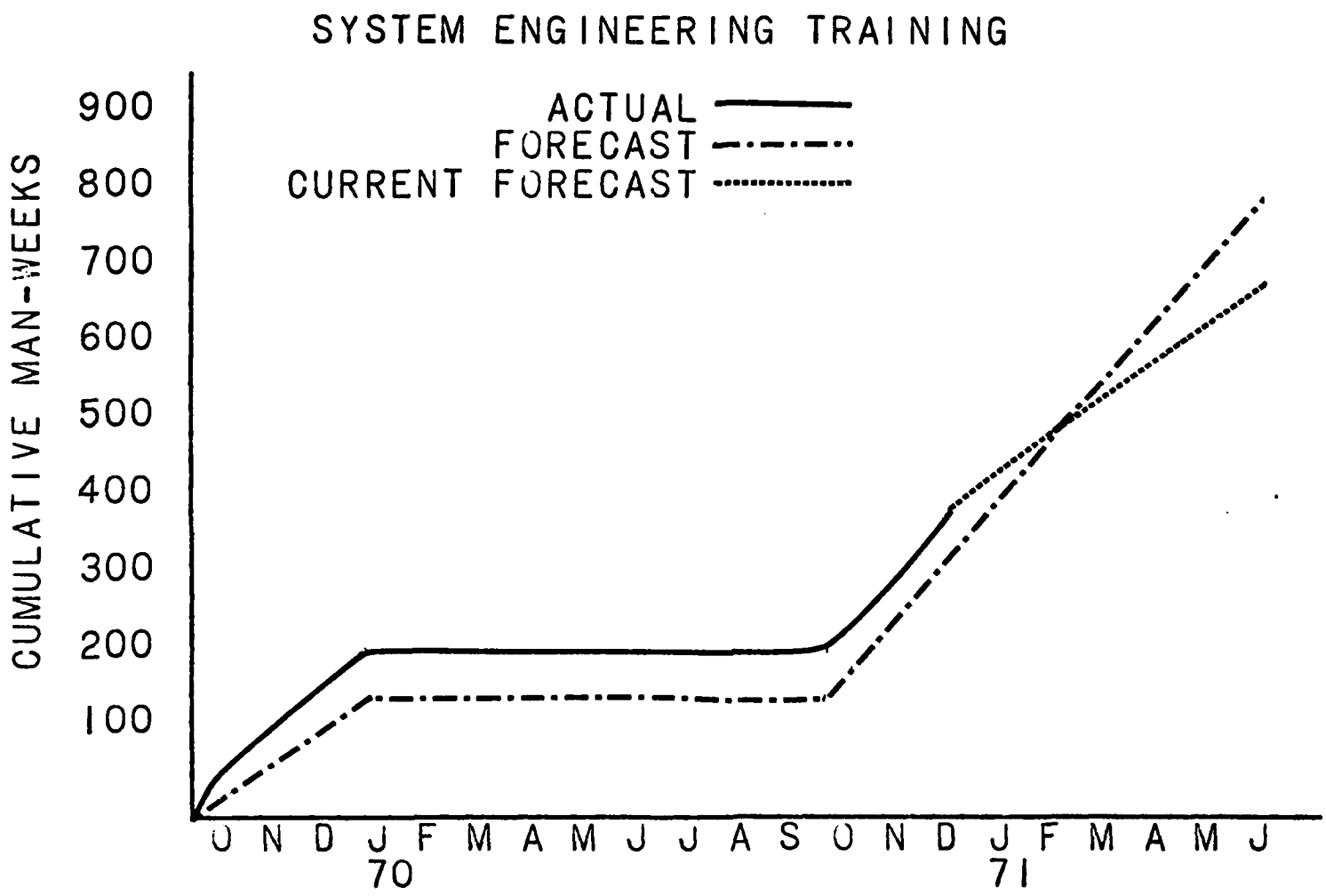
c. The true effects of System Engineering on any project can only be determined when the project is completed.

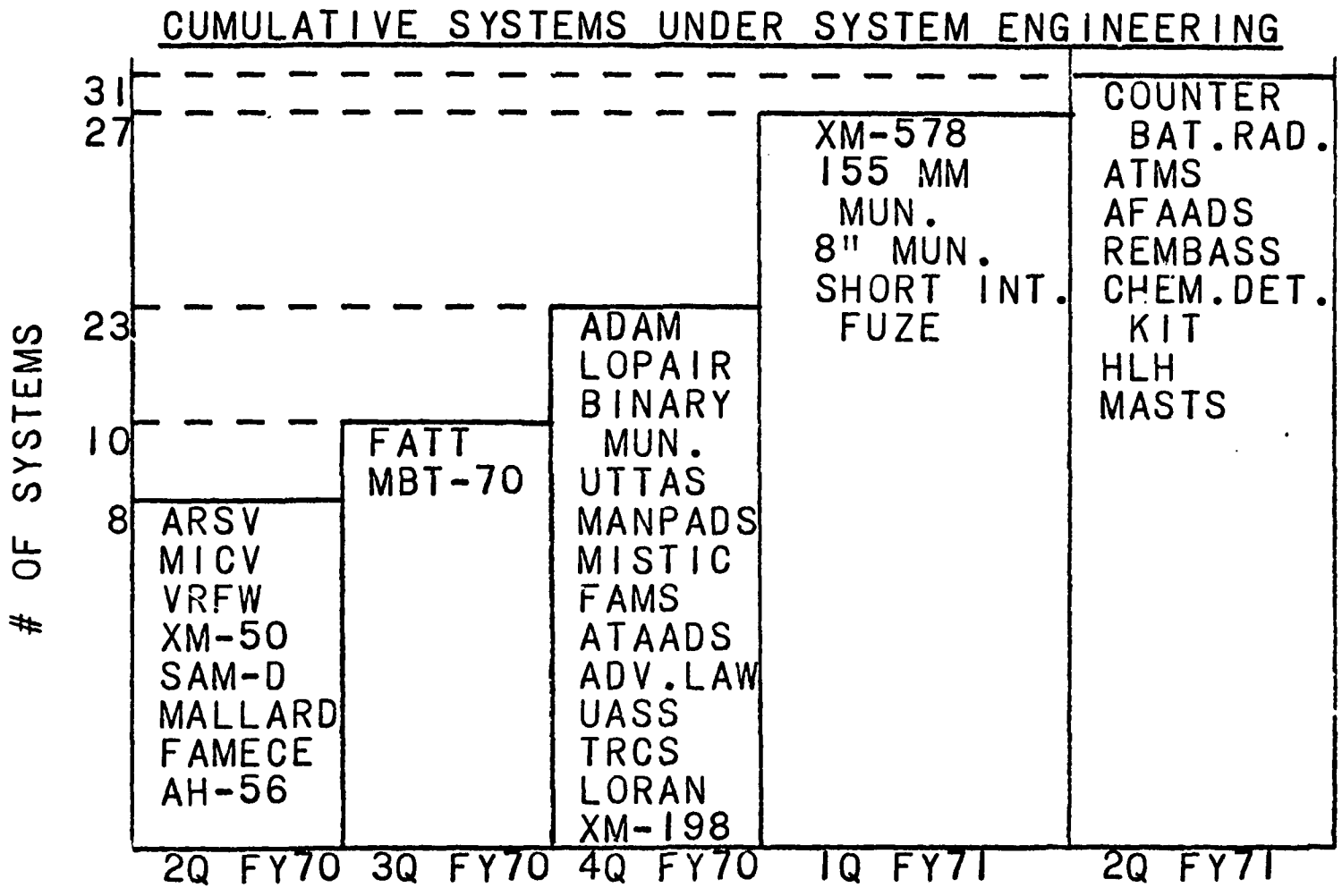
d. MIL Std 499 (AF) is still being evaluated as the result of its having been used in several Air Force projects. No dates have been set for serious tri-service work and coordination of this document.

V. FOLLOW-ON ACTION

a. Make frequent reviews of Major Subordinate Commands to determine any changes that may occur relative to the thirteen major objectives mentioned in Before and After, par. 6.a.

b. Make frequent check on number of engineering change orders, cost and performance.


SYSTEM ENGINEERING TRAINING
ACTUAL
FORECAST
CURRENT FORECAST
CUMULATIVE MAN-WEEKS
900
800
700
600
500
400
300
200
100
O N D J F M A M J J A S O N D J F M A M J
70
71


CUMULATIVE SYSTEMS UNDER SYSTEM ENGINEERING
OF SYSTEMS
31
27
23
10
8
ARSV
MICV
VRFW
XM-50
SAM-D
MALLARD
FAMECE
AH-56
FATT
MBT-70
ADAM
LOPAIR
BINARY
MUN.
UTTAS
MANPADS
MISTIC
FAMS
ATAADS
ADV.LAW
UASS
TRCS
LORAN
XM-198
XM-578
155 MM
MUN.
8" MUN.
SHORT INT.
FUZE
COUNTER
BAT.RAD.
ATMS
AFAADS
REMBASS
CHEM.DET.
KIT
HLH
MASTS
2Q FY70
3Q FY70
4Q FY70
1Q FY71
2Q FY71

SYSTEM ENGINEERING MANAGEMENT PLAN
(IN-HOUSE)

COMPLETED

ECOM
- LORAN
- MALLARD

AVSCOM
- AH-56
- UTTAS

MICOM
- SAM-D
- LAW
- AFAADS
- MISTIC

MECOM
- FAMECE

MUCOM
- XM 50
- ADAM
- Chemical Detector Kit
- Binary Sys.
- Short Intr. Art Fuze
- XM 578 (KE)
- LOPAIR

TACOM
- ARSV

WECOM
- VRFW
- CSW

TO BE COMPLETED

ECOM
- UASS
- TRCS
- FATT
- REMBASS
- ATMS
- COUNTER BAT.RADAR

AVSCOM
- HLH
- MASTS

MICOM
- ATAADS
- FAMS
- MANPADS

MECOM

MUCOM
- 8"
- 155 mm

TACOM
- MBT
- MICV

WECOM

IMPROVED TECHNICAL PROCEDURES

	1969				1970			
TRI SVC.COORD. MIL STD 499(AF)					BEING PLANNED			
SE AR								▽ DRAFT
SE AMCR							▽ DISTRIBUTION	
SE MGT. PLAN WORK STATEMENT						▽ DISTRIBUTION		
DCG/MA POLICY LETTER					▽ DISTRIBUTION			
TM 38-760-1 SE SUMMARY				▽ DRAFT	STAFF	REWRITE SUBMIT FOR PUB.		▽
TM 38-760 SE GUIDE	▽ DRAFT	STAFF		USE	REWRITE	SUBMIT FOR PUB.		▽
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q

CALENDAR YEAR QUARTERS

AMC ENGINEERING DESIGN HANDBOOKS

1. Total number of Handbooks published and available for distribution = 79.

2. Average age of Handbooks = 6.5 years.

3. Age profile of Handbooks:

No. of Handbooks	Older than (Years)	% Handbooks
68	1	86
66	2	83
60	3	76
52	4	66
52	5	66
39	6	50
21	7	27
10	8	13
1	9	1
1	10	1

4. New Handbooks under preparation = 25.

5. Existing Handbooks being revised = 2.

SYSTEM ENGINEERING APPLICATION

	Affirmative Responses		
	a. Previously Done	b. S. E. Changes	c. S. E. Added Rqmts
- Min. Life Cycle Cost Design	6	4	2
- Integrate engrg into total planning	5	3	2
- Integrate engrg specialties into design	6	3	3
- Assure intra & inter system compat.	6	3	2
- Manage through work breakdown structures	4	4	3
- Assure complete change eval.	6	2	1
- Assure coherent system reqmts	6	4	1
- Assure technical performance visibility	5	3	3
- Provide technical audit trail	4	3	3
- Engineering interface problems treated as separate actions	3	1	1
- Training courses tailored to SE	2	5	4
- SE requirements written into RFPs and final contracts	2	4	4
- Emphasis on reducing reports/data required of the contractor	4	4	3
TOTAL	59	43	32

Commands Represented:
MUCOM, MECOM, MICOM, AVSCOM, ECOM, TACOM

a. Previously done prior to requirement of formal system engineering.

b. Formal system engineering brought about changes to previous applications.

c. The application of formal system engineering resulted in additional requirements.

I. Increase Reliability of Systems

II. OBJECTIVE: To achieve reliability requirements in weapon system acquisition, to improve reliability of selected equipment, to improve effectiveness of product assurance activities and provide visibility of materiel quality and reliability.

III. BACKGROUND DISCUSSION. On 27 August 1969, the final report of the National Security Industrial Association (NSIA) Study of AMC Quality Assurance and Reliability Operations was presented to the Commanding General, AMC. The NSIA study included nineteen recommendations related to management improvement actions for AMC quality assurance and reliability operations.

Aspects of reliability operations needing management improvement were included in this task. These aspects involved: (a) reliability policy at commodity commands; (b) project manager organization and staffing for product assurance; (c) providing management visibility of reliability, and improving the reliability of selected equipment in the field; (d) improving the documentation of reliability in development documents, such as QMR/MN, SDP/CTP, Sections III and IV of specifications, and reliability status reports; (e) conducting independent assessments of reliability for IPR's and Command Reviews; and (f) training in reliability principles and practices.

IV. ACCOMPLISHMENTS. The accomplishments to increase reliability of systems are summarized below:

a. Reliability Policy. To develop effective reliability programs, commodity commands were required to supplement AR 705-50, Army Materiel Reliability and Maintainability. Accomplishments are shown on figure 1. MICOM and WECOM have published supplements. ECOM and TACOM have assigned responsibility for all program elements but have not yet published supplements. AVSCOM, MECOM, and MUCOM have not completed assignment of responsibility for all program elements; and, therefore, have not published their supplements.

b. Staffing for Product Assurance. Figure 2 summarizes the accomplishments in product assurance staffing for project manager (PM) offices. Requirements for product assurance staffing in PM offices have been identified to place proper emphasis on this critical staffing area. The spaces for product assurance personnel authorized on PM Tables of Distribution and Allowances (TDA) has increased 16.8% of the January 1970 total to a new total of 208. For on-hand personnel, an increase of 22% of the January 1970 total has been experienced with a new total of 177. The current percent of on-hand personnel to required personnel is 73% as compared to the 59% of January 1970, an overall

increase of 14%. This progress is significant in view of the Reduction-in-Force (RIF's) and reduction of aggregate personnel totals during CY70.

c. Reliability Improvement of Selected Equipment (RISE). Accomplishments are summarized in Figure 3. Seven commodity commands have identified 135 potential candidates for reliability improvement. Implementation of these improvements is expected to result in an estimated five-year cost savings in logistic and maintenance support of $293,158,106. Eighty of these potential candidates have corrective actions either underway or proposed. Five-year cost savings estimated for these 80 candidates is $120,517,466.

d. Documentation in Development and Production. Figure 4 summarizes commodity command efforts to improve reliability documentation. The significance of proper documentation of requirements, plans, programs, specifications, tests, and reports has been recognized. Continuing action to insure proper documentation have been initiated by each commodity command.

e. Independent Assessments. During CY70, 64 pre-IPR's were attended by commodity command product assurance personnel to assure that proper emphasis was placed on reliability. Commodity commands are developing procedures for formal presentation of independent assessments of reliability at all pre-IPR's by product assurance personnel.

f. Training. Figure 5 presents the AMETA reliability training programmed for FY71 (line) and the total training accomplished in CY70 (bar) for the three courses listed. This approach was taken since training is programmed on a fiscal year basis. In CY69, 145 man-weeks of training were accomplished. During CY70, 170 man-weeks were completed and 66 of these man-weeks represented accomplishment of FY71 programmed training. By the end of FY71, 397 man-weeks are expected to be completed.

V. FOLLOW-ON-ACTIONS: Follow-on actions have been identified and planned as follows:

a. Reliability Policy. Major subordinate command supplements to AR 705-50, Army Reliability and Maintainability will be completed and published to assure assignment of responsibility for all program elements.

b. Staffing for Product Assurance. The progress of PM's and commodity commands in staffing for product assurance will be monitored and reported to Hqs, AMC.

c. Reliability Improvement of Selected Equipment (RISE). This effort is being incorporated into an overall effort to improve the utilization of technical performance data by project managers and commodity commands. The 55 equipments identified for reliability improvement that have no corrective action underway will be programmed for such action. In addition, commands and project managers will continue to identify equipments for reliability improvement.

d. Documentation in Development and Production. Contract requirements for reliability and maintainability and means of demonstrating these requirements will continue to be improved by AMC elements.

e. Independent Assessments. Product assurance elements of commodity commands will concentrate on presenting independent assessments of reliability and maintainability at all pre-IPR's and Command Reviews. Adequacy of these assessments will be evaluated by Hq, AMC.

f. Training. Commodity commands will identify what personnel need what type of training in reliability and program for such training to be accomplished in FY72.

g. Data Utilization. A new project has been established to assist project managers in their efforts to increase the effectiveness of data utilization to control achievement and improvement of reliability and maintainability.

RELIABILITY PROGRAM REQUIREMENTS

PROPORTION OF KEY RELIABILITY ELEMENTS FOR WHICH

RESPONSIBILITY IS SPECIFICALLY ASSIGNED

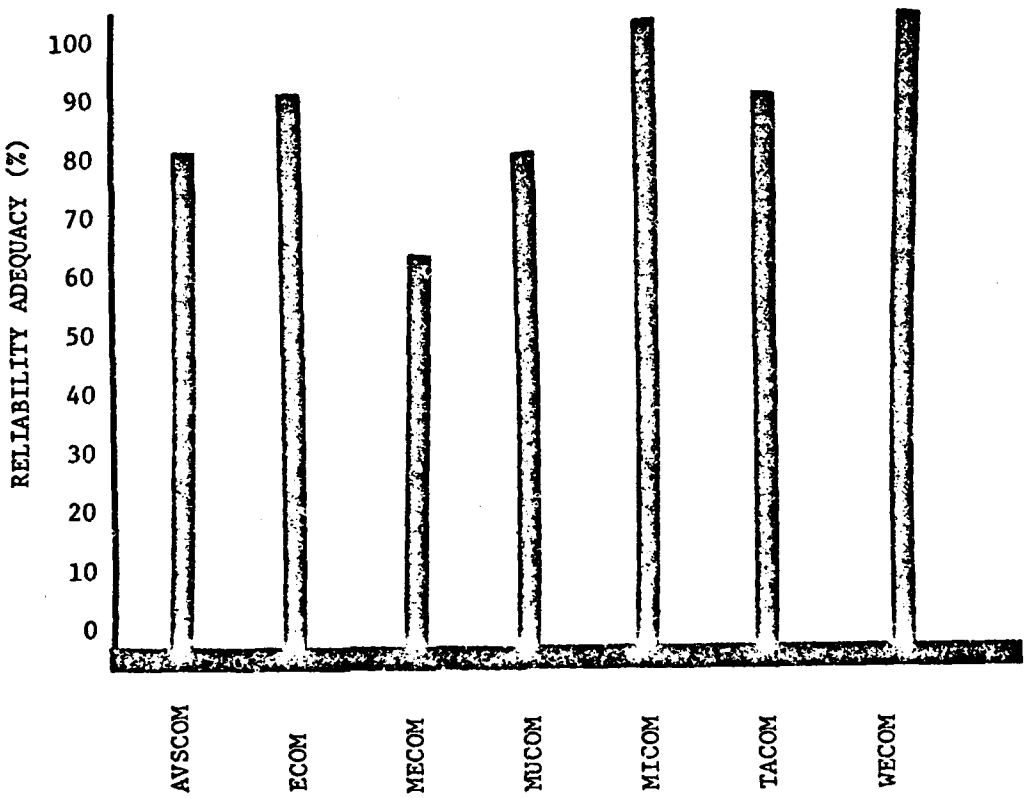


Figure 1.

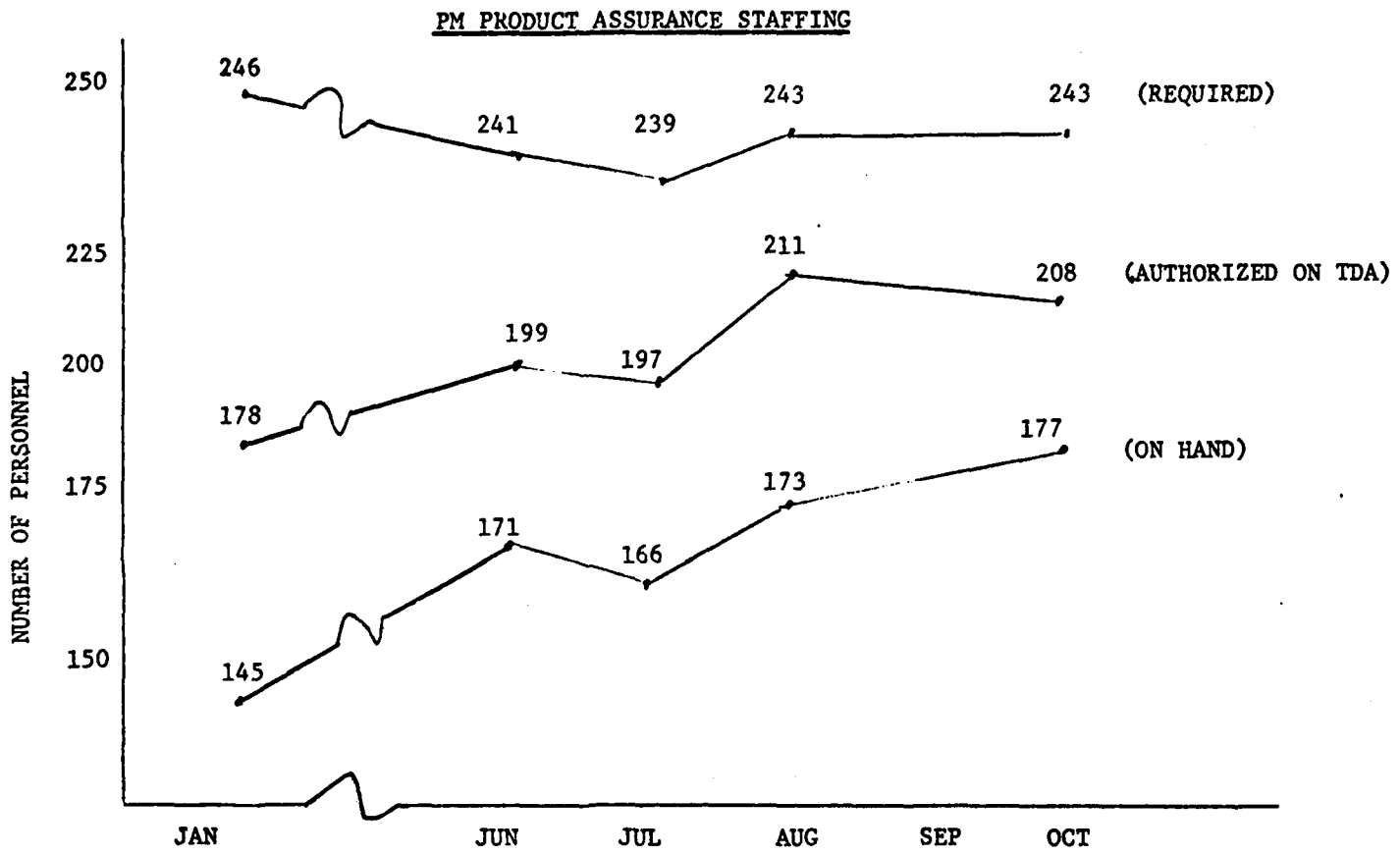

PM PRODUCT ASSURANCE STAFFING
NUMBER OF PERSONNEL
250
225
200
175
150
246
241
239
243
243
(REQUIRED)
211
208
(AUTHORIZED ON TDA)
199
197
178
177
(ON HAND)
173
171
166
145
JAN
JUN
JUL
AUG
SEP
OCT

Figure 2

RELIABILITY IMPROVEMENT OF SELECTED EQUIPMENT (RISE)

POTENTIAL CANDIDATES FOR IMPROVEMENT			IMPLEMENTATION STATUS	
Command	No. of Items	Estimated Five-Year Cost Savings	No. Implemented or Proposed for Implementation	Cost Savings Estimated from Implementation
AVSCOM	14	$ 12,502,347	11	$ 10,336,207
ECOM	10	81,474,500 1/	10 2/	-
MICOM	19	1,388,259 3/	19	1,388,259 3/
MECOM	12	4,275,000	12	4,275,000
MUCOM	4	26,700,000 4/	4	26,700,000 4/
TACOM	63	154,000,000	12	65,000,000
WECOM	13	12,818,000	12	12,818,000
TOTALS	135	$293,158,106	80	$ 120,517,466

1/ Cost Savings for TPN-18 only; savings being determined for other nine items.

2/ TPN-18 Product Improvement Proposal disapproved for FY72 Product Improvement Program by AMC Configuration Control Board. Proposal is being resubmitted for Selected Component Improvements of TPN-18 in FY73 Program

3/ Cost Savings for nine items only

4/ Concomitant savings in production costs, for the M514 VT fuze only

Figure 3

IMPROVE RELIABILITY DOCUMENTATION IN DEVELOPMENT

COMMAND	QMR/MN		SDP/CTP		Spec Section III		QAP Test Plans		Reliability Status Reports		TOTALS	
	A*	B*	A	B	A	B	A	B	A	B	A	B
AVSCOM	2	2	2	2	2	0	2	0	2	2	10	6
ECOM	0	8	4	4	5	5	5	5	0	11	14	3[illegible]
MECOM	4	15	1	12	4	7	4	2	4	2	17	33
MICOM	1	1	1	7	1	47	1	13	1	18	5	86
MUCOM	0	35	0	2	0	5	0	5	0	0	0	47
TACOM	0	4	0	1	1	9	1	2	1	7	3	23
WECOM	57	59	5	27	9	81	12	37	3	17	86	221
TOTALS	64	124	13	55	22	149	25	64	11	57	135	449

* Column A - Number of documents identified for review and/or improvement.

** Column B - Cumulative number of documents reviewed and/or improved.

Figure 4

RELIABILITY TRAINING AT AMETA - FY 71

COURSES:	MAN WEEKS
ELEMENTS OF R&M	327
RELIABILITY PROGRAM MGMT	44
SAMPLING PROCEDURES FOR RELIABILITY TESTING	26

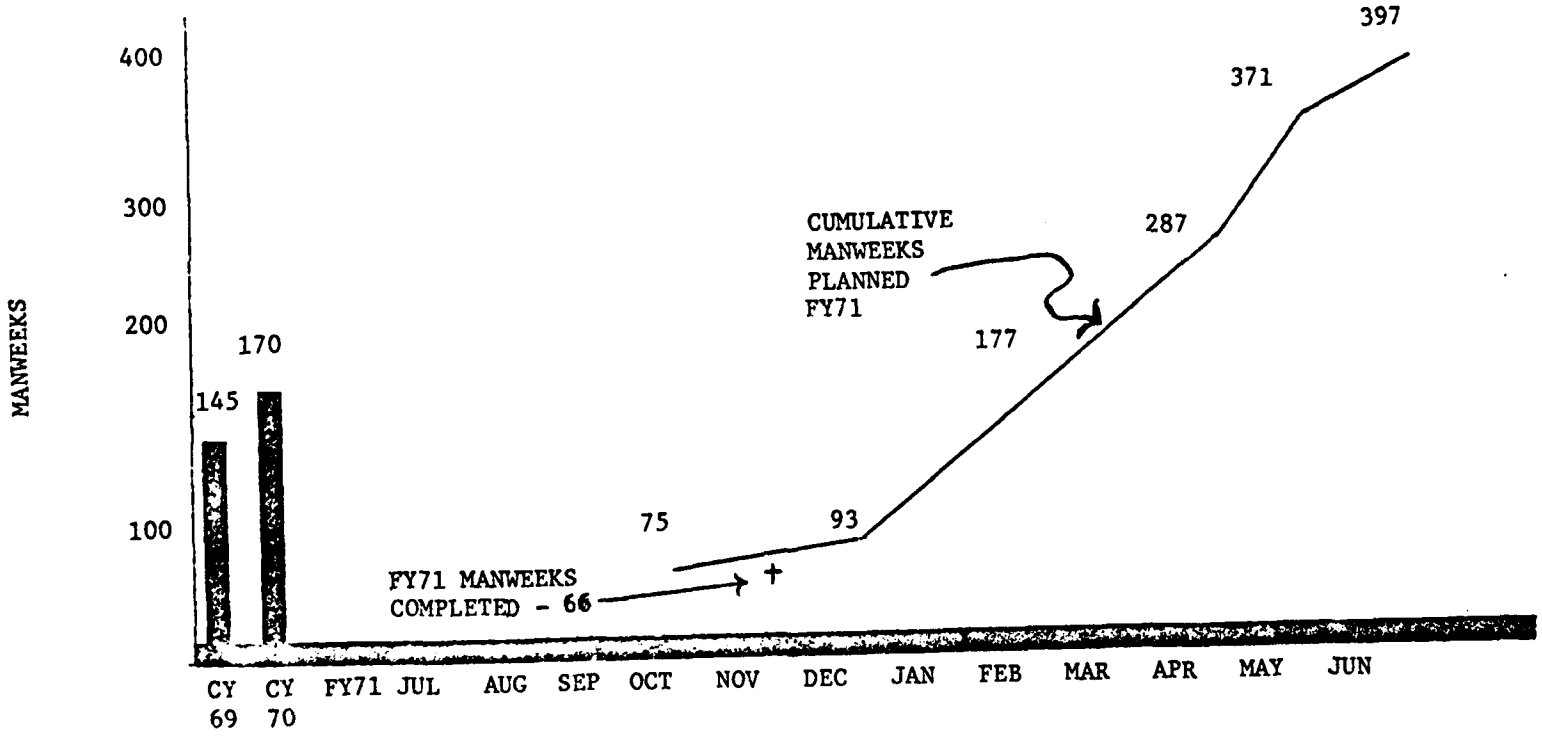


Figure 5

I. TASK TITLE: Integrated Logistic Support (ILS) Program

II. TASK OBJECTIVE: To reduce requirements for logistic support resources and system changes by integrating the elements of logistic support into all phases of system acquisition.

III. BACKGROUND DISCUSSION: DOD interest in ILS was generated by concern for increasing system complexity and the high costs associated with maintaining or supporting new weapon systems; the need for increasing the availability for commitment of these systems; and the untimeliness with which the support of new systems is achieved. This concern resulted in the publication, in 1964, of DOD Directive 4100.35, entitled: Development of Integrated Logistics Support for Systems and Equipment. Army and AMC implementation was published in AR 750-6 and AMCR 750-15, respectively. More detailed procedures and analytical techniques were still needed for effective implementation of ILS. Studies which offered recommendations for such improvement were:

Council of DOD and Space Industry Advisors (CODSIA) Report;

Army Board of Inquiry on the Army Logistic System (Brown Board) Recommendations;

Army Wide Integrated Maintenance Support Planning System Study (LD 9059); and

DOD Joint Logistic Review Board (JLRB) Report.

IV. ACCOMPLISHMENTS:

a. Policy and Procedures: Given DOD Directive 4100.35, AR 750-6 and AMCR 750-15 as the baseline policy documentation for ILS, the full range of implementing documentation was developed. This includes a

series of five Department of Army Technical Manuals (TM 38-703, -1, -2, -3, and -4, basic title: Integrated Logistic Support); a draft of proposed Military Specification (MIL-M-XXXX (AMC), Contract Work Statement Guide for Maintainability and Reliability Design); and appropriate AMC commodity command policy and procedural documentation.

b. Mathematical Support Modeling: The lack of suitable techniques for effecting design versus logistic trade off decisions and for injecting objectiveness into the logistic decision making process represented a major void in the Army ILS program.

The need for both simulation and analytical models was identified. Simulation models evaluate the impact of a wide range of support factors whose interactions are not always definable in precise, single value analytical terms. Analytical models provide a means of establishing intelligent initial input to the simulation. In addition, analytical models may be used as optimizing techniques.

Priority was given to identification, evaluation and use of existing models available in industry or government; and to the development of new models when available models did not satisfy the need. The simulation model development effort involved modification of Rand Corporation's PLANET model. This model was judged to be the most general model available which was technically acceptable, and adaptable to Army systems. New efforts at selection or preparation of the new analytical models were aimed at achieving greater economy and effectiveness in procuring repair parts and float (spare) end items; in assigning maintenance tasks; and in design of end items for improved supportability.

A summary of the models developed, evaluated and/or applied is shown in matrix form in figure 1. These and other applicable support models are described in reference pamphlet to be distributed for information and use.

COMPARISONS OF ILS MODELS

NAME OF MODEL	LANGUAGE	TYPE		AREAS OF CONSIDERATION (PARAMETERS REPRESENTING THE INDICATED AREA ARE INPUT OR OUTPUT BY THE MODEL)													
		SIMULATION (S) OR ANALYTICAL (A)	LARGE SCALE (L) OR SUBOPTIMUM (S)	RELIABILITY	MAINTAINABILITY	AVAILABILITY	DOWNTIME INFORMATION	INITIAL PROVISIONING REQUIREMENTS	SUPPORT EQUIPMENT	MAINTENANCE POLICIES	PERSONNEL REQUIREMENTS	MAINTENANCE FLOAT REQUIREMENTS	LIFE CYCLE SUPPORT SYS	OTHER COST CONSIDERATIONS[1]	MISSION REQUIREMENTS	TRANSPORTATION CRITERIA
TECHNIQUES FOR DETERMINING OPTIMAL OPERATIONAL READINESS FLOAT	FORTRAN IV	A	S	X	X	X						X		X		
ARMY ORGANIZATIONAL MAINTENANCE SIMULATION MODEL	SIMSCRIPT I.5	S	L	X	X	X	X	X	X	X	X	X			X	
DEPOT REPAIR AND OVERHAUL SIMULATION MODEL	SIMSCRIPT I.5	S	L	X	X				X	X	X					
ARMY DEPOT TRANSPORTATION SIMULATION MODEL	SIMSCRIPT I.5	S	L	X	X	X	X		X	X	X				X	X
ARMORED RECONNAISSANCE SCOUT VEHICLE SUPPORT PHASE COST (SPC)	FORTRAN IV	A	L	X	X		X	X	X	X	X		X		X	X
ALLISON LIFE CYCLE OPERATING COST MODEL	FORTRAN IV	S	L	X	X	X	X	X	X	X	X	X		X	X	
COST OPTIMIZATION AND ANALYSIS OF MAINTENANCE POLICIES (COAMP)	FORTRAN IV	A	L	X	X	X	X	X	X	X	X		X			X
REPLACEMENT OR IT REPAIR LEVEL ANALYSIS MODEL	FORTRAN IV	A	L	X	X	X	X	X	X	X	X		X			X
DETERMINATION OF TRANSIENT AVAILABILITY UNDER DEPENDENT FAILURES OR FINITE REPLACEMENT TIMES	FORTRAN IV	A	S	X		X				X						
DETERMINATION OF THE OPTIMUM REPLACEMENT TIME FOR A SYSTEM COMPOSED OF "N" INDEPENDENT FAILING SUBSYS. GIVEN THE SUBSYS AGES	FORTRAN IV	A	S	X	X		X							X		
INTEGRATED LOGISTICS SUPPORT EVALUATION TECHNIQUE (ILSET)	FORTRAN IV	S	L	X	X	X	X									
LIFE CYCLE COMPUTER PROGRAM (LCCP)	FORTRAN & COBOL	S	L	X	X	X	X	X	X	X	X		X		X	X
NMB AUTOMATIC CHEMICAL AGENT ALARM PROGRAM AVAILABILITY STUDY	FORTRAN IV	A	S	X	X	X	X	X			X					X
ECONOMIC EVALUATION OF MAINTENANCE SUPPORT ALTERNATIVES	FORTRAN IV	A	S		X			X	X	X	X		X			
GENERALIZED ELECTRONIC MAINTENANCE MODEL (GEMM)	FORTRAN IV	A	L	X	X	X	X	X	X	X	X		X			X
FAMILY OF ENGINEER CONSTRUCTION EQUIPMENT INTEGRATED LOGISTIC EVALUATION SIMULATION (FILES)	GPSS	S	L	X	X	X	X	X	X	X	X	X			X	
FAMILY OF ENGINEER CONSTRUCTION EQUIPMENT INTEGRATED LOGISTICS SUPPORT ANALYTIC MODELS	FORTRAN IV	A	S	X	X	X						X		X		

X and cases area explicitly dealt with in model

[1] Elements of life cycle cost are computed but not on a life cycle basis

FIGURE 1

c. Funding: A major obstacle to the effective implementation of ILS has been lack of identifiable funding for the contractual costs of ILS. To overcome this problem, a proposed change to AR 37-100-71 was submitted to and accepted by DA. This change provides for RDT&E funding to cover contractual costs of ILS during the RDT&E portion of the life cycle. In addition, General Ledger Cost Accounts and Basic Fact Codes have been established covering ILS costs.

d. ILS Application: ILS application was accomplished on 40 selected systems or items representing all commodity areas. These systems are identified in figure 2. The following were established as a minimum criteria to be satisfied on each system or item program:

(1) Establish ILS funding availability including necessary changes in planning and budget documents.

(2) Establish an ILS Management Focal Point specifically responsible for management of the ILS program.

(3) Establish requirements for Critical Analysis of all design data and hardware as a basis for making ILS decisions.

(4) Establish the requirement for a Central Data File to accept, store, and output analysis generated support data.

(5) Establish the requirement for application of Objective Modeling in the ILS decision making process (ref para IVb and Fig 1).

(6) Insure the Total Involvement of functional expertise from all appropriate areas of logistic support in arriving at support concepts, design and support decisions, and support planning.

(7) Provide for the establishment and use of a Disciplined Procedure to integrate, plan, schedule, manage, and conduct the various aspects of the ILS program.

(8) Provide for Visibility of ILS elements, and the management and technical efforts necessary to obtain them in applicable system acquisition documentation.

(9) Include Maintainability and Reliability work statements (e.g., MIL-M-XXXX, para IVa) in applicable contract documents.

ILS APPLICATION

SYSTEM/EQUIPMENT	COST AVOIDANCE	APPLIED ILS*
1. Manned Aerial Vehicle for Surveillance		X
2. Heavy Lift Helicopter		X
3. Advanced Aerial Delivery System		X
4. Cheyenne, AH-56A		X
5. Utility Tactical Transport Aircraft System		X
6. Radar Set AN/PPS-15	$ 20,479,000	X
7. HF Single Sideband, Airborne Radio Set AN/ARC-98	$ 10,248,000	X
8. Counter Measure Set AN/ALQ-67 (XE-5)	$ 19,220,000	X
9. Night Sight for TOW Antitank Missile AN/USQ-48( )(V)		X
10. Night Observation Device, Long Range AN/TAS-2	$ 6,976,000	X
11. Night Vision Binoculars	$ 8,560,000	X
12. Target Locator, Infrared AN/PAS-9		X
13. Improved Float Bridge 1G664717D-59503B		X
14. 15,000 BTU Heater, 60HZ 1J664713D 54502F		X
15. Family of Military Engineer Construction Equipment	$ 16,000,000	X
16. 10KW Turbo-Alternator		X
17. Petroleum Product Main Line Pump		X
18. Flood and Transfer Pump Unit, 1J664717D 49206F	$ 2,892,500	X
19. XM198, 155MM Towed Howitzer	$ 30,000	X
20. Vehicle Rapid Fire Weapons System		X
21. Advanced Light Assault Weapon		X
22. Dragon Missile System	$ 542,425	X
23. SAM-D Missile System	$3,000,000,000	X
24. Lance Missile System		X
25. Improved Hawk Missile System	$ 158,022	X
26. XM517 Projectile		X
27. Collective Protective System for Vans, Vehicles, and Shelters	$ 2,500,000	X
28. Chemical Agent Warning System for Vans, Vehicles, and Shelters	$ 140,687,000	X
29. XM50 Advanced Firing System Atomic Demolition	$ 270,000	X
30. XM234 Warhead Section (Lance)	$ 408,000	X
31. XM242 Warhead Section (Sprint)	$ 1,245,000	X
32. XM51 Shelter System, Collective Protection, CB	$ 81,000	X
33. XM217 Warhead Section Atomic (Spartan)	Included in Item 31	X
34. SAM-D Missile System Whld Vehicle	$ 7,898,999	X
35. XM705 Truck Utility 1-1/4 Ton	$ 40,044,544	X
36. XM800 Armored Reconnaissance Scout Vehicle	$ 45,733,400	X
37. XM723 Mechanized Infantry Combat Vehicle	$ 29,533,682	X
38. Satellite Communications Agency	$ 240,000	X
39. Main Battle Tank		X
40. AN/GSQ-154 Alarm Set, Anti-Intrusion (SMO)		

** X Indicates Systems/Equipment to which ILS has been applied in accordance with criteria enumerated in paragraph IVd.*

Figure 2.

e. Cost Avoidance: There exists a potential for significant dollar savings through ILS.

The predicted (or actual) dollar savings expected through the application of ILS concepts, procedures, and/or techniques on significant representative items was prepared to demonstrate this potential. These projections are shown by item and by commodity command and project manager (collectively) on figures 2 and 3 respectively.

These cost avoidance savings do not apply to existing funded or budgeted programs and are not intended to be auditable. They are, however, based on sound engineering and prediction techniques.

Very significant dollar benefits have resulted as a by product of the PROMAP-70 ILS Task. The PROMAP-70 program was aimed at improving the system acquisition process, and although the principal thrust of ILS is directed toward the acquisition process, ILS does, nevertheless, span the equipment life cycle. Accordingly, the emphasis placed on ILS through PROMAP-70 caused subordinate activities to apply ILS concepts to equipment in the operational inventory. Cost avoidance savings identified with such applications are shown on figure 3.

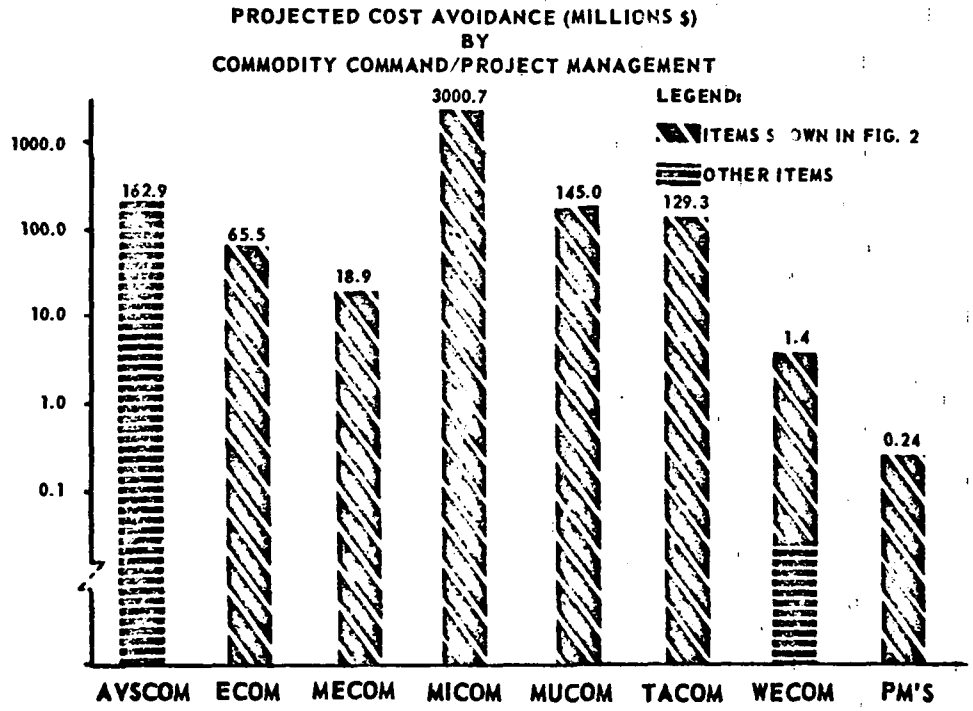


FIGURE 3

f. Provisioning: To reduce the range of repair parts stocked by field units, 8 end items were selected as study subjects to determine methods to improve existing provisioning techniques. This resulted in proposals to change 14 existing documents, 8 Army Regulations, 2 AMC Regulations, 2 Technical Manuals, and 2 AMC Pamphlets.

g. ILS Orientation and Training: ILS orientation was performed in three phases. Phase one consisted of an ILS Symposium. Phase two included a series of on-site group presentations to HQ, AMC, commodity command and project management personnel. Phase three comprised the showing throughout AMC of a two part, Army ILS film and an industry film, Design for Maintainability. The Army film was produced as a PROMAP-70 ILS task element. The number of people present at each of these orientation activities is shown in figure 4.

The Army Logistic Management Center, Fort Lee, Virginia, developed and conducted a four week course in Maintenance Engineering Analysis for ILS. The first class of 25 students was graduated in October 1970, with three additional classes scheduled through the remainder of FY 1971. Proposals were prepared and submitted to initiate development of three additional formal ILS training courses. These courses are ILS trade off techniques, ILS Contract Work Statements and Incentives, and ILS Quantification and Demonstration.

Effective implementation of ILS over the long term requires a means to identify uniquely qualified individuals in existing career fields; to attract, through established career referral procedures, and retain such individuals in ILS positions; and to establish an ILS career training program.

In pursuing these objectives, (1) the desirability for establishing an ILS career field was affirmed, (2) an ILS career field personnel base of 9,645 individuals was identified, (3) an ILS career development program consisting of 22 existing, new and proposed core courses was defined, and (4) a training requirement of 3,486 persons was identified against 22 courses. The structure of the proposed new ILS career field is shown in figure 5.

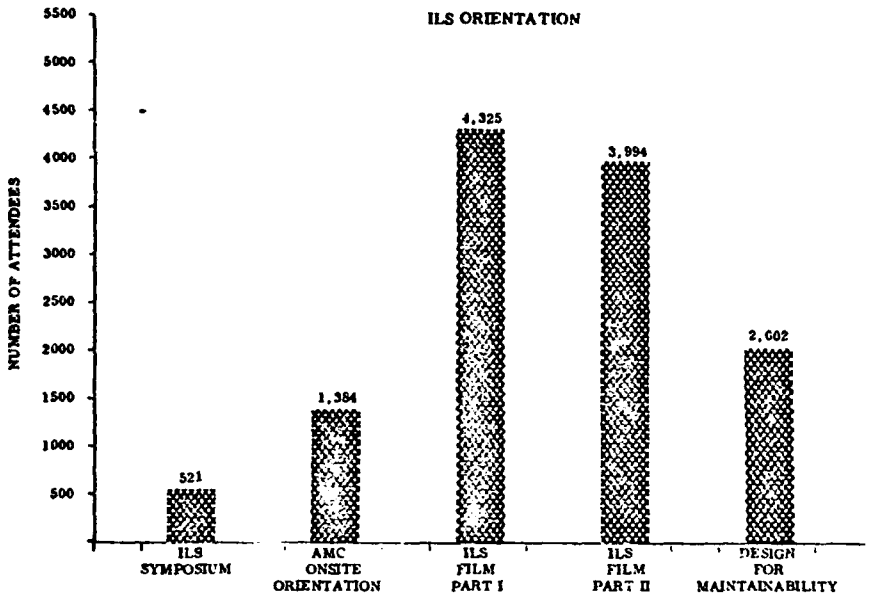


Figure 4.

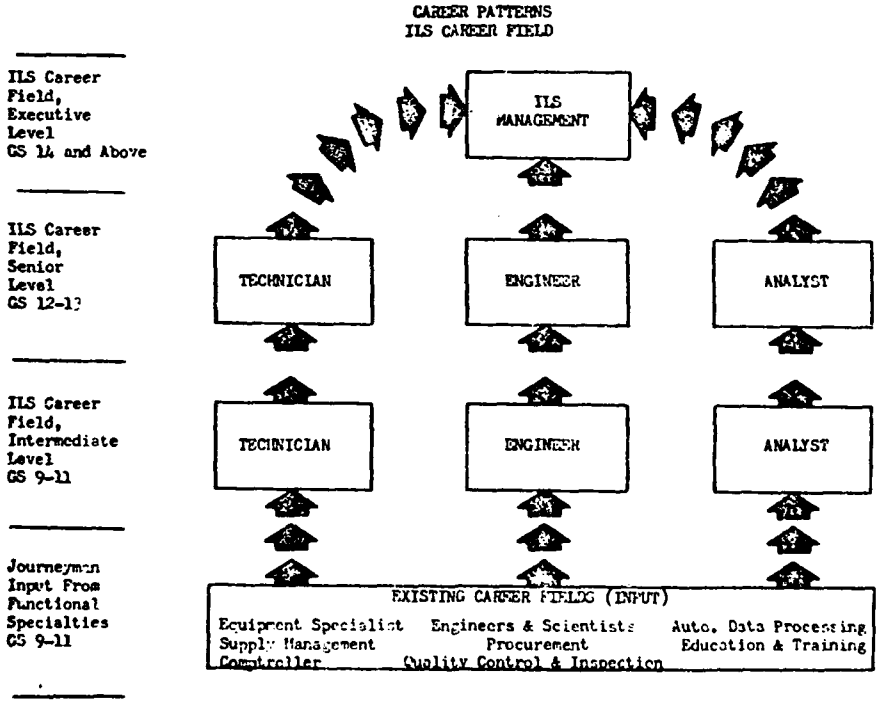


Figure 5

h. Long Range Actions: Long range actions include: (1) AMC Task Director participation in the DOD-Industry ILS Advisory Group for the improvement of ILS implementation; and (2) establishment of a program of long range logistic support studies. The Advisory Group assisted in preparation of the revised DOD Directive 4100-35, 1 October 1970, and identified eight on-going study tasks for accomplishment. To date, a number of long range logistic support studies have been proposed. Studies have been initiated on reduction of calibration workload and reduction of line items requiring mobile team calibration support. Other studies have been deferred pending the availability of resources.

V. FOLLOW-ON ACTIONS:

a. Apply and refine, as required, policy and procedural documentation in response to DOD policy guidance including DOD Directive 4100-35, 1 October 1970.

b. Coordinate and continue trial implementation of draft Contract Work Statement Guide for Maintainability and Reliability Design.

c. Review TM 38-703 series documents as required based on PROMAP-70 experience, latest revision of DOD Directive 4100.35, and the Material Need Concept.

d. Develop, coordinate, and publish TM 38-703-5, Contract Work Statement Guide for Maintainability and Reliability Design, initiate simultaneous preparation of Military Specification, same subject.

e. Identify and evaluate applicable mathematical support models; develop additional models as required; publish and distribute current reference lists of available models; and establish central point for simulation and possible analytical modeling support to MSC/PM's.

f. Refine objective modeling efforts to establish preferred methods in each principal ILS decision area.

g. Implement the provisions of contractual and program documents (developed in response to PROMAP/ILS milestone I-5) which provide for the application of ILS on 40 designated weapon systems/items.

h. Implement improved provisioning policies.

i. Continue development of: (1) ILS Trade Off Techniques; (2) ILS Contract Work Statements and Incentives; (3) ILS Quantification and Demonstration.

j. Establish separate ILS career field and integrate ILS career development program within existing career fields such as Supply Management, Comptroller, Engineering and Science, and Equipment Specialist.

k. Conduct and track essential concept studies to improve future logistic support.

l. Extend ILS activity definitions into appropriate budget activity accounts in RDTE, PEMA, OMA, and MCA programs.

I. TASK TITLE: Refinement of Requirements Documentation - Materiel Development Objectives/Requirements(QMDO/QMR).

II. TASK OBJECTIVE: To conduct a comprehensive review of existing formats/procedures/practices used in establishing materiel development objectives/requirements and to make recommendations for correcting identified shortcomings/deficiencies. Conduct of limited implementation of recommendations prior to DA approval.

III. BACKGROUND DISCUSSION: The Deputy Secretary of Defense tasked the Secretaries of the Services to improve their weapon systems acquisition processes in the areas of:

1. Cost growth prevention.

2. Cost estimating and validating.

3. Defining materiel needs properly.

4. Preventing costly changing programs.

5. Validation of the materiel needs before fullscale development.

6. Proper concept formulation activities.

7. Use of competitive prototypes to verify feasibility.

8. ET/ST accomplished before production.

The above areas of concern generated a series of meetings during the latter part of 1969 at all levels of AMC and CDC. The purpose of these meetings was to improve intercommand relationships and procedures for establishing Materiel Objectives/Requirements documents and for conducting Research, Development, Test and Evaluation (RDT&E) in response to these Objectives/Requirements.

The PROMAP objective grew out of these meetings and was pursued by a Joint CDC/AMC Ad Hoc Board which made a comprehensive study and review of existing materiel documentation during the period 8 December 1969 to 8 May 1970.

IV. ACCOMPLISHMENTS:

a. On 15 May 1970, the Joint CDC/AMC Ad Hoc Board issued a final report recommending to the CGs, AMC/CDC, the Materiel Need (MN) Concept. A Materiel Need is defined as a DA approved statement of a need for new or improved materiel to provide an initial operational capability by a specified time frame, without regard to a particular technical approach or solution. The MN Concept differs from the existing Life Cycle Management Model in that:

1. It uses a single document, a Materiel Need (MN), with a single format, to establish the need for new or improved items/systems for the Army and to provide guidance to the materiel developer throughout the life cycle of materiel.

2. MN will be established through the joint face-to-face efforts of the combat and materiel developers.

3. All MN will start at the beginning of the concept formulation phase.

4. Characteristics in Materiel Needs will be prepared as bands of performance, within which trade-offs will be performed by managers to optimize the overall system. As long as the development does not go outside these levels, it will not be necessary to revise the MN and the resulting items will be operationally acceptable to CDC.

5. External or worldwide coordination of the MN will occur only once in the cycle.

6. All MN will go completely through the concept formulation phase.

7. MN will be revised as necessary throughout the life cycle, based on information gained in concept formulation, contract definition, engineering development, testing and production, and by changes which occur in the threat, concept of use, technology, costs and time to develop.

8. A final detailed definition of the item is not stated until completion of the development and testing phases.

PAY OFFS

Use of Materiel Need (MN) Concept will (a) reduce the number of formal objectives/requirements documents from the currently used 4, (Qualatative Materiel Development Objective), (Advanced Materiel Development Objective), (Qualatative Materiel Requirement), (Small Development Requirement), to a single document, (b) reduce documentation processing time from 2 1/2 years to 60 weeks, (c) increase the materiel developer/combat developer joint face-to-face activities during development from the present 5, to 21, and (d) reduce the Army Life Cycle Management Model from the current 239 steps to 153 steps.

b. The 15 May 1970 Board report containing the MN Concept was submitted by joint signature of the CG, AMC and CG, CDC to the C of SA for approval of the MN Concept, and informed the C of SA that to expedite implementation, a number of CDOG Priority I materiel objectives/requirements documents will be converted jointly by AMC and CDC to appropriate Materiel Need (MN) status by NLT 24 September 1970. The Office, C of SA, reply was that approval decision on the proposed MN Concept would include DA appraisal of the initially converted documents.

c. A Joint Implementation Committee was formed and on 24 June 1970 the committee provided to the Joint Conversion Teams, and Promap Field Task Directors, guidance and conversion techniques, in an all day "teach-in" at Ft. Belvoir, Va.

d. Joint AMC and CDC Conversion Teams converted the following selected Priority I CDOG items to appropriate Materiel Need status:

1. Radar, Artillery Locating

2. Mechanized Infantry Combat Vehicle (MICV)

3. Improved Float Bridge (Ribbon Bridge)

4. Air Defense Guided Missile System, Surface-to-Air (Improved Hawk)

5. 155MM Howitzer, Towed, XM198

6. Improved Nuclear Projectile, 155MM Howitzer, XM517

7. Up-Gun, Cobra

   Antipersonnel and Antimateriel Weapons Subsystem (30MM Gun)

   Army Helicopter Point Target Weapons Subsystem (TOW/SHILLELAGH)

MN documentation for four of the above systems, MICV, Ribbon Bridge, Improved Hawk and Improved Nuclear Projectile 155MM XM517, has been completed and was forwarded to the C of SA for approval on 9 November 1970 over the joint signatures of the CGs, AMC and CDC. The Radar, Artillery Locating and the 155MM Howitzer, Towed, XM1[illegible] were submitted separately to DA during December 1970. The Up-Gun, Cobra is planned to be submitted to DA by the end of January 1971.

e. During the conversion period, Task Directors at the Commodity Commands scheduled MN Concept briefings for the respective CGs and their key staffs. The two hour briefing, with a question and answer period following, was given by the HQ AMC PROMAP Task Director in concert with a CDC member of the Joint Implementation Committee. Similar briefings were given at the AMC Independent Laboratories and at pertinent CDC installations. Briefings were completed by 17 September 1970 with total attendees numbering 980.

f. Field Task Directors were provided with copies of the MN Concept briefing script, vugraphs and other educational materials to use as a basis to formulate local training programs in preparation for Phase II of MN Implementation. Phase II will consist of converting the remaining Priority I CDOG items and will begin upon DA approval of the MN Concept. In anticipation of DA approval, Field Task Directors have been asked to compile a tentative conversion schedule of remaining Priority I items for which their Commodity Command has responsibility.

g. Four DA regulations have been draft revised to reflect the Materiel Need (MN) Concept and impact on 52 AMC and CDC regulations which will require revision.

V. FOLLOW-ON ACTIONS: At the 9 November 1970 briefing to the CGs, AMC/CDC, the following near-future activities were approved, and are expected to be completed during the period 1 May - 1 September 1971:

1. Review and comment on DA Guidance forwarded with MN Concept Approval.*

2. Review lessons learned from initial 7 conversions.

3. Prepare specific MN Concept instructions for Rationale Annex.

4. Prepare revisions to MN Concept based on foregoing.

5. Prepare Joint AMC/CDC Directive for Phase II of Implementation.

6. Prepare draft revised AMC/CDC Regulations.

7. Prepare handbook on MN Concept procedures.

8. Interim instructions/analysis of the partials.

9. Establish AMC Priority listing for items to be converted in Phase II & III and identify conversion points for converting on-going R&D projects to Materiel Need Format.

10. Establish training requirements.

11. Brief other developers and commands.

*In a letter to the CGs, AMC and CDC, dated 25 November 1970, the VC of SA General Bruce Palmer approved the Materiel Need (MN) Concept and provided initial implementation guidance.

I. TASK TITLE: IMPROVE AMC QUALITY ASSURANCE SYSTEM FOR PRODUCT ACQUISITION

II. TASK OBJECTIVES: To improve effectiveness of AMC Quality Assurance Operations during Product Acquisition; to enhance AMC/DCAS Quality Assurance Interface Relations; to obtain increased hardware problem visibility; to provide technical guidance in select Quality Assurance disciplines.

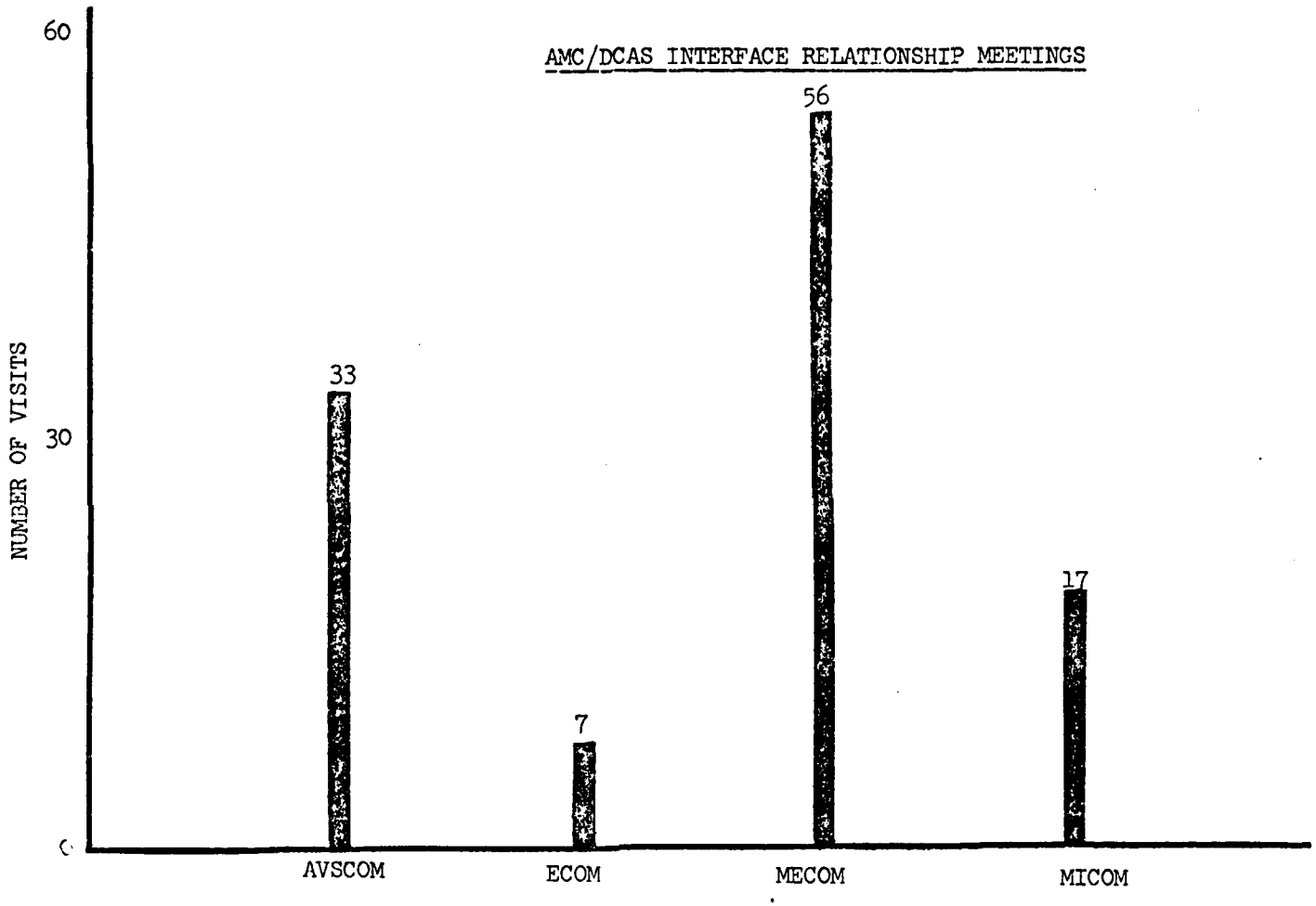
III. BACKGROUND DISCUSSION: The overall objective of this PROMAP-70 Task was to conduct in-depth review of the AMC QA program and operations, policies and procedures to find new methods or techniques to do the job better, easier or more economically. Some of the areas specifically addressed were those in which the National Security Industrial Association (NSIA) expressed concern during review of the AMC QA structure in 1968/69. These included AMC/DCAS interface relationship, uniformity and standardization of contract clauses and quality requirements, Product Quality Analysis & Liaison Operations (Key Inspection), Quality Assurance letters of instruction and policies for testing to determine suitability for issue. 11 Subtasks were established by Headquarters AMC QA to streamline and strengthen the AMC Quality Assurance system.

IV. ACCOMPLISHMENTS: The accomplishments to improve the AMC Quality Assurance program are summarized below:

a. Each Commodity Command assessed internal policies and procedures for contract preparation and changed them accordingly to assure use of only standard clauses as specified by ASPR. These actions provide similarity of contract formulation by all AMC elements and enhance AMC/DCAS contractor relationships through mutual understanding of requirements. TACOM instituted a totally new system of contract and associated documents development with resultant savings of $29,410.00 for FY 70. WECOM estimated savings resulting from reduced contract data requirements is $507,535.00.

b. KEY INSPECTION PAMPHLET - In response to needs to establish uniform application of the Product Quality Analysis and Liaison Operations (Key Inspection) by all AMC subordinate elements, AMC pamphlet 702-13 was prepared and will be published this month (Dec). This pamphlet will serve as a guide and assist all key inspection personnel in accomplishing their duties during the product life cycle. Compliance with this pamphlet will assure uniform and consistent application of Key Inspection activities by all AMC elements in their relationship with private industry and Government inspection service elements such as DCAS.

c. AMC/DCAS INTERFACE - In order to enhance relationships between AMC and DCAS and assure mutual understanding of respective roles and responsibilities, AVSCOM, ECOM, MECOM, and MICOM held 116 meetings with DCAS Regions, Districts, or offices. (See Chart 1). TACOM conducted 76


AMC/DCAS INTERFACE RELATIONSHIP MEETINGS
NUMBER OF VISITS
60
30
0
33
7
56
17
AVSCOM
ECOM
MECOM
MICOM

manhours of hardware orientation courses for DCAS personnel on wheeled and wheeled/tracked vehicles. A Key Inspection pamphlet was implemented by WECOM while MUCOM participated in a Quality Review Planning Team with DCAS. These activities have greatly enhanced the AMC/DCAS interface relationships.

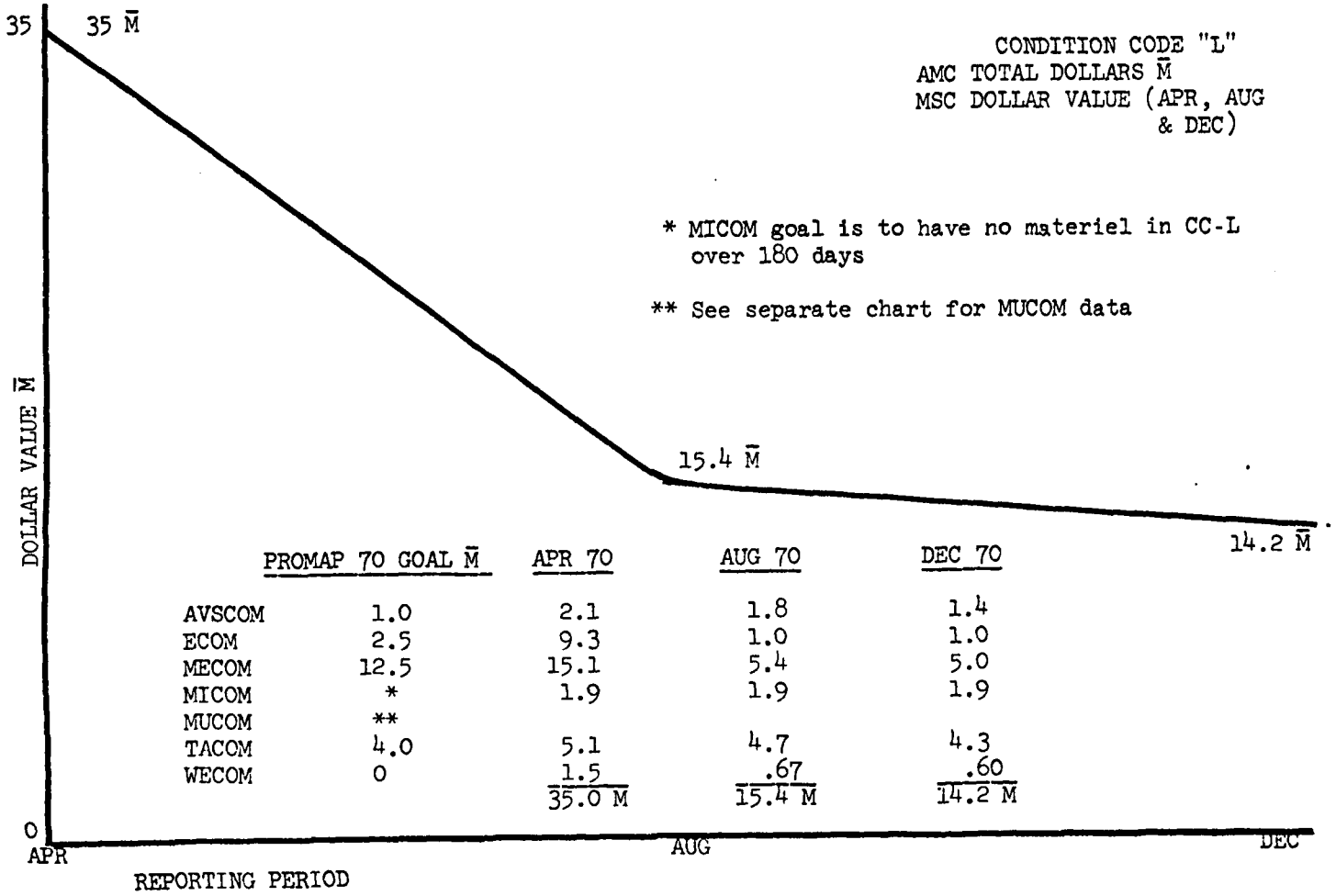
d. IMPLEMENTATION OF H-57 AT ARMY COGNIZANT PLANTS AND GOCO FACILITIES DOD Handbook 57, (Procurement Quality Assurance) which is being implemented by DCAS at all industrial facilities under their cognizance, was trial implemented at the AVSCOM Bell Fort Worth and Amarillo, Texas plants. With the exception of two (2) areas, namely, controls for nonconforming materiel and Engineering changes the handbook was determined adequate. MUCOM revised or changed the policies and procedures at Government Owned/ Contractor Operated (GOCO) plant for total compatibility with H-57.

e. REDUCE COST AND TIME OF TECOM SUITABILITY FOR ISSUE AND OTHER PRODUCTION TESTING - Currently, Initial Production Tests (IPT) plans are coordinated with the proponent but do not specifically permit formal utilization of test data by other agencies or the developing agencies. As a result, on occasion TECOM conducts more testing than necessary or duplicates valid testing performed by other agencies which would fulfil TECOM requirements. TECOM studied the procedures utilized currently and recommended changes which could be instituted whereby IPT's would be conducted in less time without reduction in the degree of quality of data produced to make suitability determinations. The IPT average duration for procurement planning purposes is 7 months.

Under TECOM proposed recommendations the coordinated test plan (CTP) would be emphasized at inprocess reviews; TECOM would publish and distribute IPT plans outlining subtasks which must be performed by TECOM; the proponent would identify in writing those subtests in the IPT plan for which other valid data would suffice to satisfy TECOM requirements; the proponent would provide the actual raw data to TECOM for review and validation. Essentially, these actions would formalize the concept of test data sharing, reduce the time required to evaluate the suitability of items for release and result in monetary savings as the tempo of data sharing increased. It is estimated that IPT timeframes could be shortened to an average of 3 months.

f. REDUCTION OF MATERIEL IN CODE-L (LITIGATION) - Initial review revealed that although a quarterly report provides data on CC-L materiel, managers were not addressing themselves to it and aggressively attempting to reduce or eliminate it. PROMAP-70 goals were established for each commodity command and specific actions were initiated to ascertain causes leading to placement of materiel in CC-L. The result was a reduction in the dollar value of materiel in CC-L from 35M to 14.2M. (See Chart 2). MUCOM efforts were addressed to reduction of Dollar Value of ammunition

CONDITION CODE "L"
AMC TOTAL DOLLARS $\bar{M}$
MSC DOLLAR VALUE (APR, AUG & DEC)



* MICOM goal is to have no materiel in CC-L over 180 days

** See separate chart for MUCOM data

	PROMAP 70 GOAL $\bar{M}$	APR 70	AUG 70	DEC 70
AVSCOM	1.0	2.1	1.8	1.4
ECOM	2.5	9.3	1.0	1.0
MECOM	12.5	15.1	5.4	5.0
MICOM	*	1.9	1.9	1.9
MUCOM	**			
TACOM	4.0	5.1	4.7	4.3
WECOM	0	1.5	.67	.60
		35.0 M	15.4 M	14.2 M

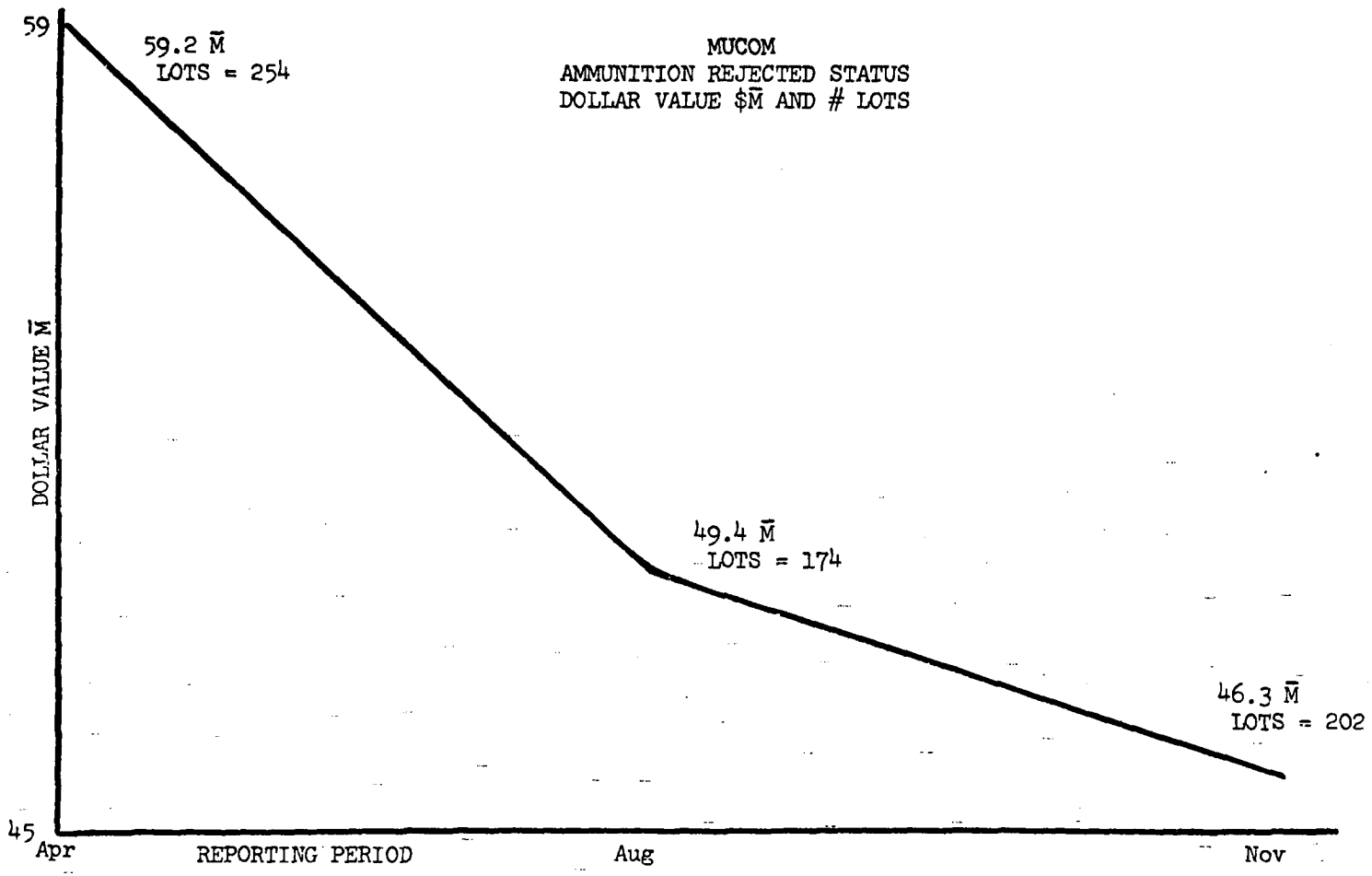
in rejected lot status. (See Chart 3). During the PROMAP-70 period this was reduced to 46.3M from 59.2M. Of even greater importance is the fact that remedical actions have been instituted through policy and procedural changes whereby emphasis and intensive management will continue toward reduction or elimination of materiel in the Code-L category.

g. HARDWARE PROBLEM VISIBILITY - The CG AMC expressed concern in late 69 of the number of line items and dollar value of items which were not issuable for various reasons such as, incomplete testing, problems identified during test; field problems etc. Special reports by the commodity commands disclosed a total of 156 line items at a value of 222.2M throughout the AMC. PROMAP-70 efforts have resulted in reduction in the number of line items to 67, although the dollar value is now at 417.6M. (See Chart 4). This is due primarily to the TACOM XM809 truck and WECOM M60A1E2 tank valued at 55 M and 250M respectively which were recently added to the list. The CG AMC is periodically briefed on this subject and future quarterly reports will prompt management actions to minimize items in this category.

h. DEFECTIVE GOVERNMENT FURNISHED EQUIPMENT/GOVERNMENT FURNISHED MATERIEL (GFF/GFM) - Efforts to determine status of defective GFE/GFM revealed a need to establish a reporting procedure whereby knowledge of this materiel would be available for management attention and appropriate action to assure desired quality of GFE/GFM supplied to contractors. During the PROMAP timeframe the dollar value of defective GFE/GFM was reduced from 7.13M to .82M. (See Chart 5). An existing AMCR is currently being revised to include quarterly reporting requirements for continuous status of GFE/GFM.

i. QUALITY OF REPAIR PARTS - The goal to achieve greater visibility as to quality status of AMC procured hardware, specifically repair parts, has been attained through commodity command selection and audit of repair parts at Army depots. The initial audit resulted in percent of units defective ranging from .9% at AVSCOM to 26.5% at WECOM, or an accumulative average of 4.6%. Subsequent corrective actions instituted by the commands with DCAS and contractors has improved the quality of repair parts. The current unit percent defective range is .7% to 22%, and the % defective average is now 2.8%. (See Chart 6).

j. NON DESTRUCTIVE TESTING - A need to recognize and promote use of Non Destructive Testing (NDT) techniques was responded to by the publication of AMCP 702-10 (Guide to Non Destructive Testing techniques) in April of 1970. This pamphlet will serve as a guide to NDT methodologies in sufficient depth to foster an understanding and appreciation of what NDT can provide in the realm of product assurance. Another pamphlet on NDT is scheduled for publication this month (Dec) which offers guidance to the specifications or contract writer in selecting NDT methods. Its use will promote motivation of AMC personnel


MUCOM
AMMUNITION REJECTED STATUS
DOLLAR VALUE $M̄ AND # LOTS
59
45
DOLLAR VALUE M̄
59.2 M̄
LOTS = 254
49.4 M̄
LOTS = 174
46.3 M̄
LOTS = 202
Apr
REPORTING PERIOD
Aug
Nov

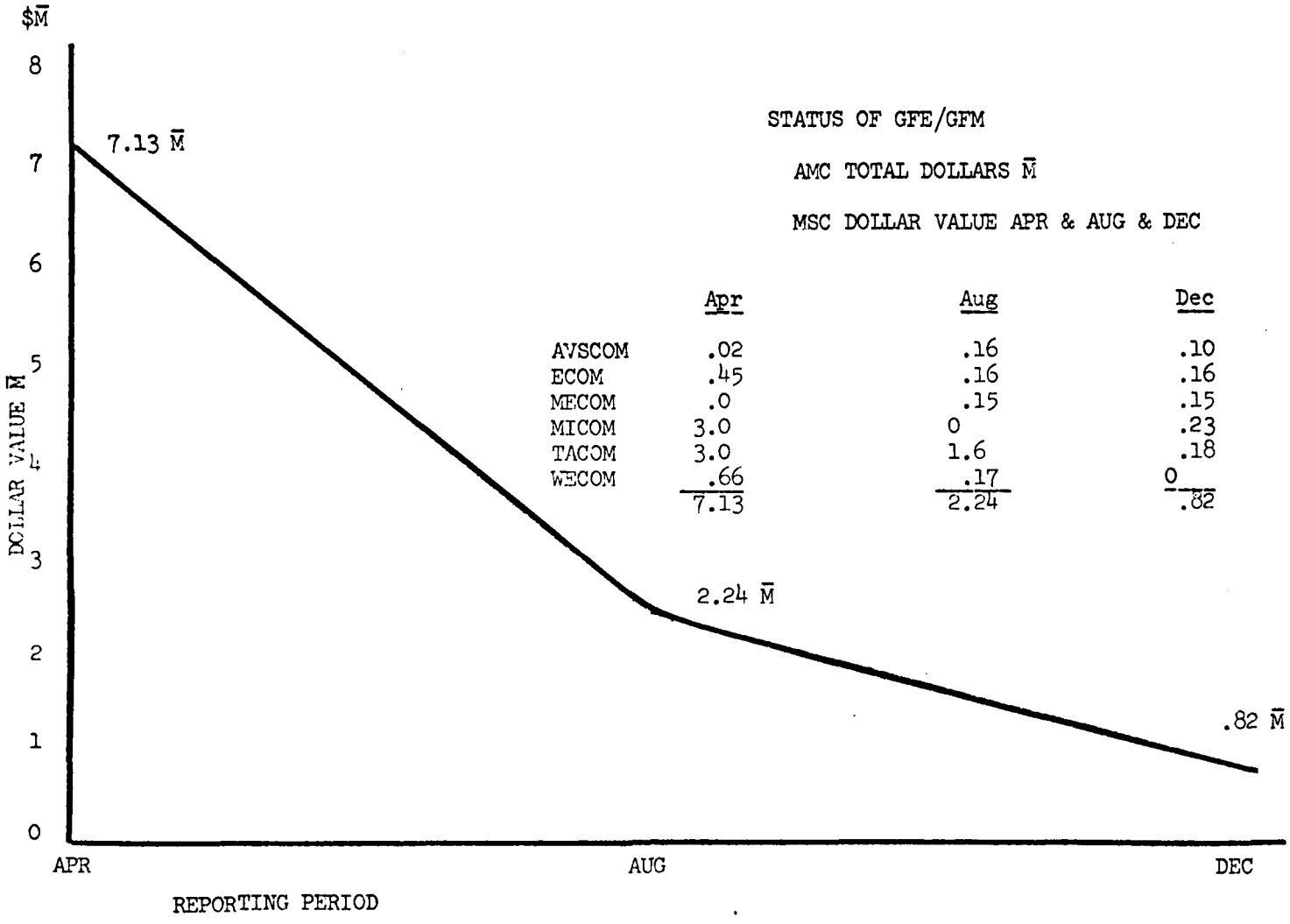
COMPARATIVE SUMMARY

ITEMS OWNED BY ARMY, NOT ISSUABLE

(Includes Oct 69 Carry Over Status)

COMMAND	NO. OF LINE ITEMS				DOLLAR VALUE			
	OCT 69	FEB 70	AUG 70	OCT 70	OCT 69	FEB 70	AUG 70	OCT 70
AVSCOM	11	*	*	*	0.8	*	*	*
ECOM	63	48 (38)	27 (17)	25 (9)	49.6	28.58 (28.00)	25.02 (20.00)	15.90 (7.78)
MECOM	45	32 (28)	23 (20)	24 (18)	37.6	49.06 (27.50)	44.73 (20.00)	47.60 (20.00)
MICOM	5	1 (1)	*	*	5.5	3.23 (3.23)	*	*
MUCOM	1	*	*	*	2.3	*	*	*
TACOM	27	16 (11)	17 (10)	17 (10)	125.5	18.70 (18.26)	104.5 (18.26)	104.60 (18.26)
WECOM	4	2 (2)	1 (1)	1 (1)	0.9	278.17 (0.90)	249.50	249.50
	156	99 (80)	68 (48)	67 (38)	222.2	377.74 (77.9)	423.75 (58.2)	417.6 (46.0)

* = Negative Report Submitted ( ) = Oct 69 Carry Over



STATUS OF GFE/GFM

AMC TOTAL DOLLARS M̄

MSC DOLLAR VALUE APR & AUG & DEC

	Apr	Aug	Dec
AVSCOM	.02	.16	.10
ECOM	.45	.16	.16
MECOM	.0	.15	.15
MICOM	3.0	0	.23
TACOM	3.0	1.6	.18
WECOM	.66	.17	0
	7.13	2.24	.82

TOTAL AMC

REPAIR PARTS AUDIT PROGRAM

AS OF 1 DEC 70

	AVSCOM	ECOM	MECOM	MICOM	TACOM	WECOM	TOTALS
NO. LINE ITEMS INSPECTED	281	200	130	536	121	176	1444
NO. LINE ITEMS DEFECTIVE	7	35	9	128	5	58	242
% LINE ITEMS DEFECTIVE	2.5	17.5	6.9	23.9	4.1	32.8	16.7
NO. UNITS INSPECTED	36129	3658	995	2856	892	1612	46,142
NO. UNITS DEFECTIVE	265	207	70	306	104	369	1321
% UNITS DEFECTIVE	0.7	5.8	7.0	10.7	11.6	22.8	2.8

in using NDT techniques in maintaining the highest possible standards of materiel quality in terms of effectiveness, reliability and safe operations. PROMAP-70 emphasis on NDT has resulted in savings or actions by the commands as indicated below:

(1) TACOM: NDT methods instituted on Track Pads, $200,00.00 recovered from Contractor + 35000 pads recovered and 86% reduction in inspection time.

(2) WECOM: Three (3) NDT techniques identified with predicted annual vings of $157,000,00.

(3) MECOM: Identified 6 specified projects with primary objective to obtain greater visibility of hardware quality and improving techniques for surveillance and sampling of various items.

(4) MICOM, ECOM, MUCOM: AVSCOM Assisted AMMRC in developing various NDT methods. (77 Projects Being Studied)

TRAINING - Extensive product oriented training was conducted by the commodity commands for Key Inspection personnel, DCAS and contractor representatives. In addition, various courses on Quality related subjects were presented. A total of 1160 man/weeks of training was completed. Approx 696 man/weeks or 60% was for in house quality related technical training to include contractors and DCAS personnel.

V. FOLLOW ON ACTIONS - Following are actions taken or initiated resulting from lessons learned during PROMAP-70.

(1) AMC and Commodity Command regulations and policies are being revised to reflect the improved operations attained through PROMAP-70, such as tighter controls on ASPR clause usage, inclusion of Interface problems on meeting agenda with DCAS, revised data requirements related to CC-L materiel and improved data collection systems for defective GFE/GFM and information pertinent to hardware problems.

(2) The AMC Key Inspection Pamphlet is scheduled for full implementation by 30 Apr 71. All Key Inspection personnel will receive a minimum of 16 hours orientation on the pamphlet to assure understanding of the AMC policies and practices espoused therein.

(3) AMCQA is continuing to improve the AMC materiel release program through a more effective test data retrieval, analysis and utilization policy. All available test data produced at contractor plants, test sites or special test facilities during the initial stage of production will be analyzed and validated for use in arriving at the TECOM suitability position. Special studies currently underway by TECOM, TACOM, and this Hdqrs, together with input by other commands, will constitute appropriate changes to test policies and procedures relative to the AMC release program. These changes will shorten IPT time frames, reduce costs associated with IPT's, and provide for more effective data feedback and analysis techniques.

I. TASK TITLE: Contractor Motivation

II. TASK OBJECTIVE: To increase contractor motivation to control costs by providing a proper contract structure which is not ambiguous and does not provide reverse motivation

III. BACKGROUND:

In replying to Deputy Secretary of Defense Packard's memorandum of 31 July 1969, subject: "Improvement in Weapon System Acquisition", the Secretary of the Army, by letter dated 2 October 1969, made the following statements as regards to contractor motivation:

"The Army will issue clear policy guidance to assure both the contractor and the Government personnel in the field that it fully intends to control costs and that this position will be backed up by all levels of command."

"The Army will examine contract structures and identify and correct specific weaknesses in providing contractors with strong motivation to control costs. It now appears that the incentive structure of contracts may, under certain circumstances, encourage a contractor to increase costs rather than decrease them."

"The Army hopes to insure that contracts, particularly those involving the procurement of major systems, clearly set forth the rights and obligations of both the Army and contractor and do, in fact, provide positive incentives for cost control by the contractor."

IV. ACCOMPLISHMENTS:

SUMMARY OF

OBJECTIVES AND ACCOMPLISHMENTS DURING CY 1970

MEASUREMENT CRITERIA	PROMAP OBJECTIVE	ACCOMPLISHMENTS
TRAINING	TRAIN 20 PERSONNEL	141 TRAINED
ESTABLISHMENT OF INCENTIVE REVIEW TEAMS	AT ALL MSC'S	TEAMS ESTABLISHED AT ALL COMMANDS
REVIEW OF MAJOR AWARDED BY INCENTIVE REVIEW TEAMS	REVIEW 50 MAJOR AWARDS	57 AWARDS REVIEWED

MEASUREMENT CRITERIA	PROMAP OBJECTIVE	ACCOMPLISHMENTS
AMC STAFF REVIEWS OF PRICE NEGOTIATION FUNCTION	AT ALL MSC'S	REVIEWS COMPLETED AT ALL MSC'S, ONE PROCUREMENT AGENCY AND ONE ARSENAL

Restated the requirement for all multiple incentive contracts over $5 million to be submitted to the DOD Project Office for the Evaluation of Structuring Multiple Incentive Contracts (POESMIC) before award in order that the incentives be evaluated to assure proper contractor motivation to control costs over the life of the contract.

Emphasized the need for Army major procuring activities to select proper contract type and to properly structure incentive contracts, when that type of contract is considered to be the proper type, to achieve optimum motivation for contractor to control costs.

As a result of being able to schedule on site training courses, 141 AMC field personnel attended the Harbridge House Advanced Incentive Contracting Workshop during 1970 as compared to the normal twenty price analysts that would have attended this course under our original PROMAP plan. This has resulted in AMC personnel of varied backgrounds and expertise involved in the procurement process obtaining a better understanding of when the Army should use incentive type contracts to the advantage of the Army and to achieve optimum motivation of contractors to control costs.

All Major Subordinate Commands (MSC) with the exception of the Test & Evaluation Command, have formally established within the procurement function, Incentive Review Teams to review major command awards and major change orders. These teams or committees are composed of the best available talent in the fields of contract pricing, incentive structuring, industrial engineering, legal, contract negotiation and others as required. The improvements in the contract negotiation function resulting from the establishment of these teams are shown below:

CONTRACT NEGOTIATION FUNCTION

CONTRACTING OFFICER TEAM:	OLD	NEW
1. SETS GOVT. OBJECTIVE	X	X
2. NEGOTIATES	X	X
3. RECOMMENDS APPROVAL	X	X
INCENTIVE REVIEW TEAM ESTABLISHED:		
1. AT EACH MSC		X
2. BEST EXPERTS AVAILABLE		X

INCENTIVE REVIEW TEAM REVIEWS MAJOR AWARDS AS TO:	OLD	NEW
1. K TYPE		X
2. INCENTIVE STRUCTURE		X
3. INCENTIVE SHARE RATIOS		X
INCENTIVE REVIEW TEAM:		
1. PROVIDES INDIVIDUAL C/O TEAMS WITH EXPERT GUIDANCE		X
2. PROVIDES EACH MSC COMMANDER WITH EXPERT APPRAISAL OF MAJOR AWARDS		X

Personnel from the Contract Pricing Branch, Procurement Policy Division, Director of Requirements & Procurement, HQS AMC conducted reviews of the price negotiation function at all major procuring commands, a procurement agency office and an arsenal during calander year 1970. Reviews were made of contract files and questions raised, when applicable, as to the commands reasons for selection of contract type and as to their methods of determining that a contract price is fair and reasonable. Orientations were conducted concerning the importance of proper contract type selection to achieve proper contractor motivation to control costs. These visits also resulted in an exchange of ideas between the field pricing personnel and the headquarters staff concerning the new Incentive Contracting Guide (FM-38-34), copies of which were distributed to all field task directors prior to the price negotiation function reviews.

V. FOLLOW-ON ACTIONS:

The Incentive Review Teams at each major procuring command will continue their review function during calendar year 1971 as a part of the Senior Procurement Review Board at each MSC.

HQS USAMC will continue to perform reviews of the price negotiation functions at subordinate installations during 1971.

I. TASK TITLE: Independent Government Cost Estimates (IGCE)

II. TASK OBJECTIVES:

Improve the development and use of the IGCE in the establishment of negotiation objectives;

Stress the use of the IGCE as a means for improving cost realism in contractor proposals; and,

Structure the independent government cost estimate in a manner consistent with the AMC cost tracking system.

III. BACKGROUND:

In 1962 the original AMC regulation on IGCE's was released, and received periodic reviews. In 1967, the Hershey Pricing Conference was conducted and Problem Number 2 addressed itself specifically to the IGCE. The Conference recommended that "1. The IGCE should become a part of the analysis process; 2. Provisions be made for feed-back of cost data variations from proposal cost analysis, contract negotiations, and actual performance to the IGCE; and 3. Cost Estimates made for various purposes, and by various organizations, should be reconciled to provide for a complete cost track."

In March of 1969, an AMC Procurement Pricing Conference was conducted in Washington, D. C. The IGCE was subjected to a critical review, and the same recommendations were made.

Thus, from its inception in 1962 through early 1969, it can be seen that the IGCE came under some critical reviews. However, no major effort was made to determine its effectivity as a negotiation tool, which was its intended purpose.

As a result, one of the original tasks set up with PROMAP 70 was IGCE's. Early reviews clearly indicated that substantial improvements were required to make this device a more effective tool in the negotiation process.

IV. ACCOMPLISHMENTS:

Since PROMAP-70 highlighted the Independent Government Cost Estimate as an item of major concern in the acquisition process, many facts have surfaced on its preparation and use. Following are the findings and accomplishments which have been made.

a. Initial Study of Current Regulation:

A joint meeting of Major Subordinate Command and Project Manager Task Directors and Headquarters, AMC personnel was held in early 1970 to review the regulation as issued in April 1968. At the conclusion of this meeting it was determined that the regulation did not define what an IGCE was, was not consistent with other cost estimates formats, did not identify the data required for its preparation nor the data which could be used, and it did not identify areas of responsibility for preparation and use.

As a result of this meeting, a draft regulation was staffed throughout AMC. A revised regulation was issued on 21 July 1970 removing most of the obstacles confronting the personnel responsible for its preparation. Since its issuance, the Major Subordinate Commands have implemented it by issuance of internal policy instructions, pending final staffing and issuance of their own regulations.

b. Reviews:

A review at each Major Subordinate Command was made during the latter part of CY 70. These reviews indicated that little effort was made to assure compliance with the AMC Regulation. The reviews also indicated that implementation of the AMC Regulation issued in April 1968 had taken up to 24 months in some cases. It was also revealed that there was no uniformity in preparation, use, or reconciliation of an IGCE. In summary it was found that the IGCE were being prepared to comply with a requirement rather than developing a useful tool for negotiations.

c. Orientations & Trainings:

In view of the substantial changes in the revised AMC regulation, emphasis was placed in orienting concerned personnel. This action was taken primarily to familiarize operating personnel with the new concepts which had been formulated. In September 1970, the program was officially launched and during the last quarter of CY 70, 966 persons had been briefed.

No formal training course had been established for this task. Although several courses had been established within the past year on Cost Estimating no specific course had been developed for IGCE's. Due to the multiplicity of procurement work directives which flow through procurement offices and the varied types of items to procure, difficulty was experienced in preparing a course of this nature. However, the current courses on Cost Estimating have been

revised to include sessions on discussing the new concepts and procedures without specific training on individual commodities. The latter, specific training on individual subordinate command commodities is being undertaken by the Pricing Function at each subordinate command, since they have the responsibility for the overall estimate and also will use the results in the actual contractor negotiations.

d. New Concepts and Procedures:

The new regulation published on 21 July 1970 resulted in substantial change of concepts and procedures. For comparative purposes it should be noted that the 1968 regulation contained no definition of what an IGCE was, nor was there any mention as to what data could be used or the means or methods to obtain such data. The new regulation makes a marked distinction between production type procurement estimates and those prepared for research and development. It also distinguishes between recurring and non-recurring costs. It maximizes to the greatest extent possible the use of the Work Break-down Structure and it goes into elements of cost categories rather than the broad general terms previously used. It stresses the need for cost realism to assure the improvement in the quality of our Independent Government Cost Estimates. The new regulation also requires reconciliations be made on differences of plus or minus 10 percent of the IGCE to the negotiated price. This latter requirement has been incorporated as a measurement device to establish factual reasoning for variances. A revision to the new regulation was issued in December 1970. In this change, the roles of the Project Manager, Comptroller, Pricing personnel, and Cost and Economic Information personnel are more clearly defined. The definition of support documentation will be incorporated to include Bills of Material, Process Sheets, etc., and will be emphasized. The concept of using IGCE's as budgetary estimates has been eliminated since that form of estimate has been completed prior to the preparation of IGCEs. A Team Concept of various functions was established. Further, the roles of the other disciplines and the communication channels between estimators and other team members were detailed. In addition, estimators are now encouraged to obtain information from commercial contractors on material prices and labor rates. (See following chart)

INDEPENDENT GOVERNMENT COST ESTIMATES

	16 APR 68 EDITION	21 JUL 70 REVISION	31 DEC 70 REVISION
ESTABLISHES THRESHOLDS	X	X	
DEFINES	-	X	
CONSISTENT WITH AMC COST TRACKING SYSTEM	-	X	
USE OF HISTORICAL DATA	-	X	
ESTABLISHES COST REALISM AS A FACTOR	-	X	
DISTINGUISHES ESTIMATES BETWEEN PRODUCTION & R&D	-	X	
BREAKS OUT RECURRING FROM NON-RECURRING COSTS	-	X	
CITES RESPONSIBILITIES FOR SPECIFIC FUNCTIONS	-	LMTD	EXPANDED
INTEGRATES IGCE WITH OTHER COST ESTIMATES	-	LMTD	EXPANDED
USE OF SPECIFIC SKILLS FOR PREPARATION	-	LMTD	EXPANDED
ESTABLISHES BUDGETING COSTS FOR CONTRACT FUNDING	X	X	DELETES

These are all major points of the new change, and are based upon the results of the reviews which have been conducted under the auspices of PROMAP-70.

V. FOLLOW ON ACTIONS: As a result of the meetings and reviews two separate courses of action are being programmed.

a. Contract Pricing Reviews:

To assure that the Provisions of the revised regulation will be complied with, a new approach will be formulated. It will

address itself to all aspects of contract pricing policies and procedures. A regulation is being drafted entitled, "Contract Pricing Reviews". It will primarily apply to reviews to be conducted by the Headquarters, AMC Contract Pricing Staff, but will also apply to annual and/or periodic reviews which must be accomplished by the Pricing Functions within the major subordinate commands, project managers, and separate installations and activities reporting directly to Headquarters, AMC. The results to be achieved by a procedure of this type are twofold. It will first serve as an action to stimulate self enforcement of pricing responsibilities and to take expeditious corrective actions. Secondly, it will be used as a tool to determine the effectiveness of pricing projects which have evolved as a result of PROMAP-70.

b. Staff Visits:

The staff visits to be conducted by the Headquarters, AMC Pricing function will serve as a basis for measuring the effectiveness of the IGCEs as a tool in the negotiation process and to make every effort to assure strict, quality compliance with the new procedures and determine actual usage of IGCEs in the negotiation process. Also, to determine that the IGCEs are approaching the range variance of $\pm 10\%$ and more importantly that the reasons for differences show that clear thinking had been employed.

Additionally a high level of information on what is being accomplished in private industry is required. To do so requires travel, review, visit to contractor's facilities, and to attend various professional seminars or industrial exhibits to the maximum extent practicable.

I. TASK TITLE: Cost Realism in Proposal Evaluations

II. TASK OBJECTIVES: To ensure that cost realism is fully considered and included in all proposal evaluations and procurements and to give greater emphasis to cost realism as an evaluation factor and to make offeror's aware that it will be a major factor in the source selection.

III. BACKGROUND:

In July 1969, the Deputy Secretary for Defense issued his Memorandum on Improvement in Weapon Systems Acquisition. Secretary Packard stated that the largest single cause of cost growth is over-optimism in cost estimates for Major Weapon Systems. He further infers that the use of the term "cost realism" reflects the need for greater cost controls, increased cost estimating capabilities and a more thorough analysis of contractors proposed cost estimates in relation to the scopes of work involved. The reasoning for improving all of our cost estimating capabilities was to deter those points mentioned above by both the Defense contractors and the Government itself.

On 2 October 1969, the Secretary of the Army replied to the above referenced memorandum. Secretary Resor's reply stated in part, "The determination of cost realism must be based on more than a review of the allowable costs proposed by the contractor. It must include the results of an Independent Government Cost Estimate (IGCE) based upon empirical data and on a "should-cost" study which determines the reasonably efficient direct and indirect costs to perform the contract effort." From this statement it becomes readily evident that more than the current practice of evaluating contractor's proposals from a technical and pricing aspect is now necessary.

Secretary Resor's plan of action in the area of source selection is further promulgated by the Commanding General, Headquarters, US Army Materiel Command's letter dated 28 October 1969. This letter officially instituted the PROMAP-70 Program, cited therein was Source Selection Evaluation Factors.

From its inception PROMAP-70 addressed itself to formal source selection. Further, as a basic premise, it used the criteria set forth in AR 715-6, AMC Supplement No. 1 and AMC Pamphlet 715-3.

IV. ACCOMPLISHMENTS:

Cost realism as an evaluation factor applied to large dollar procurements. Major efforts were directed towards issuance of

AMC policy guidance for use of cost realism. An AMC Supplement to AR 715-6 was issued which set forth the following policies:

"Insure that increased weight is given to cost realism in proposal evaluations; Insure offeror's are made aware that cost realism will be a major factor in source selection; Require that records of offerors past performance in cost estimating are used in determining the realism of cost estimates in current proposals; Insure that areas of contractors proposals which lack cost realism are reviewed and clarified through negotiations; Insure that subsequent analyses highlight the results of negotiations to resolve lack of cost realism; and finally, to obtain from other available sources, necessary information on previous experience with offerors with regard to realism of cost estimates."

The thresholds for implementation of our policy guidance as cited in these directives were $100 million for production and $25 million for research and development.

Because of this, the Deputy Commanding General for Materiel Acquisition, initiated actions to expand the program to encompass procurements below the high dollar thresholds.

The major objective of the expanded program was to define the term "Cost Realism" and to generate some means for its subsequent use. As a result of several meetings, several conclusions were reached. First, was the need for the establishment of an AMC regulation so a uniform approach on the use of cost realism could be realized. Also that a study on Contract Pricing Personnel be made since assurance that cost realism, once issued in regulatory form would be their responsibility since the pricing function is the organization which establishes the Government's negotiation objectives and must play a vital part in determining the cost realism contained in a prospective contractor's proposal.

A draft regulation was prepared and disseminated to the Major Subordinate Command task directors on 21 July 1970 for review and comments. Upon return of comments, a special working group was formed in August 1970 for the purpose of issuing a final draft of the regulation and to prepare a proposed plan for the Pricing Profile.

AMC Regulation No. 715-1 issued on 1 October 1970 defined cost realism as : "Cost realism is defined as the employment of pre-planned methods to determine the probable total cost for a procurement at completion; Cost realism involves a comprehensive analysis

to develop and establish the probable over-all cost of performance when related to the required technical scope of work." Further, the regulation cites when it will be used, how it will be used, and gives examples of some of the weight factors which can be used for cost realism. The regulation defines and establishes weight factors for the utilization of cost in multiple factored evaluations. Its principal intent is to apply a "thinking" process for those personnel who will be involved in the establishment of selection factors. The ideals set forth are for sound reasoning based upon the experience of well qualified personnel within their respective areas of expertise, to make realistic measurement factors.

Unlike the previous regulations and directives which have been issued, AMCR 715-1 sets no thresholds. The methods of operation on procurements where other than the lowest competitive price prevails, must remain constant. For examples, even though a procurement does not warrant a formal source selection or a committee for the establishment of a preset plan for evaluation purposes because of the low dollar value involved, one of the bases for determining reasonableness of prices should still consider those factors cited in AMCR 715-1, since an area of major concern is buy-ins, unrealistically low bids of proposals and unrealistic estimates for proposed changes.

In order to establish a baseline, each of the field activities were required to review past awards on a random sampling basis in which multiple evaluation factors were used and a composite average was made to show the cost weight utilized. It was recognized that this approach was not sceintific, but it did highlight the weights given to the other areas versus the weights given to cost inputs in previous source selection. This average was 12.9 percent therefore the regulation requires a minimum of 30% towards cost on production contracts.

Orientation. In the latter months of calendar year 1970, a short briefing was prepared on this task. Copies of the briefing papers were given to the major subordinate command task directors for use in emphasizing the importance of the "cost realism" action to key personnel.

Training. For the present period no formal training program has been contemplated for this task. If it becomes apparent that a course is necessary, action will be taken to implement one.

V. FOLLOW-ON ACTIONS:

To measure the effectiveness of the regulation, a test program was instituted. The test requires that each major procurement activity select 20 procurement work directives or the number available in which to apply AMC Regulation 715-1. Each procurement action identified will be monitored throughout the life of the procurement. Pertinent documents will be accumulated for an after-the-fact review.

To assure that cost realism is being actively applied, a Pricing Personnel Profile Plan has been formulated to guarantee Headquarters, AMC, that the Pricing functions are placed, staffed, and effectively utilized in their more important roles.

I. TASK TITLE: Source Selection Roster

II. TASK OBJECTIVE: To develop within AMC a roster of qualified cost estimators, cost analysts, price analysts and industrial engineers for assignment to cost teams of Source Selection Evaluation Boards and Should Cost Analysis Teams.

III. BACKGROUND:

The staffing of cost teams of Source Selection Evaluation Boards with highly qualified personnel is essential to the proper accomplishment of the purpose of such boards, i.e., to select contractors for Major Weapons Systems costing many millions of dollars. The 1967 DOD-wide Procurement Pricing Conference recommended that each department should insure that highly skilled resources are available within procurement organizations to prepare and accomplish major incentive procurements. The discussion and recommendation on this matter may be found in the proceedings of Panel No. 9 in the official report on the conference. At that time AMC was staffing cost teams of Source Selection Evaluation Boards principally on a "who do you know basis". The head of a cost team after his appointment would rely on personnel from his own organization and personal contacts for suggestions on qualified and available personnel. Normally, for a team involving a large and complicated procurement, this procedure was a difficult and tedious task. Thus it was determined that there should be established with-in AMC a talent bank of highly qualified cost estimating personnel available to heads of cost teams for staffing a well balanced team for the specific procurement involved as well as for use in the staffing of should cost teams.

IV. ACCOMPLISHMENTS:

Based on a letter to all elements of AMC individual qualification summaries for all personnel with cost estimating experience was submitted to AMC Hqs. After review by an Ad Hoc group the initial roster was published and distributed on 3 Dec 1969.

Based on a study of the individual summaries submitted, criteria for roster membership was developed and included in AMCR 715-90 dated 7 April 1970. The regulation provided for the use and maintenance of the roster. A new roster based on the establihsed criteria was distributed on 19 August 1970 with a supplement to this list on 30 Nov 1970. Figure 1 indicates the number of names of personnel with cost estimating experience submitted and selected for the rosters. Figure 2 shows a summary of the types of such personnel included in the roster. The regulation was amended

on 2 Nov 1970 to provide for updating every 12 months instead of every 6 months. It was indicated that there would be such a small number of changes on a six month basis that the effectiveness of the roster would be unaffected by updating it at 12 month intervals.

NOVEMBER 1969 ROSTER

No. Nominees Submitted	620
No. Nominees Selected	321

JULY 1970 ROSTER
(Includes Supplement)

No. Nominees Submitted	685
No. Nominees Selected	408

FIGURE 1 ROSTER NOMINEES SUBMITTED AND SELECTED

	GS GRADE							
TYPE OF PERSONNEL	16	15	14	13	12	11	9	TOTAL
Industrial Engineers	-	1	15	33	46	4	-	99
Other Engineers	1	1	18	38	20	2	2	82
Price Analysts	-	1	6	17	83	1	-	108
Program Analysts	-	3	3	13	6	1	-	26
Accts and Auditors	-	-	2	7	8	4	-	21
Engr Cost Analysts	-	2	-	1	3	-	-	6
Program & System Specialists	-	-	1	3	1	-	-	5
Operation Research Analysts	-	1	3	10	2	-	-	16
Stat/Math/Economists	-	-	-	6	6	1	-	13
Procurement Analysts	-	-	5	8	3	-	-	16
Industrial Specialists	-	-	-	4	10	2	-	16
TOTAL	1	9	53	140	188	15	2	408

FIGURE 2 TYPES AND GRADES OF ROSTER PERSONNEL

As indicated above prior to the establishment of the roster, Source Selection Evaluation Board Cost Teams were selected on a "who do you know" basis and primarily from the installation involved in the procurement. With the roster, teams are being selected from a large list of qualified personnel. Personnel from both the smaller and larger AMC installations are considered since the roster reflects an AMC-wide source of highly qualified cost estimating type personnel. Also, selection is made on a much broader basis and membership is suited to the particular procurement involved. For example, membership on the 27 man Bushmaster cost team has representatives from 17

different installations. Figure 3 shows a before and after comparison.

	OLD SYSTEM	NEW SYSTEM
TEAM LEADER REQUESTS INSTALLATIONS AND ACTIVITIES FOR SUGGESTIONS OF PERSONNEL	X	
PRINCIPAL SOURCE FROM INSTALLATIONS CONCERNED WITH PROCUREMENT	X	
LIST OF HIGHLY QUALIFIED COST ESTIMATING PERSONNEL		X
QUALIFICATION SUMMARIES AVAILABLE		X
PERSONNEL OF SMALLER INSTALLATIONS CONSIDERED		X
SOURCE AVAILABLE AMC-WIDE		X

FIGURE 3 COMPARISON OF BEFORE AND AFTER ROSTER

The roster has been used in selecting membership on 2 Source Selection Evaluation Board Cost Teams and 2 Should Cost Teams. Figure 4 indicates the number of personnel selected from the roster. The cost team for the Armored Reconnaissance Scout Vehicle Source Selection Evaluation Board is currently being selected. Three of the four members so far selected have been from the roster. Future use of the roster has even greater potential as is indicated by the number of anticipated Source Selection Evaluation Boards listed in Figure 5. There probably will be other Source Selection Evaluation Boards and Should Cost Teams. The Source Selection Cost Estimating Roster will continue to be a great aid in selecting cost teams and will be maintained at a minimum of expense and effort.

	NO ON COST TEAM	SELECTED FROM ROSTER	PERCENTAGE
BUSHMASTER	27	25	95%
CEFLY LANCER	7	6	86%
BELL "SHOULD COST"	10	6*	60%
HOLSTON "SHOULD COST"	12	9	75%

* LIST USED TO VERIFY QUALIFICATIONS OF PRIOR SELECTIONS

FIGURE 4 USE OF ROSTER

ARSV ARMORED RECONNAISSANCE SCOUT VEHICLE

HLH ADVANCED TECHNOLOGY COMPONENT PROGRAM FOR HEAVY LIFT HELICOPTER

MICV MECHANIZED INFANTRY COMBAT VEHICLE

UTTAS UTILITY TACTICAL TRANSPORT AIRCRAFT SYSTEM

AN/PRC-70 ULTRA RELIABLE TACTICAL RADIO

TNBSVS TACTICAL NARROW-BAND SECURE VOICE SYSTEM

FIGURE 5 PROPOSED USE OF ROSTER

VI. FOLLOW-ON-ACTIONS:

Regulations covering the permanent use and maintenance of the Source Selection Cost Estimating Roster are contained in AMCR 715-90. The use of the roster will be followed to validate its effectiveness.

I. TASK TITLE: Contractor Performance Evaluation.

II. TASK OBJECTIVE: To upgrade the Army Contractor Performance Evaluation (CPE) reports and make more effective use of them.

III. BACKGROUND DISCUSSION: Inclosure 2 to Secretary of the Army Memorandum dated 2 October 1969 to the Deputy Secretary of Defense entitled: "Improvement in Weapon Systems Acquisition," on Page 9 stated: "The Army must also increase its consideration of contractor's past performance as to the validity of his cost estimates and the effectiveness of his cost control. Unfortunately, the data provided by the Contractor Performance Evaluation program to date have not been adequate. The Army will, however, seek ways of upgrading the quality of these reports and making more effective use of them."

A Logistic Management Institute Report, October 1968, entitled: "Contractor Performance Evaluation in Source Selection," concluded on Page 28: "The CPE program is not working effectively in the light of the burden it carries as a consequence of the very limited amount of data in the bank." The new programs which will extend data collection to substantially all contracts of $100,000 or more and the passage of additional time will overcome the present data problem.

The new programs mentioned above were implemented by Defense Procurement Circular #64, dated 28 October 1968, and incorporated into the ASPR by Revision 3, dated 30 June 1969, at 1.908.2(b) and 1.908.3(a) -(g).

IV. ACCOMPLISHMENTS:

a. Improve cost reporting on CPE reports.

An interim reporting procedure for cost growth reporting was disseminated to the major subordinate commands by the Deputy Commanding General for Materiel Acquisition letter of 14 November 1969, subject: "Revised Procedures to Improve CPE reporting in Areas of Cost Growth." These instructions provided for:

(1) A paragraph relating to cost growth since award of the definitive contract, or in the case of periodic reports, cost growth applicable to the period being reported on.

(2) A paragraph on cost overrun, the funding for which has been incorporated into the contract, and which may be identified from contract

modifications or a contracting officer's memorandum on pricing.

The Army CPEG furnished on 19 February 1970 on request of ASD(I&L) and ASA(I&L), 60 cost growth analysis reports based on tentative cost growth category definitions; and again on 18 September 1970, an additional 22 cost growth analysis reports were forwarded to cover the six months ending 30 June 1970.

As a result of these data, the Army Procurement Research Office, U.S. Army Logistic Management Center, Fort Lee, Virginia, released Interim Report #1, captioned: "Production Cost Growth, PRO-Project 70-7." It is anticipated that these data may be used for procurement management purposes as opposed to use in the source selection process.

On 25 September 1970 the Army CPEG forwarded revised cost growth category definitions to the major subordinate commands with discussions as to the reasons for changes between the 22 June 1970 definitions and the current ones. CPE cost growth reporting, as provided for in the 14 November 1969 letter, was also affirmed.

Before implementation of revised cost growth procedures, there was only sporadic reporting of the causes of cost overruns and the analysis of cost growth; guidance as to documentation of these data was lacking.

After implementation of the revised cost growth procedures, the Army CPEG has received approximately 106 periodic reports and 46 terminal evaluation reports containing cost overrun and cost growth analysis.

b. Assure compliance with ASPR for timely submission of lower dollar value CPE reports.

AR 715-16, (para 13 f, Page 6) and the ASPR 1.902(a) require that the Army CPEG will insure that the reports (DD Form 1683) are timely and clear. The Group could find no published report to indicate when R&D type contracts were substantially completed; therefore, the Group set an objective of designing and implementing such a report. This was accomplished by utilizing data from the DD Form 350 and programming these data by the AMC Data Center to get a quarterly print-out of the small dollar value R&D type contracts with an indicated date for completion of the latest contract action.

Initial letters requesting compliance with the AR and ASPR were followed by requests on 16 February and 5 August 1970. The latter two letters were accompanied by print-outs identifying the specific contract, the applicable major subordinate command and the contractor.

c. Make CPE reports more useful.

HQ Army Materiel Command, in its continuing efforts to increase the

usefulness of contractor performance reports, on 14 November 1969 requested the major subordinate commands and various project management offices to provide specific comments and definite recommendations for improved reporting of contractor performance in the cost, schedule, and technical areas. An analysis of the replies would indicate:

(1) That the benefits from the use of CPE data are not commensurate with the efforts required to compile the reports.

(2) That the present system is cumbersome and time consuming and is in need of substantial changes if it is to influence the contracting officer's decision in the award of contracts.

A Task Force Report on the Contractor Performance Evaluation program representing a three month effort by members from DSA, ODDR&E, Navy, DCAS, Army and Air Force, was made to the OSD Director for Procurement Management on 8 July 1970. The recommendations of the Task Force were:

(1) That DOD Directive 5126.38 and Section 1-908 of ASPR be rescinded, and the CPE program (including CPR) as presently constituted, be discontinued.

(2) That the military departments and defense agencies maintain contractor past performance information which they consider necessary, and use it in a manner appropriate to the needs of each department or agency.

Minority report by the Army and Navy members recommended:

(1) That the present reporting systems be retained until input to the profiling system can be identified.

(2) That local needs not served by a DOD-wide system should be met.

(3) That a system of profiling the performance of major contractors be established. These profiles to be used in clearly defined ways in source selection and profit negotiations and for bringing contractor performance to the attention of top management.

(4) That the CPE Working Group obtain concept approval from the Steering Committee to develop the necessary systems and methodology for implementation of recommendation number 3 above.

Per records of the Defense Documentation Center, Army use of CPE reports has continued to decline from a peak of 159 requests for reports in FY 68 from the central data bank to 94 in FY 70 and a projected 68 in FY 71, based on the 1st Quarter records. Availability of CPE reports in response to requests shows 51 available against 159 requests in FY 68, 31 available against 94 requests in FY 70 and 24 available (projected)

against a projected 68 requests in FY 71. This shows a highly unfavorable picture of availability and use of CPE reports in their present form.

d. Increase the use of CPE data by field personnel.

The Army CPEG established a PROMAP objective to gather CPE data from all available sources and, upon invitation, to present summarizations to Source Selection Advisory Councils.

The Army CPEG has developed profiles for the Bell Aerospace Corporation, Bell Helicopter Company, and the Lockheed California Company, which are based primarily upon data in the 1446 system.

Army CPEG is presently developing profile data as input to an ongoing evaluation, whose objective is "to make a cost and effectiveness comparison of the M715E1 and XM702 1¼ Ton Trucks" for the Director of Plans and Analysis, HQ, AMC, which in turn, will provide the foundation for 1 March 1971 AMC/DA decision. Profiles are being developed for past performance on the following contractors:

General Motors Corporation, Chevrolet Motor Division

Jeep Corporation Division, American Motors (or Kaiser Jeep Corp.)

Since the development of profiles is a relatively new endeavor, there was no training or orientation of others required.

Before and after comparisons of the activities of the Army CPEG in this area are premature; i.e., until procedures have been definitized and experience has shown the various types of past performance data required by the SSACs.

V. FOLLOW-ON ACTIONS:

Utilization and availability figures from the central CPE data bank indicate that the CPE program in its present form should be discontinued in favor of a simple vendor rating system which will contribute performance data for contractor profiles.

OSD decision to cancel or modify the DOD Directive on CPE is still under consideration. Pending a decision, Army CPEG will continue to prepare for implementation of a system of contractor performance recording desired by DA.

I. TASK TITLE: Should Cost Analysis

II. TASK OBJECTIVE: To develop a capability for in-depth procurement cost analysis reviews to appraise the reasonableness of direct and indirect costs in contractor proposals.

III. BACKGROUND DISCUSSION:

a. A technique known as "should cost" analysis originated within DOD when the US Navy, in 1967, performed an in-depth analysis of a contractor's costs in the manufacture of aircraft engines under a letter contract. This study followed a review performed by a DOD consultant on the same contractor which revealed some operating and management inefficiencies. The results of the Navy review were significant in achieving a price reduction and long term management improvements in the sole source contractor operations.

b. The traditional approach in the acquisition of weapons systems had been to analyze contractors' proposals on the basis of their historical cost experience. Such costs were generally screened for allowability, accepted, and for projection purposes, adjusted for such factors as inflation, new technology, differing quantities of end items or requirements (specifications) and so forth. This approach had certain disadvantages in that there had been no eliminations of unreasonable costs caused by inefficiencies, mismanagement, or lack of competition. Thus, in accepting historical cost experience, the contractor's method of operation will be perpetuated to include the uneconomical, inefficient practices which may exist.

c. Many of the large weapons systems were being performed by sole source contractors wherein the restraints of the common market place did not exist. In recognition of this fact and with the advent of PROMAP 70, the Army embarked on a planned series of "Should Cost" studies. The first was conducted in connection with the procurement of the improved HAWK missile and related ground support equipment. The second study was performed in connection with the procurement of UH-IH helicopters. Two more studies are in progress concerning ammunition and electronics procurement.

d. The "Should Cost" technique encompasses a detailed, intensive review of a contractor's management and production practices to identify and determine the costs resulting from mismanagement and uneconomic, inefficient practices. The elimination of such projected costs permits the Government to develop a negotiation cost objective based on reasonably attainable economies and efficiencies which objective is supported by firm determinations difficult to challenge. The "Should Cost" review integrates the separate analyses formerly made by audit, engineering and pricing personnel into a coordinated team performing at the contractor's plant with the one end result of a negotiation cost objective. It is not intended that this approach will take the place of contractor management, but rather, as a means of ascertaining the most reasonable prices when normal competitive restraints are absent. This approach is consistent with the provisions of ASPR (Section 3-807.3) and the guidance contained in the ASPR Manual for Contract Pricing (ASPM No. 1, pages 1 thru 4).

IV. ACCOMPLISHMENTS:

a. The results of the two studies completed are detailed below and show that substantially lower prices were recommended and negotiated through use of the should cost technique.

NEGOTIATION RESULTS
in
PRIOR YEARS

SYSTEM	FISCAL YEAR		PRESENT REDUCTION
(HAWK & Related Ground Support Equipment)	1967		9.0
	1968		8.0
	1969		9.0
		Average	8.7
(UH-IH)	1967		8.0
	1968		5.4
	1969		5.8
		Average	6.4

RESULTS OF SHOULD COST ANALYSES (In Millions)

SYSTEM	YEAR	CONTRACTOR PROPOSED COST	NEGOTIATED AGREEMENT COST	PERCENT REDUCTION
(Improved HAWK & Related Ground Support Equipment)	1970	$96.3	$78.9	18.0
(UH-IH)	1970	$40.1	$35.7	10.9

The back up support to the negotiation objectives gave the negotiators more effective tools than ever received under previous procedures. In addition, and just as significant, the negotiators in both of the completed cases were able to effect agreements with the contractors concerned regarding management improvements in systems and procedures which have long range effects in attaining increased improvements and efficiencies with the ultimate effect of reducing costs to the Army.

b. Detailed reports on these cases, including the lessons learned therefrom, were completed and distributed throughout the AMC complex. Team members were selected from all of the major subordinate commands. Audit participation on the team was from full-time Defense Contract Audit Agency auditors selected from the residency staffs at the contractors' plants. Technical consultants, retained under contract, participated in the test cases as working team members, wrote the lessons learned portion of the reports and prepared a draft of a manual of "Should Cost" Analysis. A cleansed version of the original test case was furnished ALMC for training purposes. The final approved Should Cost Analysis Guide (AMC Pamphlet 715-7), distributed throughout AMC and major subordinate commands in November 1970, provides detailed guidance to personnel leading or serving on "Should Cost" teams. Included in the manual are methods for examing management policies and practices.

c. Based on the reports and other information developed from the test studies, ALMC has developed a formal one week work-shop course on "Should Cost"techniques. The first course will begin in February 1971 and all AMC subordinate commands have been given quotas for sending

personnel. The course will train 30 to 40 personnel at each session and is scheduled to be given four times during CY 1971.

d. In recognition of the fact that the selection of the team personnel requires the most capable personnel attainable, an AMC Source Selection and Cost Estimating Roster has been compiled. This was obtained by receiving recommendations from the AMC major subordinate commands. The referrals were then reviewed and screened at AMC Headquarters. The roster contains a listing of personnel proficient in the following disciplines:

Required Disciplines: (i) Engineering (Industrial, Production), (ii) Accounting, Auditing, (iii) Cost/Price Analysis, and (iv) Purchasing.

Specialized Disciplines - To use as needed: (i) Engineering Specialities (Aeronautical, Chemical, Electronic, Mechanical, etc), (ii) Mathematics, (iii) Statistics, (iv) Quality Assurance, (v) Management Science, and (vi) Automatic Data Processing.

e. In view of the proven success of this technique, measures have been taken to amplify its use as an operating tool. AMC Regulation 715-92 was issued in December 1970 and provides the AMC subordinate commands with the criteria for applying the "Should Cost" technique. Briefly, these conditions are: (i) Sole Source procurement, (ii) Long and Short Team benefits, (iii) History of Rising Prices, (iv) Potential Savings Outweigh Study Costs, and (v) Other Factors Indicating Desirability. Necessary approvals and procedures differ in regard to the magnitude of potential procurements. In the cases of procurement values over $25 million, AMC maintains approval authority for the selection of the contractor, Team Leader and team members. The CG of the major subordinate commands having procurement responsibility, exercises operational control of the team activities. In the cases under $25 million, selection of contractor, team leader and members are the responsibility of the CG of the major subordinate command having procurement responsibility. Further, teams in this category are limited to seven individuals (excluding DCAA and DCAS) formed by personnel within the MSC. AMC provides policy guidance, ALMC provides training assistance and the Army Procurement Research Office provides consultant service and reference materials as required and requested.

Candidate major systems or contractors (over $25 million) for "Should Cost" Analysis will normally be made by the CG of the MSC. The regulation stresses the need for early identification of candidates due to the time required for planning, team selection and field analysis. Headquarters, AMC may also nominate systems or contractors for analysis. The Advance Procurement Plans and PEMA Principal Procurement Plan provide the means for indicating such plans.

V. FOLLOW-ON ACTION: Headquarters, AMC will maintain continuing surveillance over the adequacy of recommendations of candidate system/contractors for "Should Cost" Analyses by means of review of Advance Procurement Plans and PEMA Principal Procurement Plans. Further control over the propriety of "Should Cost" Analyses will be achieved by the exercise of AMCs required approval authority for selection of the team leader and members in regard to the cases of procurement value over $25 million. In addition, field commanders have set command objectives for CY 1971 to ensure that emphasis is placed on making the maximum use of the "Should Cost" technique in selecting potential system/contractors and in the performance of the actual analysis when selected.

I. TASK TITLE.

Verification of Contractor's Capability to Perform/AMC Participation in Pre-award Surveys.

II. TASK OBJECTIVE.

To accomplish a comprehensive analysis and verification of contractor's capability to perform in accordance with contract requirements. Also, increase AMC participation with DCAS in performing Pre-award Surveys.

III. BACKGROUND-DISCUSSION.

The Assistant Secretary of Defense (I&L) transmitted a paper to CG, AMC on "Contractual Rights" with respect to defective materiel entering the logistic system. The paper noted that one of the preventive measures to preclude defective materiel entering in the supply system is to select a responsible supplier, one from whom quality materiel can be reasonably expected. One of the procurement "tools" to be employed in assisting the Procuring Contracting Officer in the source selection process, is the pre-award survey.

The DCGAMC noted that the problem rises out of the marginal producer (one with little or no production engineering capability) who bids a price below that bid by the qualified producers (those with adequate production engineering capability). As requested by the DCG, cases were developed wherein it was established that awards were being made to producers with little or no production engineering capability. The cases analyzed revealed that the prospective contractor's capability was not detected during the pre-award survey process but problems were detected after award. A policy statement was prepared and issued to the field emphasizing increase participation with DCAS surveys and effective analysis of prospective contractors production engineering capability to preclude the receipt of defective materiel entering the supply system.

Thereafter DCGMA determined to include a task under PROMAP 70 titled "Verification of Contractors - Capability to Perform and AMC Participation in Pre-award Surveys.

IV. ACCOMPLISHMENTS.

a. AMC will adopt the Contractor's Evaluation Board Concept currently in operation at ECOM and MECOM. This concept accomplishes the following factors:

(1) Establishes a central point within a purchasing activity for the evaluation of contractors capability.

(2) Establishes a central capability file on each contractor. This file will include contractor's current and past performance on the quality and timeliness of delivery of materiel in accordance with contract requirements.

(3) Determines whether an in-house survey, based on data in the central file, or an on-site pre-award survey is required. The time element of performing an in-house survey to determine a contractors capability to perform is reduced from 14 calendar days (via DCAS) to 2 calendars.

(4) Contractors capability to perform is reviewed and evaluated by functional specialist (Engineering, Quality Assurance, Industrial, Financial, Specialists).

(5) PCO is provided statements of fact to assist in arriving at a determination of responsibility or non-responsibility.

(6) Establishes a central point of contact with DCAS in relation to pre-award surveys. This also creates a better communication and relationship with DCAS in the pre-award survey area.

b. The task also accomplished the following:

(1) Increased AMC participation in pre-award surveys.

(2) Increased the analysis of pre-award surveys on a team concept basis.

(3) Improved the documentation of PCO's determination of responsibility or non-responsibility.

(4) Initiated recommended changes to technical data packages.

(5) Criteria of measurement of progress is included in AMCPI 1-905.80. The statistical data accumulated at MSC may be requested at any time to measure progress.

V. FOLLOW-ON ACTION.

a. Command objectives shall be established in two specific areas, namely, number pre-award survey AMC participated with DCAS and number pre-award surveys analyzed.

b. MSC will be required to submit data as required by AMCPI 1-905.80 to measure performance based on measurement of criteria established under the Task.

I. TASK TITLE: Revision of Profit Negotiation Techniques to Give Greater Consideration to Return on Investment

II. TASK OBJECTIVE: To develop techniques for negotiating profit more as a function of return on investment than as a percentage of cost

III. BACKGROUND:

Secretary of the Army Stanley Resor in replying to Deputy Secretary of Defense David Packard's memorandum of 31 July 1969, subject, "Improvement in Weapon System Acquisition" stated, "the traditional practice of considering profit as a percentage of cost appears, in some cases, to motivate contractors to raise costs (including allocation of overhead) in order to receive a higher profit on future contracts." He also committed the Army Materiel Command, in conjunction with the OASA (I&L) to work to develop specific techniques for negotiating profit more as a function of return on investment than as a percentage of cost. This task was undertaken in AMC's "Program for the Refinement of the Material Acquisition Process (PROMAP-70)".

Over the years, the DOD has given considerable attention to modifying the basis for establishing profit objectives in negotiated contracts. In December 1968, an ASPR subcommittee was established and chartered to develop procedures and establish a plan for a small scale service test. This subcommittee was subsequently disbanded and no formal recommendations were made. Again recently, several major problems with the current Department of Defense profit policies have been highlighted. First, profit performance (as a percent of company capital-employed) on prime defense awards where competition is not based primarily on price is substantially lower for some companies that that of comparable durable goods firms. Secondly, because the current policy does not give visibility to company capital-employed, profit opportunities (as a percent of capital-employed) for similar work are not equal for competing companies. Companies which have a high turnover of their own capital have the opportunity to earn more profit per dollar of company capital-employed that companies with lower capital turnover. Thirdly, by considering only cost inputs when determining profit objectives, the policy does not offer profit incentives for companies to make cost-reducing investments.

IV. ACCOMPLISHMENTS:

On 16 January 1970, a letter giving the George Washington University's methodology for allocating contractor capital was sent to all Major Subordinate Commands and directing them to select a

planned major procurement on which they would develop, on a test basis, a prenegotiation profit objective based on a return on investment analysis (ROI). They were to do this simultaneously with the development of a prenegotiation profit objective in accordance with the Weighted Guidelines Method and they were not to utilize the test results in any way with the actual negotiation. A meeting of all task directors was conducted at AVSCOM in St. Louis in March and July for the purpose of clarifying problem areas. A suspense date of 1 October 1970 was established for final submission of all reports.

The test results indicated that the overall effect on the prenegotiation profit objectives reported by the six Major Subordinate Commands was a decrease of $5,440,395 or 37% of the total profit developed under the Weighted Guidelines procedures. In two instances the profit objectives were increased and in four cases the reverse was true.

An analysis of the two extreme cases, that is the one whose profit was increased the most, WECOM, and the largest decrease, MUCOM, seems clearly to vindicate the philosophy underlying the concept, that of rewarding contractors who have particularly large fixed asset investments. In MUCOM's test case, the contractor, National Presto, is practically analogous to a GOCO Plant. The contractors fixed asset investment is primarily buildings and improvements for the military operations and amounts to approximately $240,000. In addition they are furnished $17 million worth of government production equipment for which rent free use has been authorized. When this $240,000.00 was allocated down to the individual contract under test it represented a minute .04% of the estimated costs. The total capital turnover rate was 8.5 to 1, the highest rate in the test. Consequently, the profit objective developed under the Weighted Guidelines was reduced 80%.

Conversely in MUCOM's test use, the contractor, MOTOROLA, had an insignificant amount of government furnished equipment and 32.8 million of his own facilities and equipment. When this huge investment was allocated to the individual contract being tested it represented 35% of the estimated contract costs. The total turnover rate was 1.9 to 1, the lowest turnover rate in the test. In this case, the profit objective was increased by 182%.

In between these two extremes, WECOM's test contractor, MAREMONT, had approximately 60% government furnished equipment and facilities and the test resulted in a reduction of 39%.

The major portion of the ROI profit objective dollars was attributable to the performance and risk factors. These two factors are judgemental decisions made by the negotiating team where as the Average Contract Investment (ACI) and the Average Fixed Asset Investment (AFAI) are objectively determined. Taking all tests together these two factors constituted 72.9% of the total profit dollars.

Five of the six contractors were very cooperative in supplying the necessary budgetary data required to conduct the test even though there existed no contractual or ASPR requirement to do so. (One Command did not contact the contractor and utilized an alternate approach in conducting the test). This cooperation is significant in that it indicates a willingness on the part of industry (at least to the extent of those included in this test) to cooperate in exploring the possibilities of this highly controversial, although desirable subject.

V. FOLLOW-ON ACTIONS:

This test concludes actions to be taken by USAMC. A full time ASPR subcommittee has been established to test DOD-wide an alternative methodology on this return on investment technique. The details of the USAMC test will be forwarded to this subcommittee.

I. TASK TITLE. Dollar Limitation of AMC Small Purchasing Offices (Depots, Labs, Proving Grounds and other AMC Small Purchasing Activities).

II. TASK OBJECTIVE. To study and make recommendations regarding the placement of dollar limitation on purchase actions that may be accomplished by AMC Small Purchasing Offices.

III. BACKGROUND DISCUSSION. Procurement statistics reveal that during FY 69 AMC had 63 active purchasing offices. Of this total approximately one-half were at installations or activities without a central procurement mission per se, and were not under the jurisdiction of a major subordinate command with a procurement office operating within the Headquarters organization.

During FY 69, these activities processed 416,577 procurement actions amounting to $245 million. Generally their procurement workload is limited to local or regional procurement actions; consequently not all of these purchasing offices can afford to be staffed to provide the expertise or disciplines required for high dollar value, more complex procurements. The Assistant Deputy for Materiel Acquisition by Memorandum dated 18 June 1970, requested that a study be conducted to determine the feasiblity of placing a dollar limitation on selected AMC Procurement Offices and placing procurements above the level in the San Francisco and New York Procurement Agencies.

IV. ACCOMPLISHMENTS. a. Each Procurement Office involved including the two procurement agencies was requested to evaluate the impact of the proposal.

b. The study was designed to evaluate the impact on the Procurement Offices, including personnel savings, based on limitations of $2,500; $10,000; and $50,000.

c. For the purpose of the study it was assumed that the:

1. proposed reorganization of AMC Depots under the current proposal to establish three centralized Complex Headquarters will be implemented;

2. FY 71 procurement workload at the selected purchasing offices will remain relatively constant; and

3. procurement workload of the AMC Procurement Agencies will reduce during FY 71.

d. Study Approach. Over 2,000 individual procurement action reports for FY 70 were reviewed and analyzed at the DCSLOG Procurement Statistics Office. A total of 2,375 actions were over $10,000 at $169.2 million. It is actions in this area that appeared susceptible for

for reassignment. Those actions considered feasible for reassignment were identified by applying three criteria:

1. A selected dollar limitation, that is, $10,000 and over.

2. The type and complexity of the actions.

3. The location for accomplishing those actions.

Using these criteria, all types of actions except construction, equipment, and supply/service type actions were excluded. Requirements for basic ordering agreements, repair or rebuild service contracts, time and materiel contracts, and indefinte delivery type contracts should also be reassigned to the Procurement Agencies. The Agencies would definitize the basic contractual instruments and if appropriate, assign all or a portion of the administrative functions to the requiring activities.

Concerning construction, it was decided that projects under $25,000 are normally routine repairs to buildings and grounds and consequently do not involve detailed drawings, specifications or scope of work. It was concluded that construction contracts over $25,000 could be reassigned.

The CG TECOM and Lab Commanders made strong objection to separating the scientist/engineer/procurement team for R&D procurements. Since the reassignment of R&D appears to present problems, it was determined that a test should be conducted at selected R&D activities.

e. Personnel Impact. In evaluating the personnel impact on the Depots, the Depot Complex Study was reviewed. Application of more precise data for FY 70 resulted in a refinement of the Depot Complex staffing and a further reduction of 24 spaces.

Reassignment of the actions over $10,000 (excluding exceptions) from the Labs and TECOM activities should result in a savings of at least five procurement spaces at the Labs and a minimum of eleven procurement spaces at the TECOM activities.

Reassignment of 1,048 procurement actions to the Agencies should result in a total reduction of 66 spaces. Transfer of 323 R&D contracts would save an additional eight spaces for a total reduction of 74 spaces.

f. Concept of Operations. The concept of operations under this proposal would require all procurement over $10,000 (excluding exceptions) in support of the Depots, Labs, and TECOM activities to be accomplished through quick reaction procurement branches. Liaison representatives would be designated for each customer. DCAS services would be used as much as possible. Activity requirements would be reviewed for possible consolidation, thereby allowing for quantity discounts and resulting in less administrative expenses.

g. Conclusions. As a result of the study conducted, it was concluded that placing a dollar limitation of $10,000 for supply/service type contracts and $25,000 for construction type contracts on all identified Depots, Labs, and TECOM activities, with exceptions to this limitation as proposed, and reassignment of this procurement workload is both feasible and practicable, and will result in substantial savings in personnel spaces.

h. Study Presentations. a. The Assistant Deputy for Materiel Acquisition was briefed on the results of the study on 1 October 1970.

b. An additional briefing was conducted for the Deputy Commanding General, Logistics Support, Director R&D, Deputy for Labs, and Special Assistant for Depots on 13 October 1970. The Deputy CG Log Support concurred with the proposed course of action, but suggested that the Director R&P have an alternate plan in the event the Procurement Agencies must subsequently close.

V. FOLLOW-ON ACTIONS. The remaining steps that must be taken before this PROMAP 70 Task can be completed are:

a. A decision briefing to include a plan for future utilization of the two Procurement Agencies must be presented to the Commanding General and/or Deputy Commanding General to obtain approval of the proposed plan.

b. Upon approval of the plan prepare and issue an AMCRP Procurement Policy Directive implementing the approved plan.

c. Review and recommend changes as appropriate to current delegations of authority to approve and execute contract awards.

d. Evaluate results of implementing the plan to determine actual PROMAP payoff.

I. TASK TITLE.

Review of Special Provisions for Contracts.

II. TASK OBJECTIVE.

To assure that special contract clauses and provisions are carefully reviewed by Senior Procurement and Legal Personnel prior to use in contracts.

III. BACKGROUND DISCUSSION.

Review of the M60A1E2 Tank program by an AD HOC Board at HQ AMC noted that contracts for the Tank program contained locally drafted special clauses and provisions that were in the nature of disclaimers. These clauses made concessions, with regard to the responsibility of the contractor to perform under the contract, not considered to be in the best interests of the Government. As a result of the Board's Findings the Deputy Commanding General AMC directed that appropriate action be taken to assure in the future that special contract clauses and provisions be reviewed by Senior Procurement and Legal Personnel prior to inclusion in a contract.

IV. ACCOMPLISHMENTS.

Under procedures in effect prior to 1 July 1970 no special emphasis had been given with regard to review of locally drafted special provisions. By AMCRP-SP letter, dated 6 July 1970, Major Subordinate Commands were required to provide for review of special clauses and provisions by the Director of Procurement and Production and Chief Counsel. Procurements selected were those which require Board of Award reviews at Major Subordinate Command level (in excess of $100,000). The letter also required that contracts selected for Board of Awards or Senior Procurement Review Board reviews be accompanied by proper justification for use of any special clauses or provisions included therein. Appropriate amendment to the AMCPI was processed to require that Board of Awards and Senior Procurement Review Board be provided with copies of proposed special provisions and with a justification for use of such provision. Scheduling of major contracts for Senior Procurement Review Boards has been undertaken at Major Subordinate Commands and HQ AMC level. Monthly reports are made of reviews conducted by Senior Procurement Review Boards and by Director of Procurement and Production and Chief Counsels.

All of these reviews include examination of special clauses and provisions to assure they conform to prescribed standards. Figure 1 reflects the number of Senior Procurement reviews conducted at MSC and HQ AMC.

Figure 2 reflects other reviews by Director of Procurement and Chief Counsel of special provision for contracts in excess of $100,000.

Figure 3 reflects forecast of reviews by SPRB.

V. FOLLOW-ON ACTIONS.

Continued emphasis on review of special provisions will be nominated as a Command objective for CY 71 and monitoring of reviews will be accomplished by staff visits. Continued reporting to HQ AMC of reviews conducted by the Commands will also be required.

FIGURE 1

Reviews Conducted by Senior Procurement Review Boards:

	August '70	September '70	October '70
AVSCOM	4	0	3
ECOM	3	0	1
MECOM	0	0	7
MICOM	0	3	2
MUCOM	0	1	0
TACOM	5	2	1
WECOM	0	8	0
HQ AMC	2	2	2

FIGURE 2

Reviews of Special Conditions conducted by Directors of Procurement and Production and General Counsels at Major Subordinate Commands:

	August '70	September '70	October '70
AVSCOM	1	1	0
ECOM	0	1	0
MECOM	5	2	0
MICOM	0	0	0
MUCOM	0	0	0
TACOM	0	2	17
WECOM	0	0	0

FIGURE 3

FORECAST OF SENIOR PROCUREMENT REVIEW BOARDS

REMAINDER OF FY 1971

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
AVSCOM	3	7	2	2	1	2	0	2
ECOM	3	4	3	3	3	0	1	2
MECOM	4	4	4	2	2	0	1	0
MICOM	6	7	5	1	1	0	0	0
MUCOM	7	4	2	0	1	0	0	0
TACOM	3	2	1	1	1	1	1	1
WECOM	0	2	3	3	3	2	2	2
HQ AMC	0	3	4	6	0	1	1	1

I. TASK TITLE.

Competitive - Formal Advertising Procurement

II. TASK OBJECTIVE.

Increase the use of competitive procurement and the use of formal advertised method of procurement.

III. BACKGROUND.

Testimony before Congressional Committees on Department of Defense spending revealed a high percentage of dollars being awarded on a sole source basis. Therefore, it was deemed necessary to develop a management technique in the form of a Command objective to increase the placement of procurement dollars on a competitive basis and also increase the use of the formal advertised method of procurement.

IV. ACCOMPLISHMENTS.

The accomplishments noted below were achieved as follows:

a. Establishment of an AMC goal (% of procurement dollars) for each fiscal year to achieve in the placement of procurement on a competitive basis or by the use of the formal advertised method of procurement.

b. There was an increase in the availability of technical data packages to achieve competitive procurement in the negotiated or formal advertised methods of procurement.

c. Accomplishments for FY 68, 69, 70, and 1st Quarter FY 71 are as follows:

(1) Competitive Procurement (%Procurement Dollars)

Fiscal Year	Goal	Achievement
68	29.0%	27.6%
69	30.0%	25.1%
70	28.0%	38.5%
71	40.0%	40.2% (1st Qtr)

(2) Formal Advertised Procurement (% Procurement Dollars)

Fiscal Year	Goal	Achievement
68	11.0%	9.2%
69	11.0%	8.9%
70	11.0%	16.9%
71	19.0%	25.6% (1st Qtr)

V. FOLLOW-ON ACTIONS.

Command objectives will continue to measure performance under this task.

I. TASK TITLE: Automated Army Materiel Plan (Part A)

II. TASK OBJECTIVE: Update and improve System for Automation of Materiel Plans for Army Materiel (SAMPAM) programs to provide for latest changes to DA PEMA Policy and Guidance and elimination of detected programming errors and to provide for automation of the maintenance portion of the Army Materiel Plan.

III. BACKGROUND DISCUSSION: The Army Materiel Plan, Part I, in an automated mode was first prepared in the Spring of FY 68 utilizing the contractor developed, AMC modified, computer programs and logic. Since that time there have been a series of four changes required to update the original SAMPAM programs based on policy changes as directed by DA. Three of these changes were under development when this function was assigned as a PROMAP 70 Task. The rewrite of the SAMPAM programs began in October 1969 and was completed in February 1970. The preparation of the FY 71 Apportionment AMP, at each NICP/Command, utilized these revised programs. Further changes as directed by DA were begun on 1 June 1970 and completed in July 1970. Again the preparation of the FY 72 President's Budget AMC utilized these revised programs. The automation of the Army Materiel Plan, Part II, was established as the second part of this Task with a target date of October 1970, with MICOM providing the necessary programming services. However, due to the shortages of resources the task was reassigned to LSSA and a new target date for completion was established as October 1971. The unfinished portion of this task has been established as an AMC Command Objective.

IV. ACCOMPLISHMENTS:

a. Payoffs: The AMP is the basic source document used in the development and execution of the PEMA Budget and the Five Year Defense Program. The original method of preparing the AMP manually took from three to four months. This method was cumbersome and not timely enough to support the PEMA program and budget cycle. The automation of the AMP has resulted in the following:

(1) Preparation time for the AMP has been reduced from 120 days to 30 days. See figure 1.

(2) MSC can maintain an updated SAMPAM data file on a monthly basis.

(3) Provides the DCSLOG Data Processing Center (DDPC) a magnetic tape input of the AMP for use in the preparation of the P-20 "Materiel Display for the Budget."

(4) Expansion of the SAMPAM data file to provide for submission of all data elements to MIDA for inclusion in the "LOG Data Bank" which then can be used in the preparation of any and all PEMA items studies from the same data file.

(5) Provides for additional data elements not previously available on the manual system. See figure 2.

(6) Cost to prepare the AMP has been greatly reduced. See figure 3.

b. Manpower: No additional manpower was required to accomplish this task since the "B" proponent has been staffed on a full time basis to maintain and support the SAMPAM systems. The assignment of this program to PROMAP put emphasis on the Task and has resulted in a timely schedule for necessary program changes.

c. Training: Approximately 900 NICP/Commodity Command Major Item Managers were provided with a two week training course under the confines of the original automated system. A minimum amount of in-house training which was conducted by the SAMPAM Implementation Group members at each NICP/Command was required to cover the changes made to the system.

V. FOLLOW ON ACTIONS:

a. Training: Continued in-house training by SAMPAM Implementation Group members at the NICP/Commands is required due to RIFs, major reorganization changes and system changes. Total number of managers requiring training due to system changes is 775 plus total training is required for any new managers not yet assigned.

b. Establishment of AMC Command Objective, subject: Automation of Part II AMP Via USAMIDA Programming and Printing Processes Utilizing ICP Depot Maintenance Requirements from Data Bank.

ARMY MATERIEL PLAN - PART I
(Preparation Time)

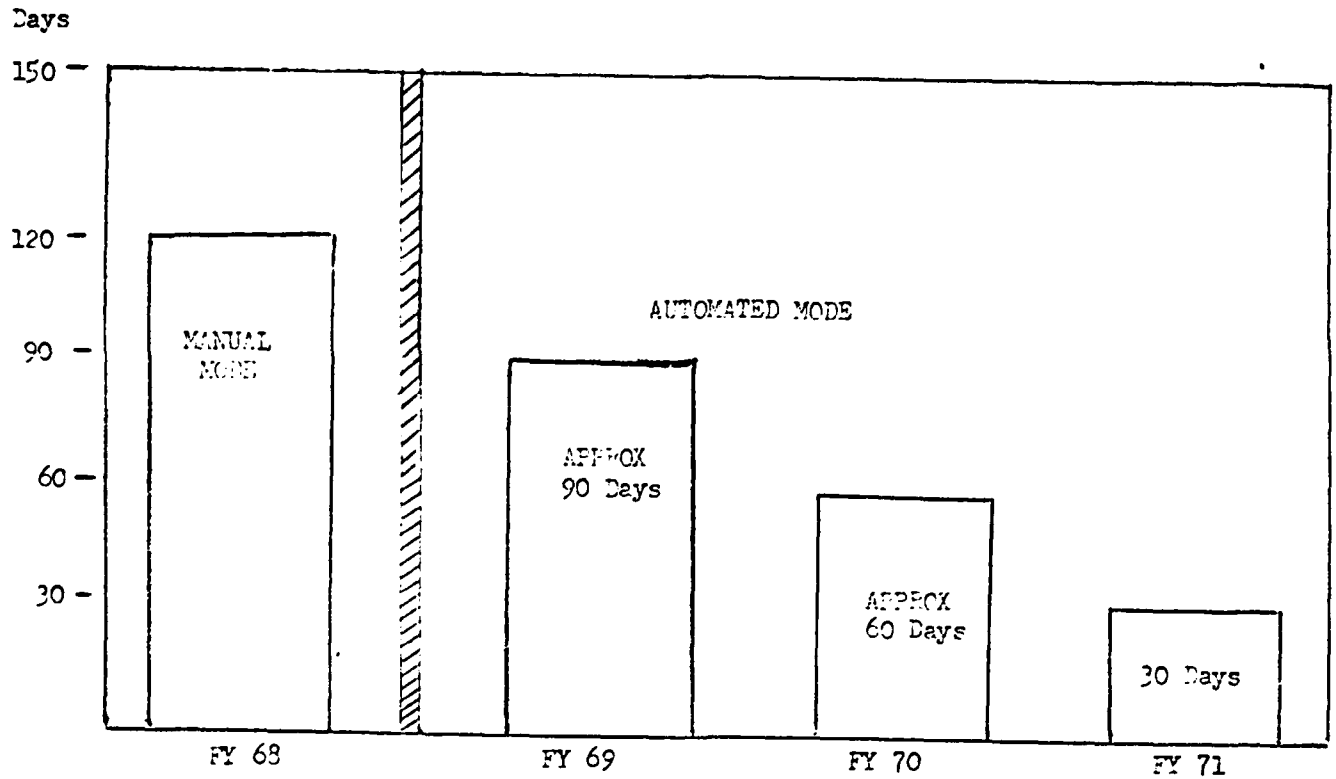


Figure 1

ARMY MATERIEL PLAN

MANUAL - VS - AUTOMATED

DATA	MANUAL	AUTOMATED
1. Requirements	1 Year	5 Years
2. Requirements Details	Budget Year	Budget Yr Fund Del Period By FDP + Out Years
3. Post D-Day Prod Offset	None	9 Years
4. Inventory Object by FY	7 Years	7 Years
5. Inventory Obj by BYFDP	None	9 Year (Complete Breakdown)
6. Losses (Consumption	7 Year (Gross only)	7 Yrs (12 Prod Per Yr)
7. Procurement	6 Yrs (3 Prod Per Yr)	Complete Breakout (Qty & $)
8. Modification Cost	Total $ Only	Maximum
9. Cross Reference Data	Minimum	Preferred/Sub/Make/Model
10. Item Identification	Preferred?Substitute	Complete Breakout of Rqmts. Producers & Their Capabilities by Monthly for 2 Years.
11. *Mob Requirements & Prod Cap*	*Totals Only*	Asset Strat by Make/Mode and Serviceability.
12. Asset Stratification	None	3 Years
13. Prod Base Support Detail	None	

Figure 2.

AMP PREPARATION COST

MANUAL VS AUTOMATED

A Command/NICP	B Cost of Manual AMP	C Cost of Automated AMP	D Savings (Difference Col B - C)
TACOM	$127,528	$16,603	$110,925
WECOM	75,635	21,112	54,523
ECOM	156,060	24,396	131,664
AVSCOM	32,616	29,069	3,547
MICOM	108,614	65,164	43,450
MECOM	67,000	41,926	25,074
TOTAL	$567,453	$198,270	$369,183

Figure 3

I. TASK TITLE: Automated Materiel Plan and Reduction in Stock Fund Budget Requirements. (Part B)

II. TASK OBJECTIVE: To reduce volume and content of supporting schedules and statements for U.S. Army Materiel Command Installations Division (Retail), Army Stock Fund program budget submissions, required by DA guidance, to conserve resources and improve program management and control.

III. BACKGROUND DISCUSSION: Consistent with AMC policy to conserve resources and in the interest of reducing workload under austere funding situations in the materiel requirement area related to Stock Fund program management, an analysis of the workload involved in preparation of USAMCID, ASF programs, required by current DA guidance, was made early in CY 1970.

The USAMCID stock fund operation supports the mission of forty-six (46) Branches managed through nine (9) Subhome Offices. Management control, covering sixteen materiel categories, must be maintained at base source level. However, elimination of non-essential program budget data by materiel category at each successive level of command would contribute substantially toward conservation of resources. It was determined that submission of programs on a consolidated basis, with a minimum of supporting schedules by materiel category, would reduce overtime cost by an estimated $29,915.00.

Overtime manhours would decrease comparably from 21% to 3% of total manhours expended. Materiel management will not be affected by a reduction in paper workload and the conserved manhours will provide for more meaningful analyses of materiel requirements.

The analysis of estimated savings to be realized in manhours and dollars by elimination of non-essential schedules, statements, exhibits and materiel category data was submitted to DA, 20 March 1970. The statistical analysis was supported by a recommended application to each form required under current DA program guidance. The recommendations were based on workload involved versus impact on management effectiveness achieved through the specific schedule, statement or exhibit. AMC proposed that recommendations be applied to the FY 1971 Initial Apportionment Request and the FY 1971 Reapportionment Request and FY 1972 Budget Estimates.

IV. ACCOMPLISHMENTS:

a. Recommendations contained in above AMC proposal were favorably received by DA. DA announced that OSD requirements for a complete base program budget submission would be limited to the following for AMC, CONUS and Overseas Installations (Retail). Some additional requirements may be imposed by the DA staff for effective review.

(1) Narrative Analysis

(2) Operating Program Summary (Modified Schedule X)

(3) Financial Program Objectives, Consolidated

(4) Operating Budget Statement, Consolidated

(5) Analysis and Computation of Peacetime Objectives, Consolidated

(6) Inventory Status and Transaction Statement, Consolidated

(7) Reimbursable Issues by Customer, Consolidated

(8) Transition from Stratification to Budget, Consolidated

(9) Tables 5-1 and 5-2 by Materiel Category and Consolidated

b. DA/OSD accepted an abbreviated (sales) budget for the FY 1971 Initial Apportionment Request in lieu of the complete submission required by the OSD guidance.

c. DA/OSD requirements were implemented to the field in April 1970, for FY 1971 Initial Apportionment Request (sales budget). Revised USAMCID, ASF guidance was distributed to the Subhome Offices in July 1970 with the DA reduction in formats to selected schedules, statements and exhibits for the complete FY 1971 Reapportionment Request and FY 1972 Budget Estimates submission. The following tabulations reflect savings to date within this task objective. Data in the tabulation is the total for all levels of command in the USAMC Installations Division.

FY 1971 Apportionment Request versus FY 1971 Reapportionment Request

Forms/Narrative Reduction	4,078
Manhour Reduction	3,390
Dollar Reduction	$20,733.00

Reapportionment Request/Budget Estimates FY 1971-1972 versus FY 1970-1971

Forms/Narrative Reduction	5,604
Manhour Reduction	1,440
Dollar Reduction	$8,239.00
Total-Dollar Savings	$28,972.00
Estimated Dollar Savings	$29,915.00

V. FOLLOW-ON ACTIONS:

a. Command Objectives

The ultimate aim of this objective is to conserve resources down to base level by application of a further reduction in complete program budget requirements to the OSD directed input for retail divisions of the Army Stock Fund with a minimum of supporting schedules to facilitate Home Office/DA reviews. Actual savings achieved through submission of an abbreviated FY 71 Initial Apportionment Request in lieu of a complete budget will be the basis for recommending DA/OSD approval of a sales budget for the FY 1972 Initial Apportionment Request.

Concurrently with the USAMCID task objective, a review of Home Office savings related to the USAMC Division Retail MAP/MOB Categories and Army Petroleum Center (POL) submissions to DA/DOD was accomplished. Savings realized are detailed below.

	FY 70-71	FY 71-72	Reduction
Forms/Narrative	165	66	99
Overtime Manhours	147	0	147
Overtime Dollars	$1,045.00	0	$1,045.00

Subsequent to CY 70, this task will be submitted as an AMCRP-PF command objective, with a 30 June 1971 target date for achieving maximum reductions in supporting program data for retail stock fund budget submissions.

b. Training

In the interest of improved management and execution, field visits are being scheduled by Home Office representatives to provide retraining in program development and management for approximately 18 persons at Subhome Office level and 46 persons at Branch Office level. Marked up copies of individual FY 71-72 programs will be discussed in detail. Inter-relationship of the various formats and the resultant effect on requested programs will be stressed. Participation by base source level representatives during the field discussions will be a point of emphasis in view of the individual peculiarities of the various installations.

I. TASK TITLE: Letter Contracts and Change Orders

II. TASK OBJECTIVE: To minimize the use of Letter Contracts and Change Orders and to definitize those issued at the earliest practical date.

PART I - LETTER CONTRACTS

III. BACKGROUND DISCUSSION: A letter contract is a document used for the procurement of services and/or supplies where the essentiality of delivery or the continuity of work is such that time does not permit complete negotiations between the Government and contractor to arrive at a fully definitive contract, particularly at to price. A letter contract is the least desirable method of procurement since it lacks a binding agreement between the two parties on the most significant aspect of a contract, its eventual cost. It contains two basic disadvantages to the Government; first a potential for cost growth exists in the absence of a definitive price, and second the cost risk shared by the contractor is reduced as he gains knowledge and experience on cost factors during the period the contract remains undefinitized. The latter condition tends to weaken the Government's bargaining position during negotiations of a definitive contract.

Letter contracts serve a distinct purpose in procurement, but they must be used with prudence and judgement. It is Secretary Packard's stated policy that the services will minimize their use. This Task has been a means to that end. Under it, management attention has been directed to the continued reduction in new letter contracts and to timely definitization of those which must be issued.

To illustrate the extent to which letter contracts were employed during the buildup in Southeast Asia and in subsequent support of operations in that area, chart 1 reflects the value of letter contracts awards as a percent of total procurement dollars for the years FY 1966 through FY 1969. The magnitude of this increase is clearly realized when compared with FY 1965 when letter contracts accounted for only 1.1% of total awards and with FY 1970 when the percentage was reduced to 5.0%. Naturally, the utilization of letter contracts in the magnitude described above brought with it the obvious problem of achieving timely definitization subsequent to award. As indicated in chart 2, the value of letter contracts outstanding (not definitized) rose steadily through the period FY 1966 - FY 1968 reaching a peak of $1 Billion in June of 1968. At the same time the value of those overage (undefinitized for a period of six months or longer) was $654.3 Million. By the end of FY 1969 the value of those outstanding was reduced to $723 Million and those overage to $552.1 Million. While these reductions were significant, still further improvement in reducing new letter contracts and more timely definitization of those on the books was considered essential.

To bring this matter to the attention of top management throughout AMC, numbered letter AMCPP-S No. 60-69, subject: Controls for Use and Definitization of Letter Contracts, was issued on 25 July 1969. It reiterated the concern by this command and higher authority over the continued use of letter contracts and the extensive time taken to definitize them. The

LETTER CONTRACTS AS A PERCENT
OF TOTAL PROCUREMENT AWARDS
(IN BILLIONS)

	FY 66	FY 67	FY 68	FY 69	FY 70
Total Awards	$11.298	$12.163	$13.147	$12.515	$9.859
Letter Contracts	1.601	1.411	$ 2.028	$ 1.680	$ 490
Letter Contracts as a Percent of Total Awards	14.1%	11.6%	15.4%	13.4%	5.0%

CHART 1

LETTER CONTRACTS OUTSTANDING AND OVERAGE
(YEAR END PERFORMANCE)

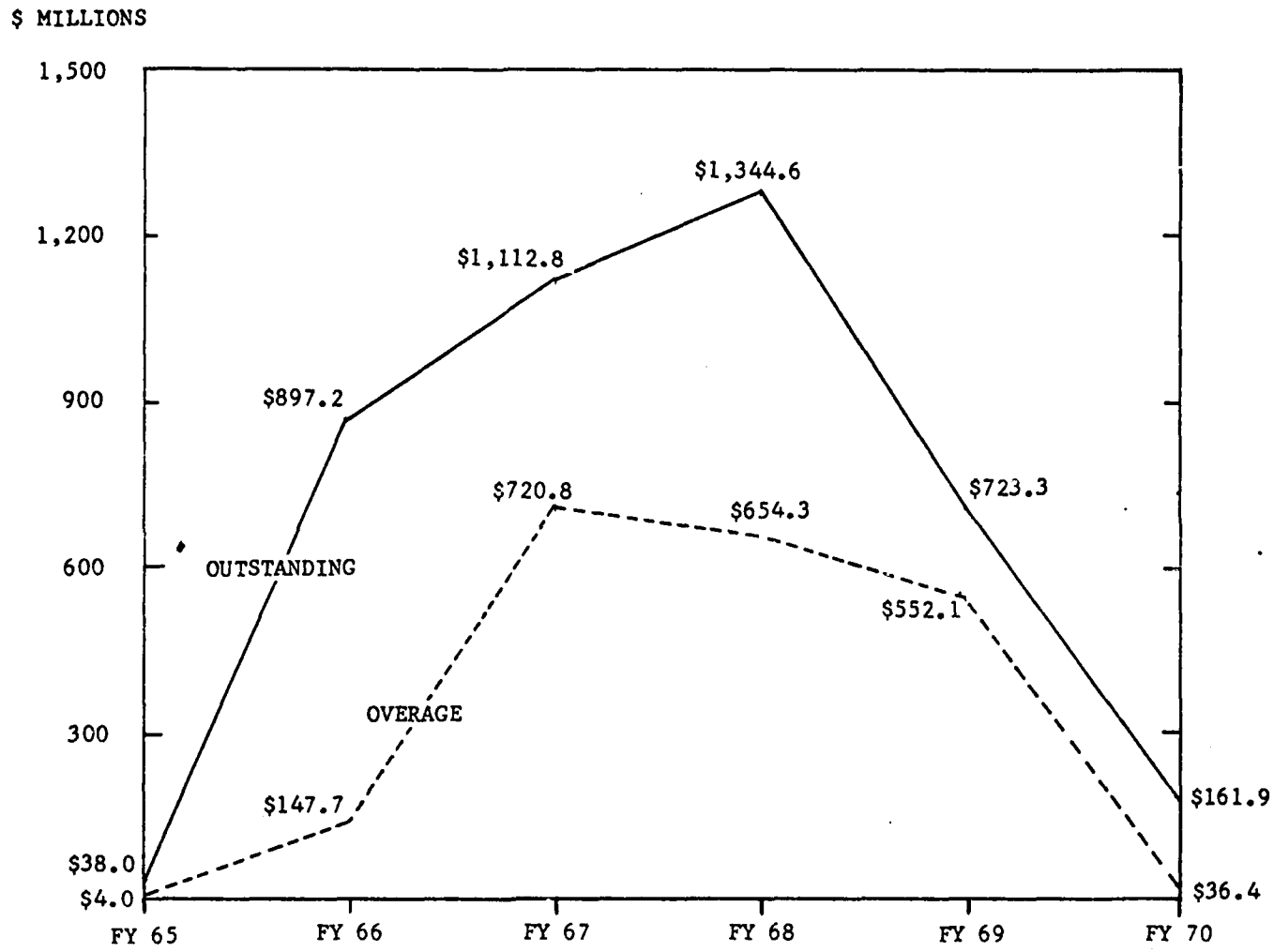


CHART 2

letter cited the provision of ASPR that required the execution of a written Determination and Finding justifying the use of a letter contract, and required that these be signed by the Commanding General or his Deputy without further delegation. It also required that a time phased plan be established for each new letter contract to assure definitization within 5 months from date of issue. The plan would include target dates for the submission of contractor proposal, completion of audit and price analysis, completion of negotiations and signature of a definitized contract.

At the same time similar internal controls were established within Headquarters AMC. AMCPP Staff Memorandum 715-4 was issued on 25 July 1969 which delineated policies and procedures for monitoring letter contracts. The memorandum required that the responsible commodity divisions would:

a. Maintain a log of each letter contract awarded by the respective command.
b. Maintain surveillance over the target dates in the phased definitization plan.
c. Maintain close liaison with the command to assure that target dates were met.
d. Require an explanation of target dates not met.
e. Advise the Director, Procurement and Production of target dates not met and reasons therefore.

Under these procedures, a follow-up was required on each target date in the definitization plan. In any instance where the date for definitization of the contract was missed, correspondence was prepared for the Director's signature to the Commanding General of that particular command advising of the trend and requesting that action be taken to assure definitization within 30 days of the original target date.

With the advent of PROMAP-70 the policies, procedures and controls outlined above were adopted and utilized as the management tools governing letter contracts. In addition, the monthly report DD-I&L-(M)-679 on Letter Contracts Awarded, Definitized and Outstanding was utilized to obtain performance data on the progress made in reducing letter contracts. These controls together with the extensive management review under PROMAP-70 brought about an acute awareness of the status of letter contracts throughout the command structure. The monthly review of progress at the Headquarters level served as an excellent tool in motivating improved performance by the subordinate commands.

IV. ACCOMPLISHMENTS: As a result of these new controls and the extensive review procedures imposed under PROMAP-70, the reduction in the number of new letter contracts, and more importantly, the reductions in the number and value of those outstanding and overage was a most noteworthy accomplishment. As indicated in chart 3, in September 1969 there were 121 outstanding letter contracts on hand valued at $784.1 million. Of that number, 29 were overage, valued at $574.9 million. By December 1970, those outstanding

DEFINITIZATION OF OUTSTANDING LETTER

CONTRACTS UNDER PROMAP - 70

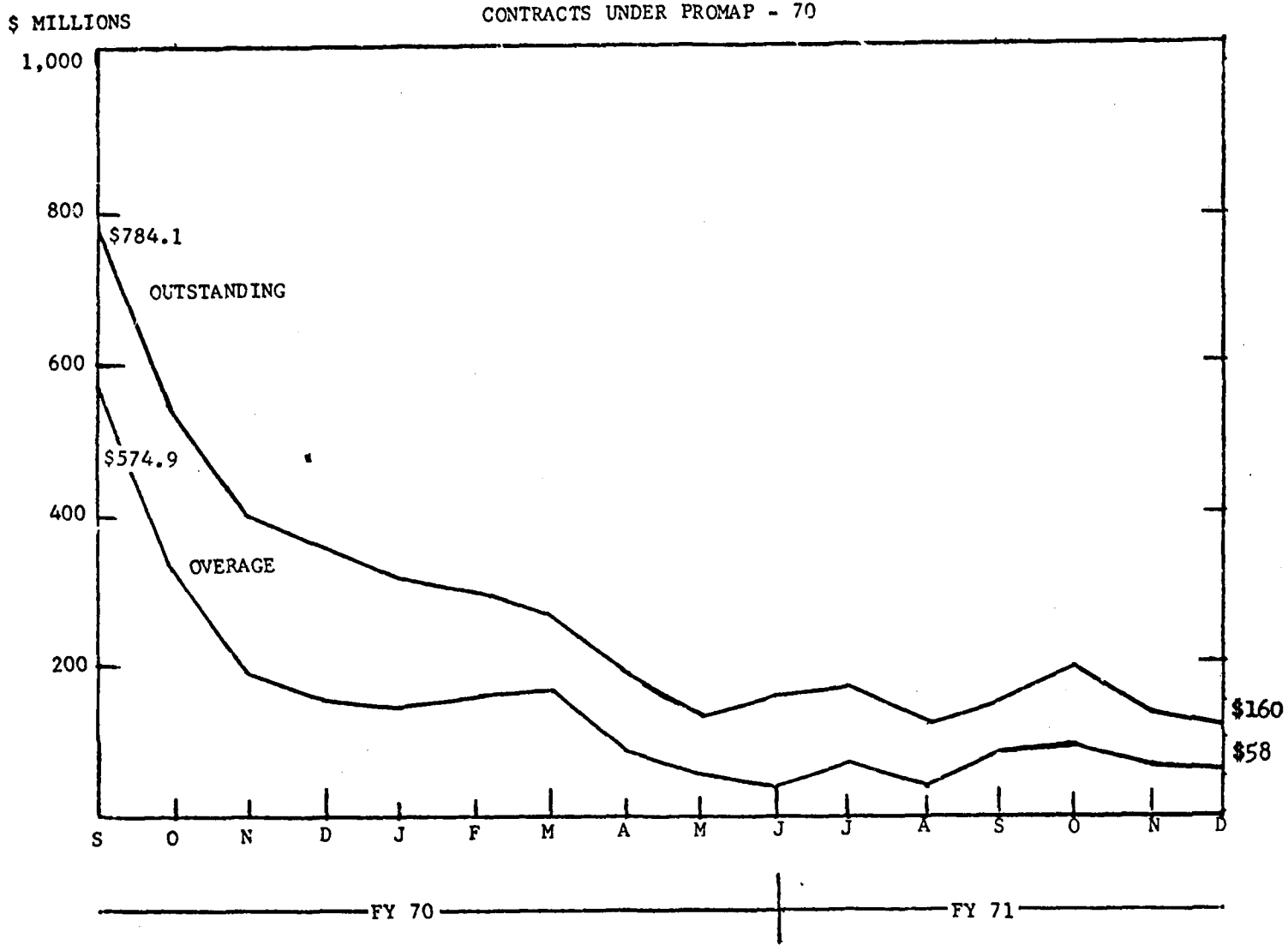


CHART 3

had been reduced to 28 valued at $160 million of which only 4, valued at $58 million were overage. These statistics reveal a 490% reduction in the value of outstanding letter contracts during the period and a reduction of 990% in the value of those overage.

Equally as important is the fact that the procedures and controls in effect over the management of letter contracts are now an integral part of the procurement function. These procedures have been incorporated into the Army Materiel Command Procurement Instructions (AMCPI) and the procurement management systems within the subordinate commands. Their continued application will assure that any new letter contract has been thoroughly reviewed and justified prior to award.

V. FOLLOW-ON ACTIONS: Performance in the continued reduction of outstanding and overage letter contracts is one of the management areas now included in the AMC Command Objectives System and reported to DA and DOD under the Logistics Performance Measurement and Evaluation System (LPMES). DA assigned fiscal year 1971 goals under the LPMES Program were not more than $200 million in letter contracts outstanding and not more than $75 million overage at the end of the year. On the other hand, this Command has established more challenging goals of not more than $100 million outstanding and none overage. Performance against these goals will be followed quarterly utilizing data provided under the DD-I&L-(M)-679 Report on Letter Contracts Awarded, Definitized and Outstanding. One remaining action to be accomplished concerns a change in the format for reporting the status of outstanding letter contracts under the DD-I&L-(M)-679 Report. It has been recognized by AMC that the elements of a letter contract, for purposes of definitization, are identical with those of a change order. Accordingly, it is planned to utilize the same format for progressing and reporting letter contracts as was developed for change orders (and discussed in that portion of this report dealing with change orders). It is expected that this new procedure, providing standardization throughout AMC, and providing a chronological monitoring device will aid in management of the definitization problem at all levels.

PART II - CHANGE ORDERS

III. BACKGROUND DISCUSSION: A change order is a unilateral written order directing the contractor to make changes in the contract without the consent of the contractor. It is used to direct the alteration of specifications, delivery point, or method of shipment or packing and is employed when adequate pricing data is not available and/or time does not permit complete negotiations and the use of a supplemental agreement. The use of a change order is an undesirable procurement technique since it is a unilateral action and usually lacks an agreement respecting price. Like letter contracts, an undefinitized change order has two basic disadvantages, first it represents a potential for cost growth and second, the degree of risk shared by the contractor is reduced as he gains knowledge and experience on cost factors during the period that a change order remains undefinitized. The latter condition tends to weaken the Government's

bargaining position during negotiations to definitize the change order.

It is Secretary Packard's stated policy that the services would minimize the use of unpriced change orders, place a ceiling price on unavoidable changes and to the maximum extent possible establish a negotiated cost and issue a supplemental agreement rather than a change. These goals are an integral part of this task. Particular attention has been paid to the control of all change orders with emphasis upon a more comprehensive review of all new proposed changes, the introduction of a price or ceiling in the change order prior to its issue and the timely definitization of any change order subsequent to issue.

Historically, the change order has been an integral part of the procurement process. Their use in a contract will depend in large measure upon the adequacy of the procurement package and the urgency of the procurement. Chart 4 indicates the extent to which change orders were utilized during the period Fiscal Year 1967 through 1970. The magnitude of increased utilization of them is best illustrated by the fact that in Fiscal Year 1966 the AMC Commands issued a total of $115 million in new changes. In Fiscal Year 1967 the value of new change orders amounted to $227 million and in Fiscal Year 1968 to $250 million. The sharp increase is attributed to the urgency of procurements in support of Southeast Asia and the complexity of some of these items.

This increase brought with it a comparable increase in the number of outstanding change orders remaining to be definitized. By the end of the 3rd Quarter Fiscal Year 1969, the number outstanding within the three departments amounted to $1,898 million, of which $1,385 million were overage. Of these totals, the Army accounted for $97.6 million outstanding and $52.8 million overage. This condition prompted Secretary Laird to address a Memorandum to the Secretaries of the Military Department on 9 June 1969 voicing concern over the proliferation of contract changes and observing that substantial management changes were indicated. Mr. Laird requested that he be advised of steps to be taken to improve this condition. While the value of our change orders were small by comparison, his memorandum did stimulate actions by AMC to improve management in this area. These included actions to expedite receipt of contractors proposals, the DCAA audits and negotiations, and renewed emphasis on the review of Engineering Change Proposals under the Configuration Management Review Procedures.

With the advent of PROMAP-70 the management of change orders became an immediate and high priority task. As a first order of business a review was conducted to determine what specific actions were required to establish tighter controls over the issuance of Change Orders and to bring about more timely definitization of those that must be issued. As a result AMCPP Policy Letter No. 76-69, subject: Management and Control of Change Orders, RCS No. AMCPP-142, was issued on 3 November 1970. It required that each procurement activity develop and implement internal procedures for management and control of all Change Orders over $10,000. These procedures were to provide for:

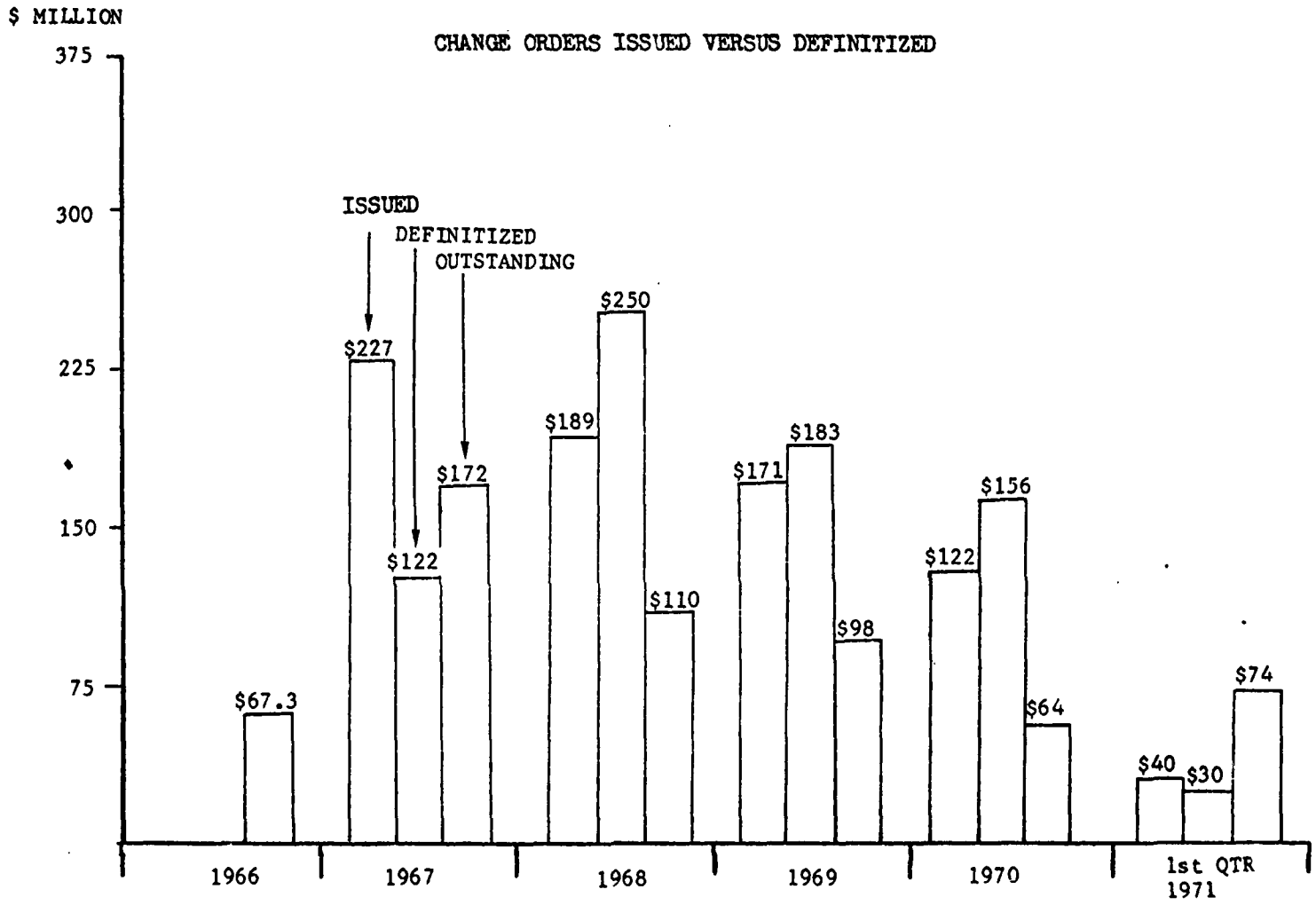

$ MILLION
CHANGE ORDERS ISSUED VERSUS DEFINITIZED
375
300
225
150
75
ISSUED
DEFINITIZED
OUTSTANDING
$67.3
$227
$122
$172
$189
$250
$110
$171
$183
$98
$122
$156
$64
$40
$30
$74
1966
1967
1968
1969
1970
1st QTR
1971

CHART 4

a. Establishing and monitoring critical target dates leading to definitization and contract modification.

b. Surfacing those change orders over 90 days old for mid-management attention.

c. Intensive management at the command level of those change orders over 120 days old.

d. A monthly report to Headquarters Army Materiel Command of all change orders that are overage (more than 180 days old).

Later it was recognized that reports on outstanding change orders were diverse in format and content and did not provide a means of evaluating from the individual monthly report the quality of efforts aimed at definitization. Accordingly, a new report form, AMC 1949R, was issued to provide a standardized report from all commands, including a cumulative chronology of definitization efforts from month to month. The new report constitutes a significant improvement in managerial methods, both as concerns supervision and statistical analysis.

This report and the DD-I&L-(Q)-680 Report on Change Orders Awarded, Definitized and Outstanding were utilized to measure performance against PROMAP-70 goals. The two reports provided data on the number and value of all change orders entered into, definitized and outstanding at the end of each quarter. Management action at this level included the follow-up of those outstanding change orders on hand at each command with particular attention devoted to those overage. More importantly, however, was the continuing review of performance conducted under PROMAP-70 and the interest held in this area by the Command Staff.

Lastly, in August 1970 the Commanding General, Army Materiel Command, issued a policy requiring that prior to the issuance of a change order effecting an increase in contract price, the change order would not be authorized until a contract price adjustment has been agreed upon by both parties, or a price ceiling has been incorporated into the change order limiting the Government's liability pending definitive price negotiation. Exceptions to this policy could be made only by the Major Subordinate Commander or his Deputy.

IV. ACCOMPLISHMENTS: As a result of the new controls imposed upon new change orders and the emphasis on timely definitization of those issued, excellent performance has been experienced against PROMAP-70 goals. As indicated in chart 5, in September 1969 there were 1,335 outstanding change orders (over $10,000) valued at $114.2 million. Of these 1,008 were overage valued at $68.6 million. By December 1970 those outstanding were reduced to 231 valued at $48 million and the number overage reduced to 89 valued at $15.3 million. Equally as important was the improved rate of definitization of outstanding change orders during this same period. Chart 6 reveals that in Fiscal Year 1970 AMC definitized 71% of those outstanding, the highest performance in the four year period FY 1967 - 1970.

DEFINITIZATION OF OUTSTANDING CHANGE ORDERS
UNDER PROMAP-70

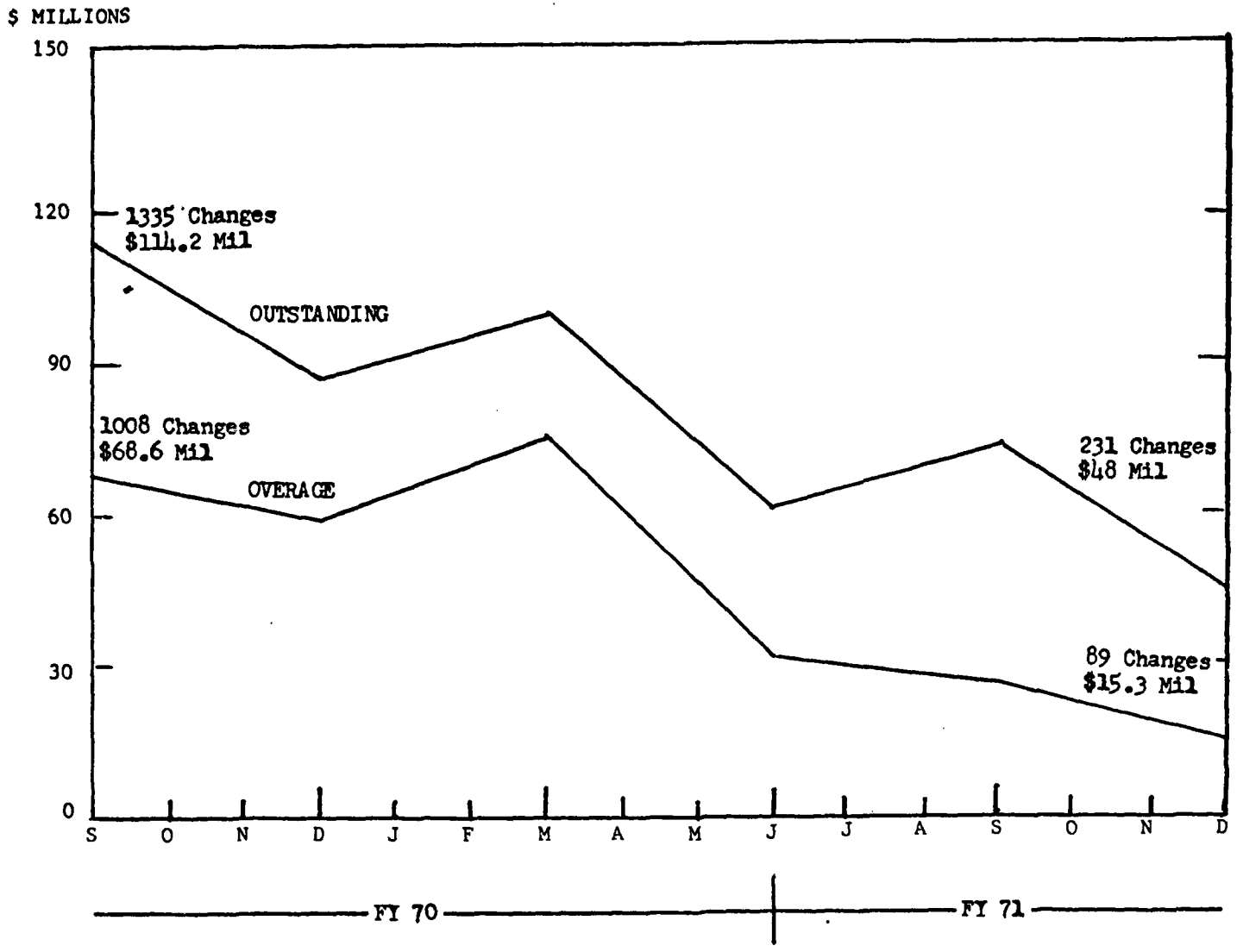


CHART 5

PERCENT OF OUTSTANDING CHANGE ORDERS DEFINITIZED

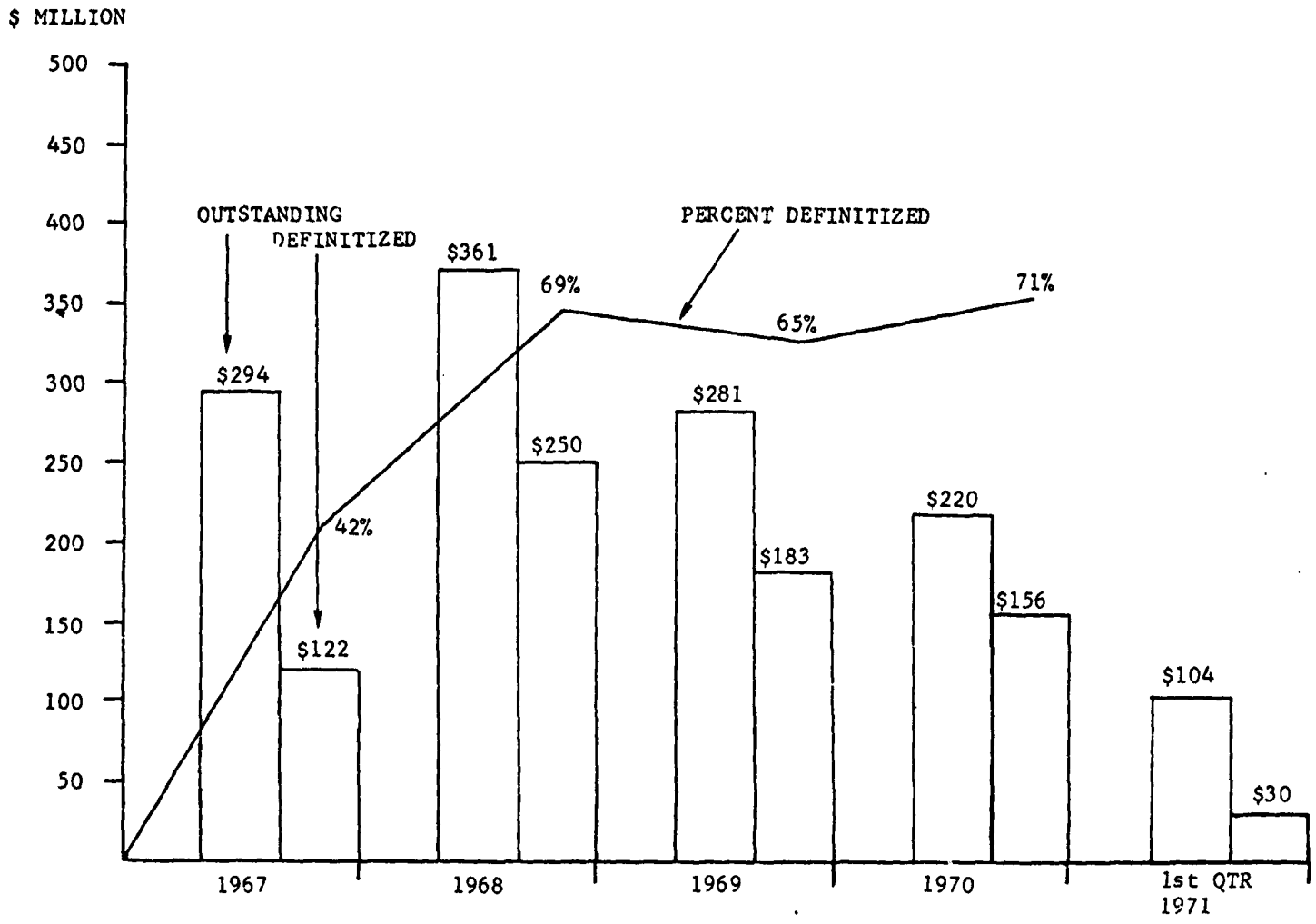


CHART 6

Since the procedures and controls over the use of change orders which were introduced during PROMAP-70 are now an integral part of the procurement function, continued high performance can be anticipated. All of these controls have been incorporated into the Army Materiel Command Procurement Instructions (AMCPI) and the procurement management systems within the subordinate commands. Continued application of these controls particularly the introduction of a negotiated price, or a ceiling in new changes affecting cost should bring about a significant reduction in the number outstanding. In the future the cost of a new change order will have been established prior to its issuance and will no longer represent a reason for delay in achieving definitization.

V. FOLLOW-ON ACTIONS: Performance in the continued reduction of outstanding and overage change orders is one of the management areas now included in the AMC Command Objectives System and reported to DA and DOD under the Logistics Performance Measurement and Evaluation System (LPMES). DA assigned Fiscal Year 1971 goals under the LPMES Program are not more than $70 million in change orders outstanding and not more than $50 million overage at the end of the year. AMC, however, has established more challenging goals of not more than $40 million outstanding and none overage. Performance against these goals will be followed quarterly utilizing data provided under the DD-I&L-(Q)-680 Report on Change Orders Awarded, Definitized and Outstanding.

I. TASK TITLE: Contractor Cost Reports

II. TASK OBJECTIVE: Collect cost and related data to meet Cost Information Reports (CIR) requirements. Expand coverage of CIR to other weapon systems. Collect cost and related data to support Selected Acquisition Reports using Cost Performance Reports (CPR). Collect cost data to support procurement information requirements through new reporting system identified as Procurement Information Reports (PIR).

III. BACKGROUND DISCUSSION: The basic purpose for establishing the task entitled Contractor Cost Reports is twofold. The CIR and PIR satisfies the need for a data base which shows for military systems and components, their actual experienced costs. This cost data base will be used to extrapolate the cost experience of previously produced systems and components to new systems and components. The data is needed to develop Cost Estimating Relationships (CER) for use in developing cost estimates. Properly applied, CERs derived from contractor cost reports will be useful in long-range planning when it must be decided whether a new weapon system is needed. The data will be helpful in projecting the cost of unfinished portions of procurement programs, for programming purposes, for budgeting, and in evaluating proposals for follow-on production.

The Cost Performance Reports are designed to provide Project Managers and other interested management officials cost and performance data to evaluate cost vs schedule and cost vs value of work performed. These reports are intended to provide visibility into cost and schedule performance that will aid the project/program manager in obtaining an early awareness of cost growth and help to meet the objective of improved acquisition management.

IV. ACCOMPLISHMENTS: The major activities included in this task are summarized below:

a. Orientation. A program to provide command-wide orientation in the application and use of Contractor Cost Reports was developed and carried out during June 1970. The orientation seminars were conducted for all major subordinate commands (MSC). The seminars were attended by MSC representatives, predominantly from Procurement, Research and Engineering, Comptroller, and Project Management Organizations. A total of 340 MSC personnel participated in the seminars. No prior formal orientations had been conducted by the Army.

b. Training. Four courses were selected as representative of the management functions most involved in the application and use of the data to be obtained. Approximately 600 man-weeks of training were received by personnel of the AMC major subordinate commands applicable to the contractor cost reporting under PROMAP-70.

c. Before and After Comparisons. CIR was available from six aircraft and two missile weapon systems at the beginning of this program. A CIR Data

Plan was developed for the Armored Reconnaissance Scout Vehicle (ARSV) and submitted to the Army staff for approval. The Data Plan was returned later, and AMC suggested that the Project Manager consider application of PIR to the ARSV. Application of CIR to the SAM-D missile system has been approved beginning with the Engineering Development phase.

PIR was approved by DOD and approved for implementation by the Army in September 1970. Fourteen weapon systems have been considered appropriate for application of PIR during the PROMAP-70 program and reporting requirements have been included in contracts applicable to eight systems. See Chart #1.

CPR was approved by DOD and implemented by the Army in February 1970. This reporting system was not previously applied to weapon system procurements by the Department of the Army. During the PROMAP-70 program, seventeen weapon systems have been considered for application of CPR, and reporting requirements have been included in contracts applicable to eight systems. See Chart #1.

The contractor cost data made available from the reports under contract and under consideration will provide a significant increase to the cost data base available for more effective cost estimates and cost analyses by procurement managers.

V. FOLLOW-ON ACTIONS:

a. Application of Data Requirements to Contracts. Continuing action must emphasize the close supervision and control of requirements for essential contractor cost data to assure that only valid requirements are included in contractual documents. This control can be managed through careful reviews made by the Data Requirement Review Boards (or equivalent) at each command, prior to approval of contractual data requirements. This action should be a continuing function of procurement management.

b. Use of Data. The use of CPR as a devise for performance appraisal should be given continuous attention. Command action to assure the availability of the Cost Performance Report to weapon system managers is a necessary follow-up action related to this PROMAP-70 task.

CONTRACTOR COST REPORTS

	Prior to PROMAP-70	Accomplished during PROMAP-70	
	Systems Covered	Systems Proposed	Systems Covered
Procurement Information Reports	0	14	8
Cost Information Reports	8	7*	4*
Cost Performance Reports	0	17	8
TOTAL	8	38*	20*

*Includes 3 weapon subsystems for Aircraft Weapon Systems.

Chart 1

I. TASK TITLE: Contractor Cost and Schedule Performance Measurement

II. TASK OBJECTIVE: To apply the DOD Cost and Schedule Control Systems Criteria (C/SCSC) as established in DOD Instruction 7000.2 "Performance Measurement for Selected Acquisitions" to new large acquisition programs and to on-going programs where practicable.

III. BACKGROUND DISCUSSION: The Department of Defense has experienced considerable difficulty in obtaining early warning of significant schedule and cost variance during the acquisition of weapon systems. In many cases, the problems are not visible until after the Government is deeply committed to the project. In an effort to improve the timeliness and accuracy of contractor reporting, the Government has imposed specific management systems on contractors. This practice not only increases costs but also encourages the maintenance of more than one management system by the contractor.

The application of the DOD Cost/Schedule Control Systems Criteria (C/SCSC) allows the Government to obtain timely and valid cost and schedule information for performance measurement from the contractor's own management system. C/SCSC application assures that the contractor uses a Work Breakdown Structure for defining contract work, assigning work responsibility and summarizing with respect to plans and actual accomplishment, the detailed cost and schedule information for successive levels of management.

AMC has recognized the potential benefits to be derived through the application of C/SCSC for improving weapon system acquisition. Thus, the DOD criteria approach has been implemented as an important element within the AMC PROMAP-70 Program.

IV. ACCOMPLISHMENTS: Some of the most significant accomplishments are summarized below.

a. Guidance. It is essential that implementing procedures be provided for the benefit of the contractors and the Government teams involved in reviewing the contractor's management system to assure effective application of the criteria. This need has been met through publication of the following documents:

(1) DA Pamphlet 37-2 was published in February 1970 to provide Department of the Army implementing procedures for the application of C/SCSC.

(2) Army Materiel Command Supplement 2 to AR 37-200 was published to assign responsibilities within AMC for application of the criteria.

(3) Uniform tri-service implementing procedures were developed in conjunction with the Air Force and Navy to provide a uniform DOD approach to the application of C/SCSC.

(4) A draft DOD Handbook, an "Interpretive Guide" for C/SCSC, has been widely distributed. This provides uniform definitions of the many terms related to the application of the criteria.

b. Orientation. Over 500 AMC personnel throughout the Headquarters and the major subordinate commands have attended comprehensive briefings concerning the nature of C/SCSC, its application and its benefits to be derived from its use.

Three contractor seminars were held during which representatives of all services participated in open discussion and dialog with industry.

c. Training. Two PROMAP-70 related courses were utilized to train project managers, PMO Staff, MSC Staff and Headquarters Staff in the application of, and management with, performance measurement data.

(1) AFIT Course #197 "Evaluation of Performance Measurement Systems" is conducted by the Air Force Institute of Technology. This course trains personnel who will review contractor management systems in the application of C/SCSC. The schooling is supplemented by on-the-job experience wherever possible. See Chart 28-I for a summary of personnel involved.

(2) The Army Management Engineering Training Agency (AMETA) Course, "Managing with Contractor Performance Measurement Data" was established under PROMAP-70 to train project managers and staff personnel in the skills of analysis and use of performance measurement data. (See Chart 28-I)

d. Application. Action has been taken during the period of PROMAP-70 to apply C/SCSC to both new and on-going AMC programs. Application of the criteria has not been restricted to the mandatory program thresholds of $25 million RDT&E or $100 million production but has been extended to programs of lesser value. Chart 28-II depicts the actions accomplished under PROMAP-70 in applying C/SCSC to selected systems.

V. FOLLOW-ON ACTIONS: Implementing actions on those projects listed in Chart 28-II will continue. Also, effort will be made to apply C/SCSC to other new and on-going projects.

Continued effort in terms of publications and training is needed.

a. Worksheets and detailed testing procedures in support of the tri-service implementing guide must be developed.

b. Publication of material on managing with contractor performance measurement data for the project management personnel is needed.

c. Surveillance procedures for assurance of contractor compliance with C/SCSC after validation should be published.

CHART 28-I PROMAP-70 RELATED TRAINING

COMMAND Project and Staff Personnel	AFIT Course 197 1/	Demonstration Review Experience	AMETA Course 2/
AVSCOM	3	1	3
ECOM	3	0 4/	9
MECOM	0	0	2
MICOM	8	5 6/	14
MUCOM	4	0 4/	5
TACOM	2	2	10
WECOM	3	2	6
PM-MBT	2	3	3
PM-SATCOM	1	0	3
PM-LANCE	0	0	4
PM-SAM-D	1	0	3
PM-AAWS	1	0	2
HQ AMC	4	3	3
TOTAL	32 3/	16	67 5/

1/ AFIT Course "Evaluation of Performance Measurement Systems"
2/ AMETA Course "Managing with Contractor Performance Measurement Data"
3/ Does not include 5 personnel, previously trained
4/ Scheduled for early 1971
5/ Does not include 7 personnel from Safeguard Command
6/ Prior to the period of PROMAP-70

C/SCSC IMPLEMENTATION ACTIONS ACCOMPLISHED UNDER PROMAP 70

PROJECT 1/	Review RFP in terms of C/SCSC	Release RFP with C/SCSC	Evaluate Contractor Proposal	Contract Award with C/SCSC	Project Personnel Trained 2/ AMETA	AFIT	No. of Readiness Reviews at Contractor Facilities	No. of Demonstration Reviews at Contractor Facilities	Validate Contractor
AACOMS					3	1			
ADCAT	X	X	X	X	3				
AH-56A	N/A	N/A	X		2	1			
ARSV	X				4	1			
B&R Comp	N/A	N/A	X		4	1			
CCW					1	1			
HAWK	X	X	X	X	3	2	1		
HLH	X	X				1			
LANCE	X	X	X	X	4				3/
MBT	X	X	X		3	2	2	2	1
MICV					4				
SAM-D	X	X			3	1			
SATCOM	X	X	X	X	3	1	1		
TOW	X		X		4				
VRFWS	X				3	1			
TOTAL	12	7	8	4	44	13	4	2	1

1/ All projects (42) reviewed for C/SCSC applicability.
2/ A. AMETA Course "Managing with Contractor Performance Measurement Data".
B. AFIT Course "Evaluation of Performance Measurement Systems".
3/ One of approximately 5 contractor facilities.

d. There is an acute need for continued training in the application of C/SCSC and the use of performance measurement data. Project managers and key command and project staff personnel must attend the AMETA course. The training of demonstration/evaluation review team members at AFIT is necessary.

I. TASK TITLE: Quality of Test/Evaluation Military Personnel.

II. TASK OBJECTIVE: To improve the quality of testing and evaluation of materiel through the stabilization of military personnel assigned to test and evaluation projects, stabilization of units engaged in test projects, and raising the projected requisitioning authority to 100% of TDA for those units.

III. BACKGROUND DISCUSSION: The buildup of US Army forces in Vietnam during the period 1965 - 1969 created an abnormal rate of turnover of personnel in CONUS organizations. Headquarters, Department of the Army levied CONUS activities for oversea personnel requirements and supported their authorized strength in accordance with an activity's position on the DA Master Priority List (DAMPL). The list grouped activities/commands in five groups in descending order from I to V. Although AMC was raised from Group IV to Group III in March 1968, it still had a low priority status, consequently AMC was understrength in officers of grades of captain and above and had a high turnover rate among these. These two factors decreased the quality of personnel performance particularly in test and evaluation of materiel projects. Prior to the development of this task, none of the six test boards of the US Army Test & Evaluation Command (TECOM), or the Aviation Test Activity of US Army Aviation Systems Command (AVSCOM) were recognized by DA as units in which 1,811 military personnel were stabilized for specific tour lengths. Likewise, the projected requisitioning authority (PRA) for TECOM was only 79% of its 942 officer TDA.

IV. ACCOMPLISHMENTS: The following is a summary of actions taken to accomplish the task objective:

1. Stabilization of Military Personnel. As the result of recommendations submitted to the Office of Personnel Operations, DA (OPO), for stabilization of individuals assigned test and evaluation projects, 170 officers and 200 enlisted men have been stabilized for varying periods according to duration of the project, ETS of the individual, or deferment of availability dates for oversea assignment.

2. Stabilization of Units. At the onset of PROMAP - 70, the following AMC units/elements carried some degree of stabilized status, meaning that key personnel thereof would normally remain assigned for periods of 24 to 36 months:

Headquarters AMC
US Army Missile Command
US Army Participation Group
US Army Safeguard Logistics Command

As the result of recommendations submitted to DCSPER, DA, the following additional AMC units/positions now have stabilized status:

	Months		
	Field Grade Officers	Warrant Officers	Enlisted Personnel
Project Manager Offices	Indefinite	Indef	24
Research, Development, and Test and Evaluation Laboratories	24	24	36
Military Police Companies (security personnel only) at Savanna, Seneca and Sierra Army Depots	24	24	24
US Army Aviation Systems Command Test Activity		24	
Nuclear weapons maintenance specialists, Picatinny Arsenal	36	24	24

Efforts to stabilize the six Test Boards were unsuccessful due to the number and types of people (1,479) involved.

3. Raising the projected requisitioning authority (PRA) of activities engaged in testing and evaluating materiel. As the result of negotiations with DA, AMC's position on the DAMPL was raised. The prime purpose of this significant action is to increase DA's support of AMC personnel authorizations reflected in TDAs. In turn, this command raised the PRA of US Army Test and Evaluation Command to 100% of their TDA effective the 2d Quarter, FY 1971, illustrated as:

GRADE	TDA	1QTR71 PRA	%of TDA	2QTR71 PRA	%of TDA
COL	58	51	87.9	58	100
LTC	170	134	78.8	168	98.8
MAJ	224	134	59.8	188	83.9
CPT	274	218	79.5	258	94.1
LT	213	171	80.2	267	125.3
TOTAL	939	708	75.3	939	100

The following realistic payoffs are developing from the foregoing actions:

a. Reduction in turbulence of military personnel assigned to test and evaluation projects contributing directly to weapon systems acquisition.

b. Improvement in skills and knowledge of test and evaluation personnel through longer tenure on vital projects.

c. Reduction in time lost retraining replacements.

4. Collateral Actions. The Test and Evaluation Command made a comprehensive review of TDAs for their activities having similar missions, e.g., test boards, proving grounds and garrisons with the objective of standardizing organization and refinement of personnel staffing requirements. Fifteen revised TDAs were submitted to DA for approval; to date, fourteen have been approved. Accepted improvements included updating officer special career program positions and graduate level degree requirements.

V. FOLLOW-ON ACTIONS:

1. Stabilization. Administrative procedures have been implemented for monitoring stabilized personnel to assure their retention in the command for periods as approved by DA.

2. Projected Requisitioning Authority. The assigned strength in conjunction with personnel requisitions of US Army Test and Evaluation Command will continue to be closely monitored to assure that both quality and quantity of personnel authorizations are maintained.

I. TASK TITLE: Test and Evaluation Effectiveness.

II. TASK OBJECTIVE: To improve the effectiveness of test and evaluation procedures by insuring:

a. Objectivity and thoroughness in test practices,

b. Review of test results prior to procurement commitment,

c. Efficient use of test resources, and

d. A smooth transition from development through production testing.

III. BACKGROUND DISCUSSION: The objectives of this PROMAP-70 task, developed at the HQ AMC level, are broad because test and evaluation is conducted throughout the entire Life Cycle of Army Materiel. Consequently, all Major Subordinate Commands (MSC) of AMC were involved in this task.

Secretary Packard, in his 31 July 1969 memorandum to the Service Secretaries, stated that "I'm concerned about a general deficiency in the amount of test and evaluation performed on developmental weapons systems before significant resources are committed to production." This PROMAP-70 task is an implementation of Secretary Packard's guidance.

After the four task objectives had been thoroughly analyzed, seven distinct problems surfaced: Coordinated Test Plans (CTP) were of poor quality and were not being used as a management tool, the caliber of test personnel was unknown, test items arriving at the test sites were not ready to be tested, test facilities were not fully utilized, test costs could not be accurately identified, test-report preparation time was too long, and the test structure appeared to be unnecessarily extensive.

To address these problems, 19 separate subtasks were formulated. At the MSC's, the objectives were studied in relation to each command's mission. For example, the objectives at United States Army Test and Evaluation Command (USATECOM) resulted in the establishment of five subtasks and twenty-four actions.

IV. ACCOMPLISHMENTS: The two paramount accomplishments of this PROMAP-70 task are that, first, test and evaluation has obtained greater management visibility commensurate with its place in the materiel acquisition

process and, second, substantial monetary savings have occurred through better test practices. The following chart is a list of monies saved:

MSC	Savings/Cost Avoidances
Aviation Systems Command	$12,604,000
Electronics Command	*
Missile Command	$60,000,000
Mobility Equipment Command	$265,000
Munitions Command	*
Tank Automotive Command	$2,000,000
Test and Evaluation Command	*
Weapons Command	$18,700,000

* To be determined at end of FY.

The test and evaluation elements in HQ AMC and its eight subordinate commands have completed 110 subtasks. The seven problem areas and the progress of their solutions are summarized below:

a. Coordinated Test Programs (CTP)

Prior to PROMAP-70, CTP's were inadequate in scope, depth, and overall quality to serve as useful management tools. The first step to vitalize CTP's was a Command letter implementing DA instructions on the new CTP format. The publication of AMC Supplement #1 on 18 August 1970 to AR 70-10, Test and Evaluation During Research and Development of Materiel furnished guidance on the implementation of AR 70-10. Since this time, 87 CTPs have been submitted to AMC for approval. An additional 31 CTPs are being prepared by the materiel developers in accordance with a schedule developed to insure their submission on a timely basis. Thus, all new major materiel development projects now must follow a coordinated program that contains a test schedule and projected costs for testing. The program is fully coordinated with AMC, CONARC, TECOM, CDC, and the Logistics Doctrine, Systems Readiness Agency (LDSRA) prior to approval at a formal In-Process Review (IPR). Now, managers at all levels have a document to chart development progress.

During the CTP policy development phase, the Test and Evaluation Division conducted a series of seminars for over 120 people throughout AMC and MSC's on the preparation of CTPs and the revised AR 70-10 has been written for publication in January 1971.

b. Profile of Test Personnel

A survey of the 6,745 test and evaluation personnel throughout AMC was conducted and showed that the typical civilian employee is a college graduate at an average grade level of GS-12 and the 619 military

officers had an average rank of major. Nine per cent of the personnel had advanced degrees. The survey also indicated that 65 per cent of the people were fully trained for test and evaluation management positions. Only 9 per cent of the personnel required special training beyond the capability of AMC.

As a result of the survey, a revision of the Army Logistics Management Center's (ALMC) Program of Instruction was made and approved by DA on 9 Sept 70. Increased Command emphasis was placed on sending personnel to the test and evaluation schools to improve their capabilities and efficiency. Thirteen "TECOM College" courses, attended by 384 people, and 5 ALMAC Seminars, attended by 112 students were conducted in 1970. The immediate pay off of this training was the improved quality on the preparation of test reports. The survey showed that a career field in test and evaluation management is not required.

c. Test Items not Ready for Testing

Many test items arriving at the test site in an unsuitable condition for testing surfaced during PROMAP-70. Two actions were instituted to alleviate this problem. The first action was TECOM's establishment of its Test Resource Management System (TRMS) to replace its Test Scheduling and Management System (TSMS). TSMS had become a unwieldy management tool that provided little more than an inventory of tests. The new system gives visibility to the actual workload and isolates the cause of test delays. The second action was to establish a PROMAP policy action to reduce lead time by requiring test items to arrive at the test facility in a test ready condition. This policy was implemented in the revision of AMCR 700-38, Correction of Defects found during Materiel Life Cycle Testing. As a result of these two actions, USATECOM test delays have been reduced from approximately 18 per cent to approximately 10 per cent.

d. Identification of Test Costs

A survey which was initiated to identify the percentage of RDTE funds spent on test and evaluation activities showed a wide variance in estimating test costs. The disparity was due to a lack of a good definition for testing and test cost parameters. The study indicated that approximately 40% of the RDTE budget is used for testing and test related activities.

The results of this test cost study generated a more comprehensive study by the AMC Comptroller. At this time, a cost category model has been designed and "Test and Evaluation" has been defined as those tests conducted by AMC during the Development Acceptance and Production phases of the life cycle. This complicated problem now has received high level command attention.

e. Use of Test Facilities

Seven separate studies have been completed on the future reposturing of USATECOM for greater responsiveness and efficiency in the use of test facilities. Upon implementation, there could be a potential saving of over 400 man years of work. The studies looked into the future of four test sites, the consolidation of two installations, the relocation of a test center headquarters and the elimination of a major Project Managed activity. All of the studies are under DA and AMC consideration. These studies can provide a basis for sound decisions in the face of austere funding and choices to improve efficiency.

f. Reduction of Test Time

A TECOM study was made on how to reduce administrative test time. It was found that if a test agency submits a final draft test report instead of a final report, 4-8 days can be saved in administrative editing and printing. A second finding was that 10 days of report processing time can be saved if some categories of reports are exempted from processing by the USATECOM Review Board. Finally, 20 days of report processing time may be saved at USATECOM if the Final Test Report is not required to be an inclosure to the USATECOM letter which formally informs AMC of its conclusion on the suitability for issue of the tested item.

The benefit of the study was to find potential areas for saving time in the administrative processes. A refinement of this study will continue in 1971.

g. Required Number of Tests

An AMC Study Group was established to review and analyze the major materiel tests conducted throughout the materiel life cycle to determine the validity of these tests and the feasibility of combining certain tests to reduce test time and test costs.

The Study Group concluded that the current test structure is adequate, that tests should be selected which are appropriate to the life cycle of the particular item of materiel, and that they should be prescribed through the use of the Coordinated Test Program for the item. The Study Group determined that a strong centralized staff element at HQ AMC is required to effectively manage life cycle testing. This determination supports the AMC command decision to augment the personnel strength of the HQ Test and Evaluation Division.

V. FOLLOW ON ACTIONS:

Follow-on efforts are programmed for participation by Test and Evaluation personnel in the HQ AMC Comptroller's study of Test Costs and the analysis of the TECOM study on reducing administrative test time.

I. TASK TITLE: Mobilization Production Base

II. TASK OBJECTIVE: An Army/Industrial Production Base capable of supporting military procurement requirements during either Limited War or Declared Mobilization.

III. BACKGROUND DISCUSSION:

1. Prior to June 1967, the AMC Industrial Mobilization Production Planning Program (IMPPP) provided coverage for an average of 2400 planned items.

2. The Southeast Asia (SEA) buildup period, starting in 1965, required the diversion of Industrial Preparedness Operations (IPO) personnel to the more urgent current procurement program in support of SEA operations. IPO manpower engaged in the placement of contracts, surveillance of production, resolution of production problems, acceleration of equipment deliveries, and numerous other supporting roles. The manpower diversion impacted heavily on management of the mobilization production base, relegating the effort to little more than the renewal of existing planning agreements without verification of requirements or production capability.

3. DOD guidance (Series 4005) starting in June 1967 was addressed to AMC for action. The impetus of this program was on the development and maintenance of the industrial production base, and planning to insure that the base will be responsive. The new DOD/DA guidance resulted in an AMC planning objective in excess of 113,000 planned items. Of these, approximately 45,000 required in-depth study and analysis.

4. AMC attempts to obtain additional manpower and funds to meet the new objectives were fruitless. The major expansion and intensification of the Industrial Mobilization Production Planning Program -- Limited War, envisioned by the DOD/DA guidance, was far beyond the capabilities of current AMC resources; however, all AMC commodity commands shifted available manpower toward accomplishment of the new program objectives, to the degree possible.

5. A Secretary of Defense Memorandum, dated 24 July 1969, emphasized to the Secretaries of the Military Departments and the Director, Defense Supply Agency, the need for a viable and realistic Industrial Mobilization Production Planning Program - Limited War, to assure the industrial production base required. Secretary Laird stated, "This base is vital to our national security"; "I am accordingly approving the full execution of this program without delay." A status report, requested by the secretarial memorandum, was submitted to DA in

September 1969. The report reflected the extent of AMC's capability within current resources and revealed that less than five percent of the DOD/DA program objective was being accomplished. No relief was provided.

6. A command-wide reduction-in-force (RIF) action further reduced available Industrial Preparedness Operations personnel from a high of 1096 spaces in FY 69 to 694 spaces in FY 70. FY 71 manpower levels reflect 620 authorized spaces, with a downward trend predicted due to budgetary limitations.

7. It is also significant that the July 1970 report of the Blue Ribbon Defense Panel, the FY 70 Joint Logistics Review Board (JLRB) Report; and numerous audit team reviews and reports, have all severely criticized the management of the Mobilization Production Base and associated programs.

IV. ACCOMPLISHMENTS:

1. PROMAP-70 recognized the deficiencies in the Mobilization Production Base far in advance of the high level reports and took the steps necessary to focus attention on those items and operations most critical to the AMC readiness posture. PROMAP-70 actions taken or implemented to provide an adequate Mobilization Production Base are summarized below:

a. New AMC Planning Objective Established. New AMC Guidance Issued. Intensive management of 1900 items, which includes principal items in the Army Materiel Plan and other critical components, is being pursued. Concentration of effort on these critical items will insure a Mobilization Production Base capable of supporting materiel requirements, under varying procurement conditions. Prior guidance never clearly dictated priority of effort, resulting in a less than desirable result.

b. Complete DD Form 1519 (Prime Contract Schedule) Over 2150 planning agreements are currently in effect, covering in excess of 2185 planned items (carryover planning). The reduced manpower levels coupled with multi-program responsibilities would almost have completely deteriorated this effort; however, PROMAP-70 emphasis has permitted the major subordinate commands to maintain an effective industrial mobilization planning effort. Increased effectiveness has been achieved as a result of PROMAP-70 and is measurable as follows:

Prior to PROMAP-70

Mobilization Production Requirement

$1.407 Billion Dollars per month.

Planned Production Capability

$0.901 Billion Dollars per month.

Effectiveness = 60 Percent

After PROMAP-70

Mobilization Production Requirement

$1.628 Billion Dollars per month.

Planned Production Capability

$1.330 Billion Dollars per month.

Effectiveness = 82 Percent

As can readily be seen, the PROMAP-70 emphasis has lived with the theory of "more with less". Proper emphasis on priority of effort has resulted in more effective performance.

c. Base Retention Studies Completed for 620 Planned Items, to justify the need for Government-owned production base capability. Prior to PROMAP-70, emphasis was at the discretion of the individual commodity command, with no requirement for higher echelon review. PROMAP-70 recognized the need for these studies and for the first time required submission by all major subordinate commands for AMC/DA review in support of Production Base Support funding. The base retention studies have been widely accepted at all Army levels, since they provide a management overview on the status of the Mobilization Production Base on an individual item basis.

d. A Management Improvement Program (14 Point) was developed and implemented under the auspices of PROMAP-70 to improve the Production Base Support Program. Many problems affecting the timeliness of submission and approvals, their adequacy, and the accuracy of reporting were resolved. While most of these problems have no measurement characteristic, the fact that the AMC complex was able to obligate over 87 percent of the DA released funds during FY 70 shows a major significant improvement over prior year experiences. The establishment

of Production Base Support Program in-depth reviews of project submissions has reduced experienced re-work cycles and higher echelon disapproval ratio. Project milestone charts depicting status permit reorientation of effort, when necessary. Single points of contact at lower echelons were established enabling a more rapid response to queries. An automated Production Base Support Data System was developed in connection with PROMAP-70 at the direction of higher echelon. The first test run resulted in a highly acceptable product; however, the test period will continue for one year before a complete appraisal is made and implemented by Army regulation. Significant management improvements in future years are expected as a result of PROMAP-70 impetus.

e. A PROMAP-70 training course in Procedures and Techniques essential to Mobilization Production Package Layaway was developed. The course entitled "Preparation of Industrial Plant Equipment for Storage or Shipment" was conducted by the Joint Military Packaging Training Center (JMPTC) during April and June 1970. Sixty-two Army personnel received training as cadre personnel to expand the training within their commodity commands. Further classes are scheduled by JMPTC in December 1970 and March 1971, at which time DSA/DCAS personnel will be in attendance.

f. A multitude of other PROMAP-70 instigated actions will be completed during the seventies, such as: Consolidation of AMC regulations; Issuance of a standardized presentation procedure; Development of a new, less complex reporting system; Preparation of systems analysis studies; etc. PROMAP-70 has opened the door to investigation of new methods. It has revitalized the imagination of industrial preparedness personnel in completing the AMC objectives, providing wider coverage, and implementing improved techniques.

g. Various PROMAP-70 symposiums, conferences, training session, etc, have served to establish improved communication channels through personal liaison. The policies and objectives of the Mobilization Production Base have been widely discussed. All effort is being directed to the DOD objective: "a viable and realistic Industrial Mobilization Production Planning Program" enabling better decision-making in the day-to-day management of related programs.

V. FOLLOW-ON ACTIONS:

1. Many of the PROMAP-70 actions are scheduled for continued emphasis as command objectives. Maintenance of completed planning agreements at a specified interval; Base Retention Study submissions; Review of regulations and reporting systems and methods; etc., are among those actions requiring future surveillance.

2. Training in all Mobilization Production Base functions, will be encouraged and developed, as budgetary restraints permit.

VI. TASK DIRECTOR COMMENTS:

Acquisition and application of manpower is a most serious problem to be faced in the future, since a majority of the functions in the Mobilization Production Base require manual input. All automated potentials will be seriously analyzed in an effort to provide wider coverage with reduced staffing.

I. TASK TITLE: Production Engineering Project Management

II. TASK OBJECTIVE: To improve Production Engineering Project Management (PEMA and OMA) by devising and implementing a program formulation system and a follow-on work progress reporting method to provide information on the progress and compatibility of the scope of work described in the approved projects.

III. BACKGROUND DISCUSSION: The HQ USAMC reorganization on 1 July 1968 in part centralized HQ USAMC Engineering functions in the Engineering Division, Directorate of Research, Development, and Engineering, including management of the Production Engineering Program. HQ USAMC Technical Engineering Reviews and an AMCRD Review Board were established during the formulation of the FY 70 program in CY 1968 and 1969 for Advance Production Engineering and Military Adaptation of Commercial Items (APE/MACI). At that time it became apparent that the system for program formulation and review of technical progress was inadequate in the MSCs. Projects were being proposed based on uncoordinated informal criteria and forwarded directly to HQ USAMC for review and approval. MSC reviews, if held, were sketchy in nature and usually involved only Section Offices and Branch Chiefs. Follow-on technical work progress reviews were either lacking or were performed on an irregular basis at low action level. Once all funds were distributed based on the DOD approved project, Technical work progress was not reviewed again by HQ USAMC on a regular basis until the Rejustification Review in the 3rd year of the project. In view of the situation described above, it was essential to set up a system for program formulation and technical work progress review and reporting.

IV. ACCOMPLISHMENTS:

a. Initial Studies -

(1) A survey of the command revealed that only MECOM and TACOM had Review Boards. The results formed the basis for implementing a command wide program formulation system.

(2) Work Progress reporting systems in the Command were surveyed and it was found that Technical Work Progress Reporting was not in affect for APE/MACI projects and that the MM&T Report System could be expanded to include APE/MACI. A study was conducted, Jan 1970, with all MSC PROMAP Directors and Representatives from PEQUA and Industrial Preparedness(AMCRP), and the basic format for the Technical Report was devised. The already existing Manufacturing Methods and Technology Progress Report was expanded to include APE/MACI projects. The frequency of the report was revised from monthly, as it had been for MM&T, to semiannually for APE/MACI and MM&T. Upon completion of that study a letter was published, 8 June 1970, placing requirement on the MSC to submit the first series of semiannual reports for APE/MACI projects NLT 1 November 1970 to be as of 1 October 1970. The Thirty(30) days were allowed

to provide time at the MSC level for Board Review and Program Corrective action prior to submission to HQ USAMC.

b. Orientation -- No formal orientations were conducted. A letter with basic guidance on the Semiannual Report was sent, 8 June 1970, with followup TWXs containing additional guidance was sufficient. Timely telephone discussions with MSC PROMAP Directors were also conducted as required.

c. Training -- none. The written guidance was sufficient. The management staffing in the commands was not increased or changed to require training.

d. Before and after comparison -- The measurement criteria for comparison includes expanded Command Reviews, project quality improvement and project progress.

Improvement in Command Reviews

The payoff started to occur in February, March and April 1970 with the expanded MSC Reviews. Prior to that time, only MECOM and TACOM had established formal Reviews. As of 31 March 1970, all Commands had established Review Boards. The Boards were used for the first time on a command wide basis for the formulation of the FY71 Apportionment Program for APE/MACI and were used again for the formulation of the FY72 Budget Program. Appointing orders and Board procedures have been completed and copies received by this HQ.

Improvement in Quality of Project Proposals

As a direct result of the Command Reviews, improvement in quality of project proposals was particularly noticeable for the FY71 apportionment submitted by AMC to DA. All 39 of the APE/MACI projects were supported by DA and only 2 dropped by DOD. One of the two projects dropped, the DRAGON, was later funded as an upward adjustment to the FY69 Program. This attainment shows a 20% improvement over the results of the FY70 program submitted to DA.

	FY70		FY71	
APPORTIONMENT	PROJ	$MILL	PROJ	$MILL
Initial Submittal MSC	58	88.3	46	72.9
Deleted by AMC	11	15.2	7	17.5
Submitted to DCSLOG	47	73.1	39	65.4
Deleted by DCSLOG	11	16.4	NONE	NONE
Submitted to DOD	36	56.7	39	65.4
Deferred/Deleted	3	19.8	2	23.4
Funded Program	33	36.8	37	41.5

Improvement in the quality of proposals continued in the FY72 budget, which involved a higher number of projects for significantly higher dollar cost. DA approved $96.9 Million dollar of the $107.0 Million AMC submitted for the FY72 Budget. Informal feedback from DA indicates that the program is being favorably considered by DOD.

BUDGET	FY72 PROJ	FY72 $MILL
Initial Submittal MSC	81	129.8
Deleted by AMC	23	22.8
Submitted to DCSLOG	58	107.0
Deleted by DCSLOG	14	10.1
Submitted to DOD	44	96.9

TECHNICAL PROGRESS REPORTING SYSTEM

The second part of the objective of PROMAP Task to implement a feedback Technical Progress Reporting System fulfills the management requirement for a semiannual Technical Progress Report for the PEMA and OMA portions of the program.

PEMA -- There was not any progress report except for statistical funding information for management purposes in the past causing a void in management decision data. The APE/MACI Technical Progress Report has filled that void for PEMA APE/MACI Projects. The report has multipurpose use to include (i)Technical review of the progress on the approved project scope, (ii)review of the fiscal obligation rate, (iii)review of the continuing need for the project and (iv) the opportunity to influence the project progress where required. The MSC reaction has been favorable and the payoffs readily apparent. The semiannual report will be submitted in November and May each year. Preliminary evaluations have revealed weaknesses in technical progress and obligation rates upon which prompt remedial influences have been initiated.

OMA -- The data provided by the Commands for the OMA Production Engineering Program has been budgetary in nature, consisting primarily of consolidated statistical data. While some magnitude of the workload is provided, specific engineering work proposed or accomplished remains relatively unknown. Hence, there is insufficient data for proper management of the program. The OMA Progress Report will fill this void. The purpose of the report is to establish a data base for evaluating the OMA Production Engineering efforts by command and includes a categorical breakdown of major efforts, objectives, recent accomplishments and manyear funding. The first report requirement was placed on applicable field elements to report on their OMA Production Engineering

Activities during August and September 1970. The report will be submitted on a semiannual basis during September and February. Preliminary evaluations of field submissions have revealed weaknesses and inconsistencies in the OMA Production Engineering Program and the need for better coordination and guidance from HQ USAMC.

V. FOLLOW-ON ACTIONS: The primary action will be to continue to insure that the quality of the MSC APE/MACI programs are maintained during the Budget and Apportionment Program formulations and to act in a timely fashion on the data submitted in the Semiannual reports in order to keep the individual projects moving and obligation rates at a satisfactory level. This will be accomplished by measuring the project and report submissions against checklists to assure quality is maintained and by measuring the results of current year approvals against prior year approvals at DA and DOD. If the project and report quality is maintained at a satisfactory level, approval success before DA and DOD should remain high which will indicate that the subordinate commands are continuing the program formulation methodology developed by this PROMAP project. The measurement will be effected twice each year during the Budget and Apportionment formulations(August and May) for project quality. The project progress will be measured twice a year also during the semiannual submissions(November and May).

An additional follow-on action will be to write the project and report methodology into the AMC supplement for AR 700-90, Industrial Preparedness.

I. TASK TITLE: PRODUCT IMPROVEMENT

II. TASK OBJECTIVE: To improve the management of the Product Improvement program by formalizing: (1) necessary organizational arrangements; (2) P.I. program and Budget formulation, identification and review, and (3) Promulgation of regulations, procedures and practices.

III. BACKGROUND DISCUSSION:

a. Product Improvements constitute a large part of engineering changes affecting cost of materiel. Deputy Defense Secretary Packard emphasized this in his memorandum of 31 July 1969 to the Service Secretaries, in which he stated that the control of changes in on-going programs is one of the five principal problem areas in the weapons system acquisition process. Secretary of the Army Resor's response to Mr. Packard on 2 October 1969, established control of cost growth as one of the Army's sixteen objectives.

b. Although the principle reason for initiating this PROMAP-70 task was to implement the Deputy Secretary of Defense guidance cited above, HQ, AMC recognized the necessity to improve management of Product Improvement and had initiated improvement actions earlier. As early as 1966, the Army Materiel Command had initiated one of several studies on the subject (AMC Board Report 2-66) under the topic "Product Improvement". This led to the reorganization of HQ, AMC in July 1968. The management of the Product Improvement program was centralized in the Research, Development and Engineering Directorate. Initial effort was directed at differentiating between the formal Product Improvement Program and correction of minor deficiencies involving little engineering effort as well as removal of production stoppages/bottlenecks that were solved by Contractors and the Government through normal and joint provisions of Engineering Change Proposals (ECP) and resultant Change orders for cut-in to production.

c. Product improvement policy and procedures were revised for the review and evaluation of requirements, and an AMC position, prior to the Budget cycle and DA Review. The objectives of the PROMAP-70 task were oriented to formalizing these controls over the product improvement portion of engineering changes; formulating a program to include the engineering effort; and obtaining prior DA approval for multi-year requirements.

IV. ACCOMPLISHMENTS: The improvement in the management of Product Improvement as a formal AMC program, resulting from this PROMAP-70 Task, is summarized below:

a. Improvement in Organization and Staffing.

(1) At HQ, AMC - Before 1 July 1969	After PROMAP-70
(a) Engineering overview fragmented: 1. Config Mgt. in Log. Data Mgt Office. 2. Engineering Support of Procurement in P&P Dir. 3. PEMA reprogramming for increased scope of Engineering in AMCRP. 4. Product Improvement Br. non-existent.	Configuration Mgt. and Product Improvement Branches combined in new Eng. Div. of AMCRD. (Resources req'd for Identification and Scope of PI at HQ, AMC prior to Budget preparation)
(b) No organizational entity for Product Improvement.	Organization staffed with 9 Engineers/ Action Officers.
(c) No Formal Organization for Configuration Control.	Config. Control Bd. established by AMCM 15-28 dated 28 May 1970.
(d) No interface with, or verification of User-requirements; Combat Developments Command (CDC).	CDC Counterparts named in each Commodity/Budget Activity. (Interface established 23 June 1970).
(e) No Program evaluation prior to the Budget Submission	Total Impact Evaluation made with assessment of risk and cost effectiveness.

(2) At Major Subordinate Commands (MSC/PM)	- Before 1 July 1969	After PROMAP-70
(a)	No fixed responsibility for programming reqmts.	Product Improvement Coordinators named at each MSC.
(b)	No Config. Control Bd. procedures for devel. of RD&E position.	Established CCB's for Command control.
(c)	PM programs submitted directly to DA via Army Materiel Plan (AMP) update.	Evaluation of PM programs by MSC prior to PEMA Budget preparation.
(d)	New Reqmts made Reprogramming requests at any time (AMCRP).	Integration of new requirements with Apportionment of prior-year Programs.
(e)	All Engineering for Product Improvements buried in PEMA line items or Modification/ Retrofit line.	P.I. Separately identified as PEMA, or OMA, Inclusive of Engineering Effort.

b. Improvement in Program Management (Policies and Procedures)

(1) The initial objective of PROMAP-70 task for Product Improvement was to implement the provisions of the revised Army Regulation; namely, those provisions that govern the formal, pre-budget evaluation of requirements, not only improvements defined as "improving mission availability (operational readiness) or safety" but also those that provide "new or improved tactical or operational characteristics" (normally RDT&E), and those that "significantly reduce production costs and/or logistics Support requirements."

(2) Implementation of the revised Army Regulation (AR 700-35) for Product Improvement of Materiel during the review and evaluation of FY 72 and future requirements availed the following payoffs:

(a) Provided visibility for engineering costs that have an impact on future budget years implementation (heretofore buried).

(b) Permitted an assessment of risk and technical complexity which required recycle of some engineering efforts to RDT&E.

(c) Assured a total logistical impact evaluation for all engineering changes.

(d) Ascertained cost effectiveness of modification/retrofit during multi-year programs for rebuild.

(e) Verified timeliness of implementation and application to the inventory.

(f) Eliminated non-essential proposals or marginal improvements and phased-in application of modification kits.

c. Improvement in Controls.

(1) Improved controls have been realized by establishing a Configuration Control Board (CCB) at Headquarters, AMC (AMC Memo 15-28 dated 28 May 1970); developing criteria for the evaluation and validation of Product Improvement Proposals; organizing CCB Working Groups in the various System Components/Commodity areas (13); and fixing responsibilities for the technical review and need-evaluation upon Commodity Divisions of the Directorates of RD&E, R&P, QA and the Comptroller. These procedures culminated in AMC Memo No. 700-1 dated 18 September 1970.

(2) Criteria for evaluating proposals from the field were the first product of the new staff. Subsequently, six of the nine Action Officers/Engineers visited two or more of the Commodity Commands to orient Product Improvement Coordinators prior to the formulation of their programs, in March and April of 1970. Having established P.I. Coordinators at the Commands, the preparation of the FY 72 P.I. Program was put in their hands and the 60-odd individuals that had been oriented on the new procedures and criteria. These criteria will be implemented fully at major subordinate commands (MSC's) for qualification of the FY 73 program requirements during apportionment of the FY 72 program in the 3rd Quarter of FY 71.

(3) The P.I. proposals received in AMC in May (400) were made the subject of intensive review by working groups for each of the commodity areas prior to presentation to the AMC Configuration Control Board (see above). The evaluation of these proposals in May and June 1970, by Configuration Control Board procedures resulted in a P.I. program of 191 projects with an estimated cost in FY 72 of $133 Million. As a result of this intensive review, and subsequent to verification by Combat Developments Command that programs over $1 Million each were valid User-requirements, AMC was able to formulate and submit a program to DA by 25 June 1970. This program was recommended to DA with options for $100 Million and $85 Million; contingent on Budget reductions. This accomplishment is considered an

achievement by virtue of DA approval of 87% of the program submitted. The majority of those projects approved but deferred to FY 73 for funding were the same ones recommended by AMC in the $1[illegible]0 Million Decrement.

(4) Additional accomplishments resulting from implementation of organizational, procedural, and control improvements are identified as follows:

(a) AMC obtained identification for essential tactical, operational and/or mission requirements that could be obtained on a timely/cost effective basis (FY 72 and future).

(b) Programs involving efforts over $1 Million were validated by CDC for priority purposes as critical or much needed. Elimination of marginal improvements provided DA priorities within the currently limited funds (ceilings) and eliminated the time-consuming coordination of DCSLOG with/by ACSFOR during the DA Reviews.

(c) Projects that were approved for future-year Modification/retrofit or Conversion were scrutinized in the time frame of Modification kit procurement and application.

(d) Methodology and criteria developed for reviewing proposals permitted the relegation of portions of program proposals to either RDT&E effort, or Advance Production Engineering necessary to the next procurement.

V. FOLLOW-ON ACTIONS:

a. AMC proposes that the intensive program review at HQ, AMC be made the responsibility in 1971 of the Major Subordinate Commands. Toward this end, specific guidelines and criteria for qualification/evaluation, based on the revised Army Regulation (AR 700-35) and the experience gained at Headquarters, AMC in 1970 (as outlined in IV above) will be provided the field in January 1971. For multi-million-dollar programs an assessment of risk will be mandatory. This evaluation, coupled with implementation of AR 37-13 for ECONOMIC ANALYSIS, should avail a better justification for Product Improvement of items in the inventory rather than development of replacement items. Implementation of this is dependent upon regulatory procedures for RISK analysis. (Another PROMAP-70 Task)

b. The following objectives will be made the subject of implementing instructions to the field for review of the FY 72 approved program during apportionment and integration with FY 73 requirements:

(1) Identify those approved, but unfunded, requirements deferred to FY 73.

(2) Re-evaluate these requirements on the basis of engineering and testing accomplished to date.

(3) Verify that requirements are valid P.I. Programs in consonance with new guidance and not an Engineering measure for the next buy or Engineering in Support of Procurement for which alternative funding is appropriate.

(4) Audit previously approved, on-going programs to assure that accomplishments are commensurate with funding.

(5) Present new/revised programs for FY 73 to local Configuration Control Board prior to Command decision, update of Army Materiel Plan (AMP) and submission to HQ, AMC.

(6) Conduct In-process Reviews (IPR) at critical points in the development of approved and on-going Product Improvement Programs.

(7) Initiate and operate a Configuration Management effectiveness reporting system and/or Milestone Status Report for selected Systems/items of high dollar value.

I. TASK TITLE.

The Army Procurement Research Office.

II. TASK OBJECTIVE.

To provide a procurement research facility to the Department of Army for indepth research into selected procurement problems to assist in the improvement of the acquisition process.

III. BACKGROUND DISCUSSION.

AMC management recognized a need for a procurement research facility, free of operational responsibilities, to objectively apply a broad range of high caliber talents to detailed studies and analysis of the effectiveness of current acquisition management techniques and to develop, test and evaluate most advanced techniques within the area to assume leadership in a rapidly changing technology and environment. The decision was made to establish such a facility within the Institute of Logistics Research, Army Logistics Management Center, Fort Lee, Virginia. DA Staff approval was obtained and personnel spaces were allocated from within the AMC.

IV. ACCOMPLISHMENTS.

The staffing of the APRO was completed on 9 June 1970 and consists of 16 highly qualified professional and 4 clerical personnel. Tasks commensurate with the developing staff's capabilities were assigned during the year to this point where ten research projects have been assigned.

One project on Life Cycle Costing has been completed. The AMC Life Cycle Costing manual was developed and distributed and a revision to the ASPR was proposed to give status and guidance to this technique.

Another completed project established a "should cost" library at ALMC. The bibliography and procedures applicable to the library have been distributed. The library is being utilized by two "should cost" teams.

A preliminary report on "Production Cost Growth" and a final report on "Effectiveness of Contract Incentives" have been received and are being staffed within AMC Headquarters.

The following tabulation and notes thereon reflect APRO contributions to and coordination with other PROMAP-70 tasks:

PRO RESEARCH PROJECT TITLE / PROMAP 70 TASK	More Realistic Cost Estimating	Effectiveness of Contract Incentives	Transmission of Procurement Technical Requirements	Better Procurement Through Expanded Usage of Life-Cycle Costing	Production Cost-Growth	"Should-Cost" in R&D	Phase-Out Government-Owned Facilities in Possession of Contractors
	70-1	70-2	70-5	70-6	70-7	70-8	71-2
Acquisition Management							
Models for Cost Estimating (PILOT ICE),				1/			
Training for Improved Material Acquisition	2/						
Concept Formulation							
Adequate Tech Data Package and Request for Proposals,			3/				
Configuration Management			4/				
Contract Definition and Source Selection							
Contractor Motivation,		5/			6/		
Independent Government Cost Estimates	7/						
Cost Realism in Proposal Evaluation						8/	
Contractor Performance Evaluation					9/		
"Should-Cost" Analysis						10/	
Engineering Research & Development							
Definitization of Contract Changes			11/				
Production							
Production Mobilization Base							
Production Engineering Project Management			13/				12/
Industrial Plant Equipment (IPE and Facilities Management)							14/

NOTE 1: Pilot teams recommended by 70-6 to use Pilot 5 Studies and data banks.

NOTE 2: Considerable involvement in training, e.g., CETSA.

NOTE 3: Relate actual field TDP experience to prescribed and authorized transfer procedures.

NOTE 4: Immaturity of technical data and incorporation of changes.

NOTE 5: Determined effectiveness of contract incentives in motivating contractors to reduce costs.

NOTE 6: Economic model of cost growth, based on contractor entrepreneurial behavior and motivations.

NOTE 7: PRO supplied two people, full-time, for the Bell Should-Cost Study, and assists AMC training.

NOTE 8: Determine feasibility of applying "Should-Cost" to R&D procurement.

NOTE 9: Data base for study is CPE Cost Growth Analysis Reports.

NOTE 10: (i) "Should Cost" in R&D project, (ii) Participation in Bell Study, (iii) Consultant services for teams, (iv) Publication of AMC Guide, (v) "Should Cost" Mini-team Project, (vi) "Should Cost" Center.

NOTE: 11: Timeliness of changes and proposals being studied.

NOTE 12: Disposal of facilities that could be used by industrial mobilization base producers.

NOTE 13: Evaluate relationship of production engineering management to tech data package quality and timeliness.

NOTE 14: Determine impact of DOD "Facilities Phase-Out Plan" on current government contractors, future procurements, and on the used machine-tool industry.

Efforts are continuing on two "should cost" research projects, a study on the "transmission of procurement technical requirements" and on the impact of the "phase-out of Government owned facilities in the possession of contractors". An off-shoot of one of the should cost projects was the development of a two week cost estimating course which is now a part of the ALMC curriculum. Another product of this should cost project is a draft "should cost guide" which has been distributed to the Major Subordinate Commands. Additional copies were made available to DCAA, DCAS and Department of the Air Force. Additional distribution will be made as soon as the present printing is completed.

In addition to the foregoing, the APRO staff has participated actively in both of AMC's major should cost studies. They have done other ALMC course development and presentation work.

V. FOLLOW-ON ACTIONS.

The APRO is now a permanent integral part of the Institute of Logistics Research (ALMC) and will receive its' guidance and management control from the Director of Requirements and Procurement. Emphasis on the APRO mission, function and procedures will be given in the annual "5 Year Procurement and Production Program" document.

I. TASK TITLE: Industrial Plant Equipment (IPE) and Facilities Management

II. TASK OBJECTIVE: Achieve a balance of industrial plant equipment (IPE) and facilities ownership to maximize Army's ability to utilize contractor capability while minimizing facility costs.

III. BACKGROUND DISCUSSION:

1. Several major events occurred from 1963 to 1969 that made IPE management uncommonly difficult. Several of the events are listed below.

a. 1963: The Army central IPE Management Agency was dissolved and a central DoD agency was established.

b. A continuing series of studies and changing guidance emanated from the Office of the Secretary of Defense (OSD) and the Defense Supply Agency (DSA) .

c. The Vietnam buildup in the period 1965 thru 1967 required many militarily expeditious decisions and actions relative to the use and management of IPE which sometimes were at the expense of the peacetime niceties which had developed since the last period of conflict.

d. Assignment of a low priority to the entire Industrial Mobilization Production Planning function including IPE management, resulted in greatly reduced manpower being applied to the program. An attempt to correct this situation through the submission of a Program Change Request (PCR) in 1968 was unsuccessful.

2. As a consequence, Army Materiel Command (AMC) found itself in violation of a number of rules and regulations. This fact did not escape the notice of the US Army Audit Agency (USAAA) or the General Accounting Office (GAO). The extent of their interest is indicated by the following list of audits:

a. USAAA "Army-wide Audit of the Management of Industrial Plant Equipment", Report No. MW 70-15 (AMC No. 1A116825) (1968-1969, 21 sub-reports based upon audits at 21 AMC installations and commands. The 21 individual audit reports were also combined into a single final report.

b. Eight GAO reports relating to IPE management as follows:

(1)	GAO Letter Report	(OSD Case 2902)
(2)	GAO Report	(OSD Case 2644)
(3)	GAO Review	(OSD Case 2900)
(4)	GAO Draft Report	(1 May 1967)
(5)	GAO Survey	(AMC Case 1G36814)
(6)	GAO Letter Report	(OSD Case 2991)
(7)	GAO Review	(OSD Case 2978)
(8)	GAO Review	(AMC Case 1G126840)

IV. ACCOMPLISHMENTS:

1. Re-emphasis of Program: The importance of revitalizing the program was brought to the attention of the major subordinate commands through:

a. HQ, AMC letter directing reallocation of manpower to the program was issued.

b. A meeting on IPE management was held for the major subordinate commands and arsenals by the Director of Requirements and Procurement at Rock Island, Illinois on 2-3 December 1969.

c. The Director of Requirements and Procurement presented the IPE management improvement program to the AMC Commanders Conference at Huntsville on 10 December 1969.

d. The on-going "Catch-UP" program was incorporated into PROMAP.

2. Improved Guidance:

a. A new all-encompassing Industrial Preparedness Program regulation (AR 700-90) was distributed in October 1970.

b. A new DoD definition of IPE was published as an aid to field activities.

c. A new method of calculating amortization on the machine tool replacement analysis worksheet was published.

d. An entire reporting system and the regulation requiring it (AMCR 700-26) was rescinded and the requirement was met by using existing data at the Defense Industrial Plant Equipment Center (DIPEC).

3. Equipment Housecleaning: Some of the audit criticism pointed to cases where IPE had been held unnecessarily for long periods of time. In some cases this criticism was valid, therefore, it was made a milestone to rid AMC activities of unneeded IPE. As a consequence, IPE was identified and reported to DIPEC as excess to Army needs during the PROMAP period as shown.

	No. of Items	Acquisition Cost $ Million
a. Excess declaration from layaway	3490	31.3
b. Excess declarations from active use	4210	45.2

4. Orientation and Training:

Type	Length	Number of People
Management Orientation	2 Days	75
Top Management Briefings		50
Economic Analysis Seminar	2 Days	87
Distribute Replacement Handbooks		130
Cadre Training for Layaway	5 Days	84

5. Effects of Selected Actions:

ACTION	OLD WAY	NEW WAY
Publication of a Five Year plan for Industrial Preparedness	A Modernization and a Manufacturing Technology Five Year Plan were published. These two plans did not cover all IPE acquisition, nor did it cover layaway of facilities.	A single integrated Five Year Industrial Preparedness Plan has been developed which spans the life cycle period during which plans are made for mobilization production thru the preparation for production thru the provisions for facilities

ACTION	OLD WAY	NEW WAY
		and finally includes layaway of industrial facilities. Management visibility is greatly improved.
Publication of AR 700-90 Army Industrial Preparedness Program	Several Army and AMC regulations in the logistics, comptroller and other functional areas contained fundamental guidance on the Army Industrial Preparedness Program	The preparation and subsequent publication of AR 700-90 has brought the entire Army Industrial Preparedness Program within the scope of a single document, thereby streamlining operations at Headquarters and field levels.
Publication of new DOD definition of IPE	The existing definition of IPE was extremely ambiguous and resulted in the growth of DIPEC reportable IPE to include equipment in 109 federal supply classes (FSC)	The new definition published by OSD constrains the IPE definition to all the equipment in 40 FSCs and some equipment in 24 additional FSCs and provide as well a noun nomenclature and functional description of equipment to be categorized as IPE there by reducing confusion as to reporting requirements.
Change regulations governing computations of amortization period of machine tool replacement analysis worksheet.	Existing instructions for calculations of amortization period resulted in requirement for a double amortization, thereby penalizing the Army and its replacement of machine tools relative to the other military departments.	The new method of calculation of amortization permits more readily the replacement of inefficient and obsolete machine tools by not applying the capitalization factor before dividing the net investment by the first year operating advantage.

ACTION	OLD WAY	NEW WAY
Development of machine tool requirements	Under AMCR 700-26, an AMC-wide reporting system was required to project machine tool requirements for DIPEC	AMCR 700-26 and the entire reporting system that is required has been rescinded. DIPEC now projects machine tool requirements on the basis of demand history.
Screening DIPEC prior to procurement of IPE for modernization	When screening DIPEC in the past for potentially available IPE which could be substituted for IPE desired for modernization, DIPEC frequently offered machine tools of ancient vintage which in no way contributed to Army Modernization program.	Agrement has been made with DIPEC that for the Army Modernization program, no items of IPE will be offered which are in excess of eight years old.
Preparation of P-15, P-16, and P-17 Project Formats.	Project Formats called for by AR 37-40 contained requirements for ambiguity and redundancy of information.	New P-15, P-16 and P-17 project formats have been simplified reducing administrative workload.
Project Status Reporting	The project status reporting summary (1123 report) was prepared on an erratic basis and contained data insufficient for current management needs.	The new project status report system (1123 report) is automated and will contain current data valuable to management decision making.

V. FOLLOW-ON ACTIONS:

1. Continue to assure that voids in layaway packages are filled from Army excess declarations and through DIPEC screening for candidates.

2. Maintain meaningful level of functional staff visits to all levels of activities.

3. Consolidate IPE management function into a single Headquarters, AMC office to the optimum extent utilizing the results of Research Analysis Corporation Study as much as possible.

4. Continue training program for layaway as SEA level of activity subsides.

I. TASK TITLE: Numerical Control/Computer Aided Manufacturing (NC/CAM)

II. TASK OBJECTIVE: Make maximum economic utilization of numerical control (NC) machines in the acquisition of AMC materiel. Develop and implement systematic time phased plans for the evolution to computer aided manufacturing (CAM).

III. BACKGROUND DISCUSSION: In June 1968, the Army Materiel Command first identified the potential of numerical control as a quick response economical method for acquiring low volume repair parts. As a result, a Master Planning Objective was established which stated:

"Army Materiel Command will augment its existing fast-reaction repair parts manufacturing capability by applying the advantages of numerically controlled machine tools."

This resulted in a Related Directed Action. The CG, AMC directed that:

"Each commodity command will establish a fast-reaction manufacturing capability with its associated depots. In addition, Army Materiel Command will foster the education of Engineering, National Inventory Control Point, and procurement personnel in the increased use of numerically controlled machines for logistics support."

These were established as AMC Master Planning Objectives in FY 69.

Additionally, in June 1969 the CG, AMC issued the following policy guidance for FY 70 and FY 71:

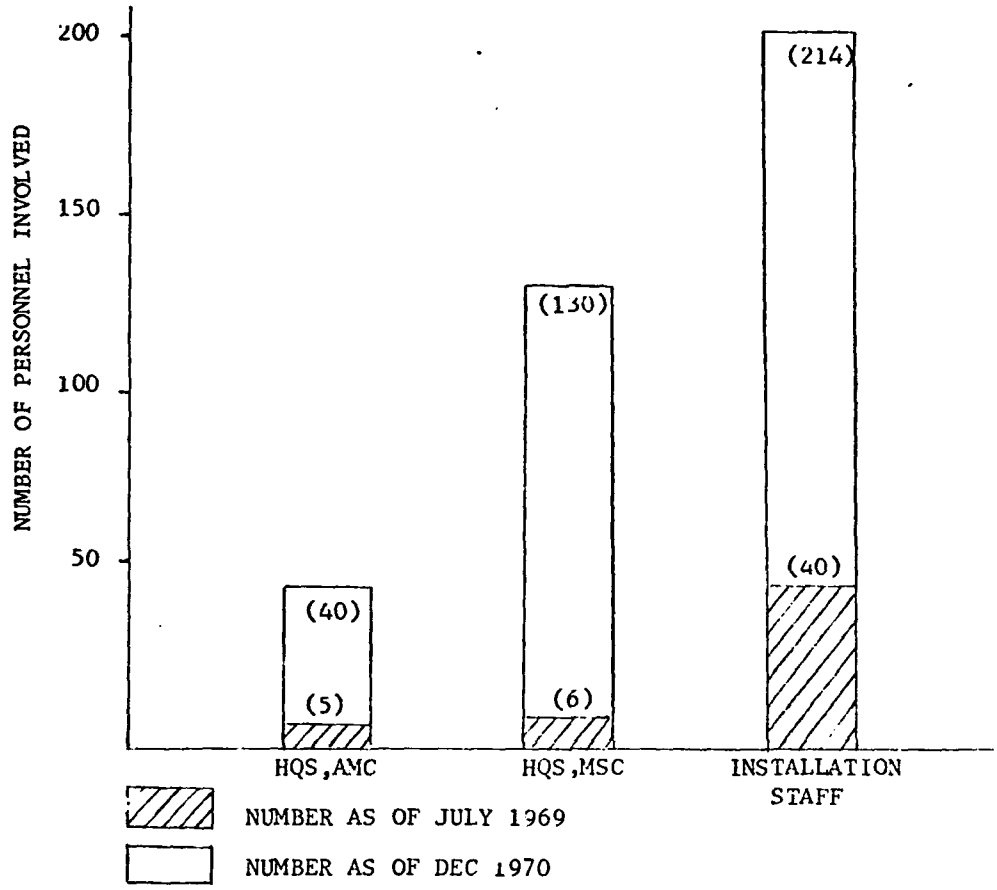
"AMC plans to make greater use of NC machine tools. These tools provide a semi-automated capability to manufacture small quantities of repair parts and thereby permit us to be more responsive to sporadic demands, and to fill demands for items in zero balance without wasting normal procurement. This equipment also will provide a means to assess better the reasonableness of contractors' prices, particularly for small orders. One example at ARADMAC caused reduction in price of one component from $650 to $102. We will also benefit by reducing the number of skilled operators required. This program deserves high priority and I seek your support in its funding in FY 70 and future years."

IV. ACCOMPLISHMENTS: Since July 1969 AMC has added 25 NC machines to its inventory making a grand total of 198 machines. This includes 106 machines Government-operated and 92 machines contractor-operated. This inventory represents a total investment of $20,000,000. During PROMAP a total management program has been established under

AMCR 15-13 "Numerical Control/Computer Aided Manufacturing AMC Steering Group." Personnel involvement has grown from 5 to 40 at HQs, AMC; from 6 to 130 at the major subordinate commands; and from 40 to 214 at the Installation level. NC machine utilization has continued to run about 65 percent of a full two-shift operation. Annual cost savings from our Government-operated inventory are approximately $2,900,000. This portion of the inventory is valued at $9,000,000.

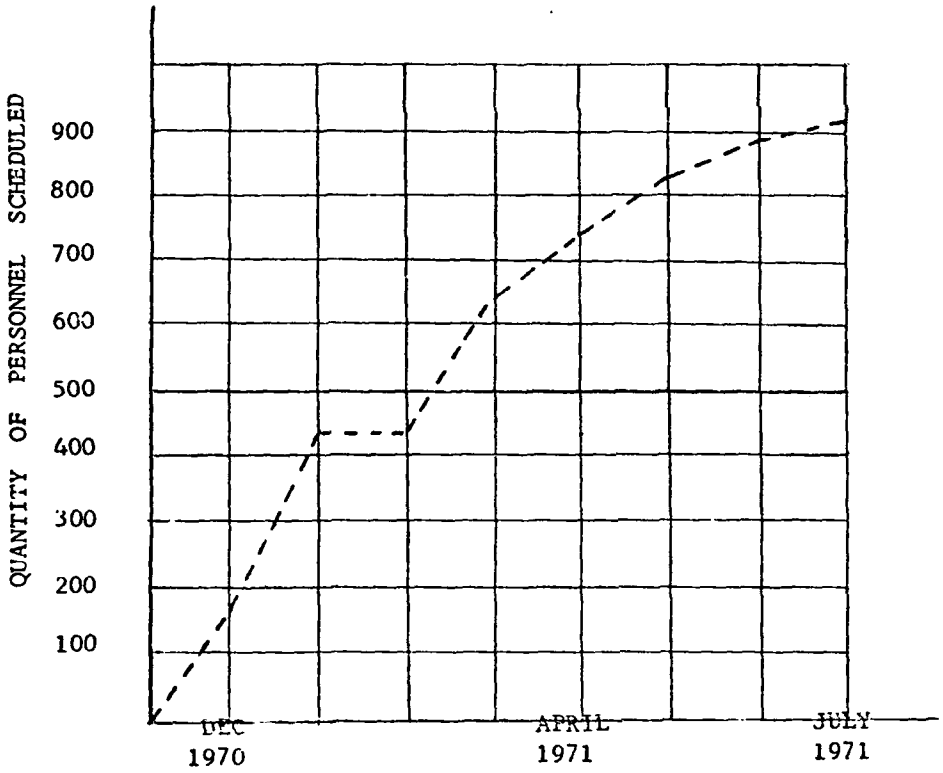
In July of 1969 there was no NC training either management oriented or bench level technology in being or planned in AMC. There had been some meagre efforts to purchase training from industrial sources. This exposure was generally limited to personnel already involved in NC operations. In a joint effort between the AMC technical personnel and the Army Management Engineering Training Agency a series of training programs have been developed. Firm schedules for attendance at these sessions have been established.

The following series of charts and graphs compares the July 1969 baseline data with current data relative to each of the accomplishments.



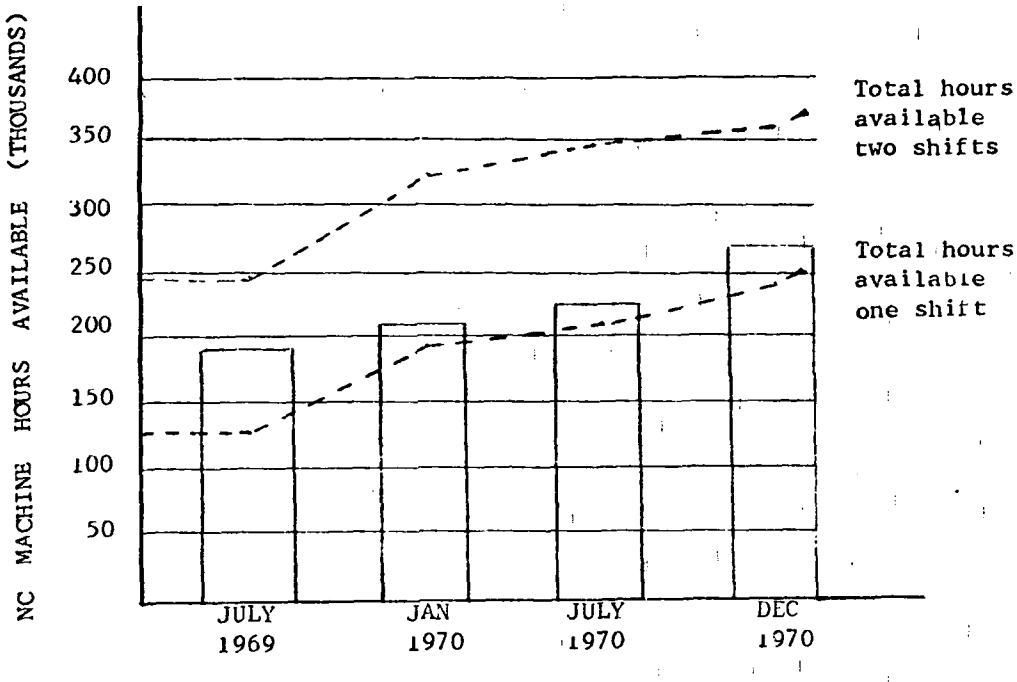
NC/CAM
PERSONNEL INVOLVEMENT

Concurrently with the publication of AMCR 15-13, dated 18 August 1970, which directed the formation of an AMC NC/CAM Steering Group, similar groups were formed at each MSC and among the depots. This also resulted in comparable management functions at the installation level. In each case the composition of the group included all interested elements spanning most all organizational functions. This has increased the personnel involved with NC/CAM management from 51 in July 1969 to 384 in December 1970. More importantly, this has given AMC a management structure to address this new technology.



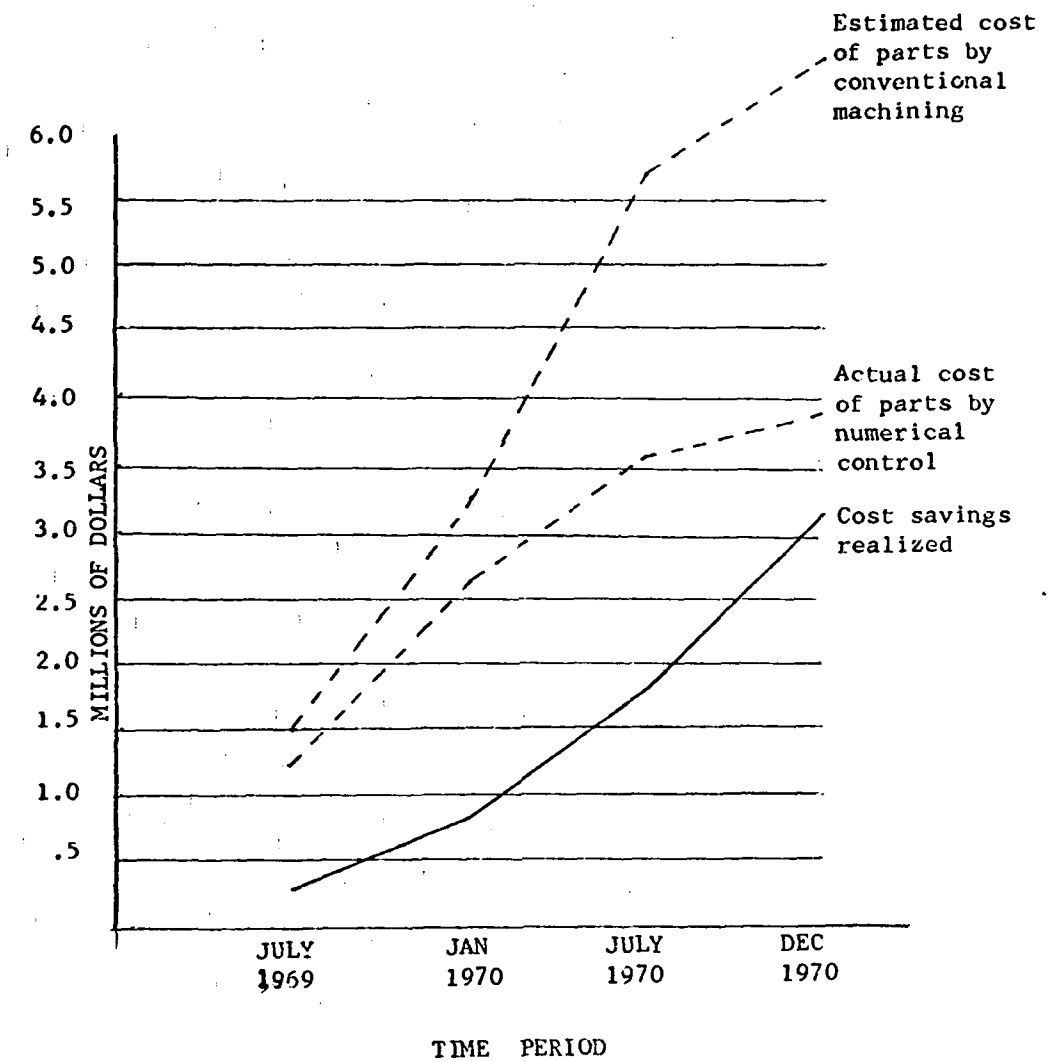
TRAINING PERIOD
TRAINING SCHEDULE FOR NC MGT ORIENTATION

Through the cooperation of the AMC technical personnel at the MSCs and the training personnel at Army Management Engineering Training Agency (AMETA) a Top/Middle Management Orientation in NC has been developed. A firm training schedule and training requirements have been established as reflected in the above chart. This training will be provided as a "road show" and by the end of June 910 AMC management personnel will be exposed to the orientation.



NC MACHINE HOURS USED
AMC NUMERICAL CONTROL MACHINE UTILIZATION

The above chart reflects an average utilization rate of approximately 65 percent. This rate has been relatively constant during a period of increasing NC inventory and decreasing manufacturing requirements. Industrial users have established 85 percent of a two shift operation as being a full utilization status. As training increases within AMC, greater utilization is anticipated.



During the early stages of NC implementation, there is a significant learning curve. However, subsequently, the technology is mastered and proper applications are identified. As shown in the above chart, annual cost savings of $2,900,000 are being realized from an initial investment of $9,793,000 in NC machines.

In summary, the accomplishments from this PROMAP-70 Task are as follows:

a. Established an AMC NC/CAM management structure.

b. Established an AMC NC management orientation program.

c. Developed measurement criteria for NC utilization.

d. Developed measurement criteria for NC cost savings.

e. Developed an AMC Five Year Plan for NC/CAM.

V. Follow-On Actions:

The Five Year Plan for NC/CAM will be updated and published annually as an appendix to the AMC Five Year Industrial Preparedness Program. This plan, under the management cognizance of the AMC/CAM Steering Group will provide the subsequent guidance for improvements on a continuing basis.

I. TASK TITLE: Type Classification Acceleration and Control

II. TASK OBJECTIVE: To establish an orderly formalized system to accelerate type classification/reclassification actions and to provide control procedures for managing the progress of type classification/reclassification actions.

III. BACKGROUND DISCUSSION:

a. On 26 April 1970, DA (ACSFOR) alerted this command to the fact that 121 limited production (LP) type classification authorizations had expired. This DA letter further requested that AMC take action to either reclassify or extend the LP authorizations until such time as reclassification becomes appropriate.

b. Initially this task concerned only the expired LP authorizations. When the PROMAP task was established, the task effort was expanded to cover all type classification categories.

c. Early in the study of the PROMAP task, two major problem areas were identified: failure to follow existing regulations; and the necessary imposition of new and more stringent requirements on the type classification process.

(1) Prior to effective date of AR 71-6, 1 January 1970, type classification actions have been governed primarily by AR 700-20. This regulation clearly stated that NOT LATER THAN 60 days prior to the expiration of LP authorization, action must be completed and submitted to DA to reclassify the item or to extend the LP authorization until such time as reclassification is appropriate. Of the 121 LP authorizations mentioned in the DA letter; 91 expired in 1969 and 20 expired in 1968. Some of these actions could have been delayed due to unforeseen technical problems or the necessity to resolve differences between agencies, but the majority of the authorizations expired because of failure to follow the regulation.

(2) The second major problem area was caused by the introduction of AR 71-6 which replaced AR 700-20 and imposed needed additional requirements for the processing of type classification proposals, especially in the LP categories. This new regulation has caused considerable delay to most of the type classification actions which were already in progress under AR 700-20 by requiring significant rework to furnish the required data in the new format prescribed by AR 71-6. There have been significant changes in limited production-urgent (LP-U) and limited production-test (LP-T) procedures (these new categories of AR 71-6 replace the LP category of AR 700-20). AR 71-6 requires an In-Process Review (IPR) and full scale type classification procedures for LP-U extensions and/or additional purchases under existing ap-

proved LP-U authorizations. New time frames for LP-U actions are illustrated in figure 1.

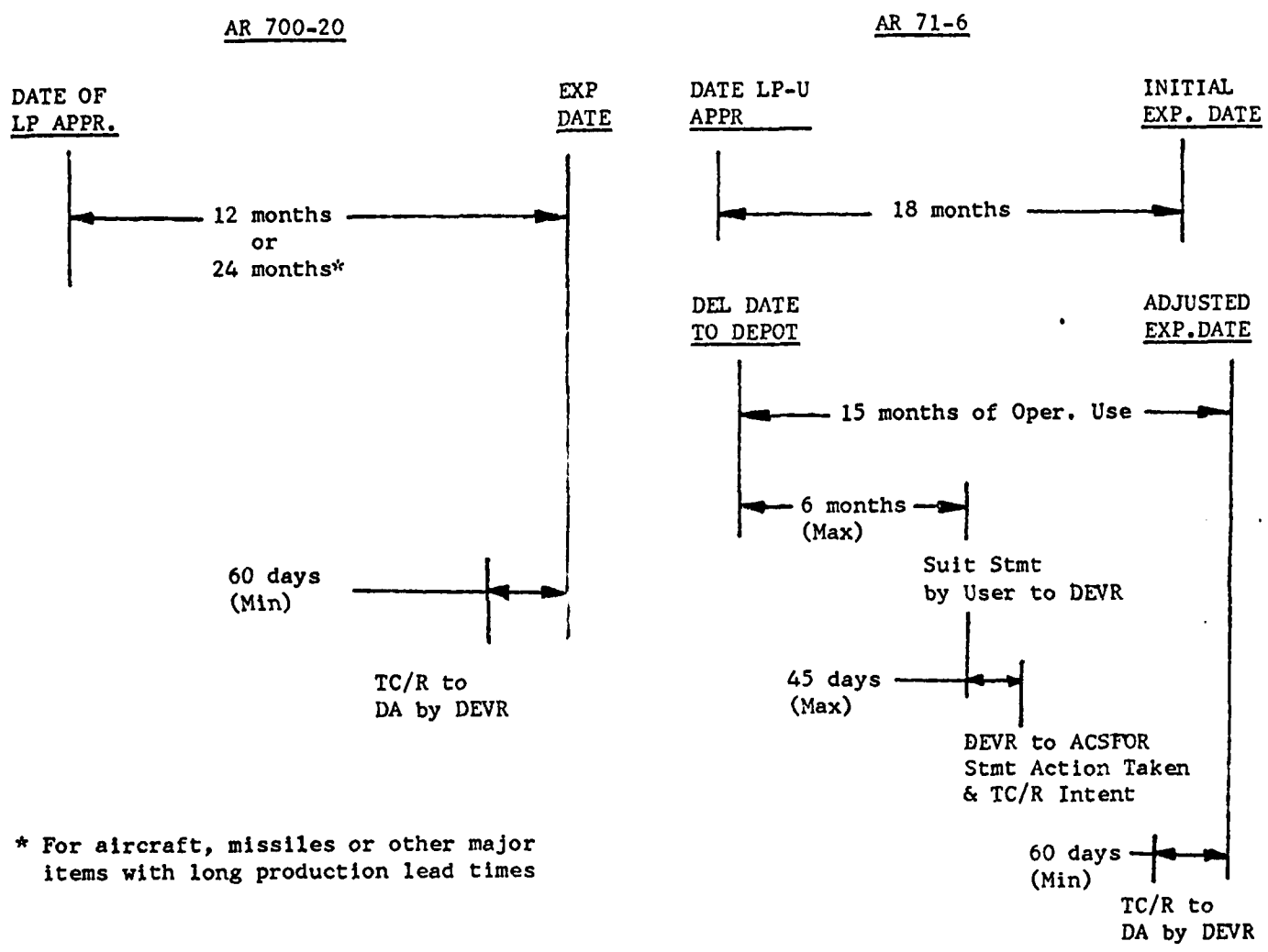
IV. ACCOMPLISHMENTS: Sub-tasks implementing recommendations of the PROMAP-70 study on Type Classification Acceleration and Control are summarized below:

a. Elimination and Extension of Expired LP Authorizations. As of 31 December 1970, actions for all except 13 of the items had been forwarded to DA for approval (these 13 to be forwarded before the end of February 1971). Figure 2 shows the past progress and projected clean-up of the expired LP actions.

b. Information has been obtained from the major subordinate commands (MSC) as to how each plans and controls the management and monitorship of type classification/reclassification (TC/R) actions within their command. In addition, each has submitted sample TC/R actions which they consider typical of those processed at their individual commands. Processing times for the various type classification categories (LP-U, STD-A, STD-B, Contingency and Training, and Obsolete) and the yearly volume and distribution of these categories processed during 1969 and 1970 are shown in figures 3 and 4. A recent change to the AR governing IPRs has a significant impact on the length of the TC/R processing times. Prior to this change, preparation of the formal TC/R proposals could not commence until after DA approval of the IPR minutes. Now, the TC/R proposal is initiated prior to the IPR and is considered for approval by DA simultaneously with the IPR minutes. It is estimated that this change will effectively reduce the processing times of TC/R actions approximately fifty percent. This change in procedures is shown in figure 5.

c. The Army Materiel Command has established an improved system for the management and control of the type classification process. All MSCs, and all other separate installations/activities under this Headquarters directly involved in the initiation, preparation, or processing of TC/R actions have designated an element within their organization to be responsible for the centralized management and control of TC/R actions. The TC/R Proposal Schedule required by AR 71-6 is modified to include the TC/R actions for the forthcoming two fiscal years and LP-U expiration dates are so identified.

d. The MSCs have identified all LP-U actions within their purview which have neither been reclassified or terminated by DA. This input, combined with records already available at Headquarters, has been used to set up an AMC master list of all LP-U actions and their official expiration dates. As a continuing action this AMC master list will be corrected and updated each quarter, utilizing the modified TC/R Proposal Schedule as required in AR 71-6.



* For aircraft, missiles or other major items with long production lead times

FIGURE 1'

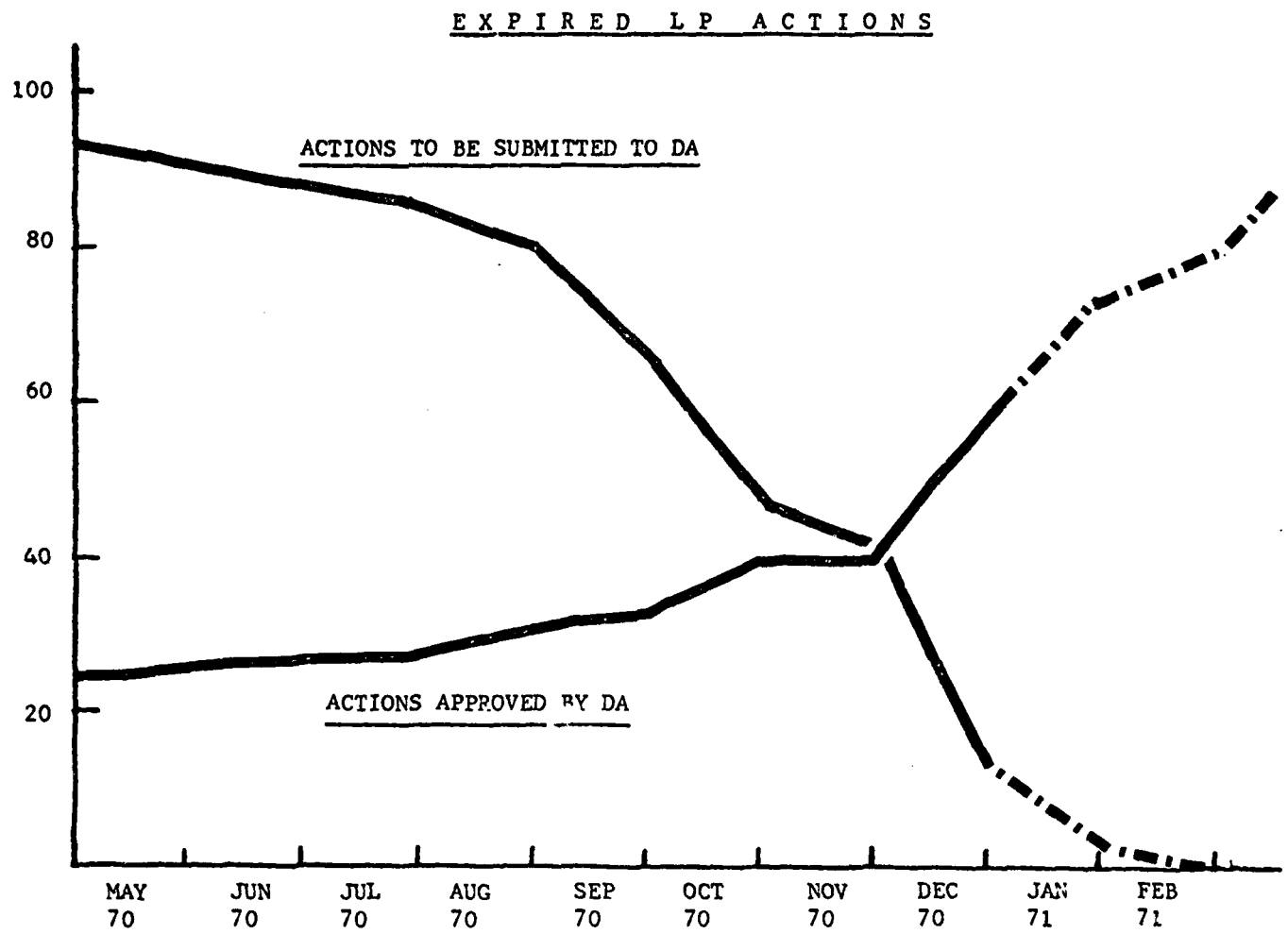

EXPIRED LP ACTIONS
100
80
60
40
20
ACTIONS TO BE SUBMITTED TO DA
ACTIONS APPROVED BY DA
MAY 70
JUN 70
JUL 70
AUG 70
SEP 70
OCT 70
NOV 70
DEC 70
JAN 71
FEB 71

FIGURE 2

PROCESSING TIMES FOR TYPE CLASSIFICATION PROPOSALS

(D E R I V E D F R O M 78 S A M P L E S)

	STD-A	STD-B	L P	C&T	OBS
TIME FRAME COVERED (DAYS)	60-1113	131-1095	25-936	107-641	91-717
SAMPLE AVG. (DAYS)	351	390	217	299	259
SAMPLES TAKING OVER 1 YEAR (%)	25	36	14	9	12
SAMPLE AVG OVER 1 YEAR (DAYS)	827	683	656	641	717
SAMPLE AVG UNDER 1 YEAR (DAYS)	198	223	156	244	210

FIGURE 3

TYPE CLASSIFICATION AND RECLASSIFICATION ACTIONS
(ANNUAL VOLUME AND DISTRIBUTION)

	1969		1970	
	Items of Materiel	Agenda Items	Items of Materiel	Agenda Items
STANDARD-A	99	73	216	149
STANDARD-B	148	69	140	64
LP	189	82	-	-
LP (QTY CHANGE & EXTENSION)	78	56	-	-
LP (EXTENSION)	25	14	-	-
LP-U	-	-	57	38
LP-U (QTY CHANGE & EXTENSION)	-	-	74	41
LP (EXTENSION)	-	-	86	17
LP-T	-	-	2	1
C & T	45	19	18	15
OBSOLETE	321	186	319	275
TOTALS	905		912	

FIGURE 4

TYPICAL ADOPTED CATEGORY CYCLE

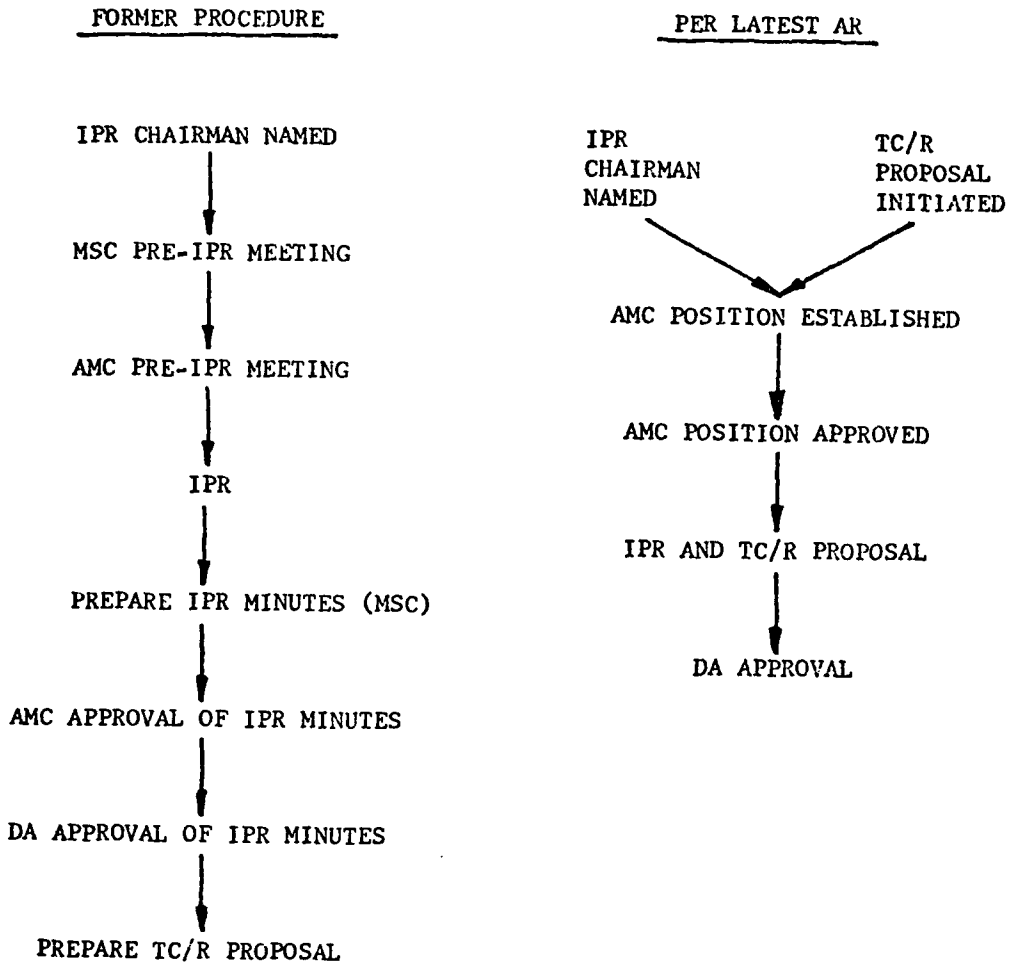


FIGURE 5

e. Relief from full TC/R procedures for certain low cost, low quantity items is needed from a cost effectiveness viewpoint and will allow AMC to concentrate its TC/R management and control effort on the equipment items of greatest significance to the Army. A preliminary study, seeking background data on candidate items and recommended dollar, quantity, and time-frame thresholds, has been initiated. Data obtained to date has been non-conclusive. The study is continuing.

V. FOLLOW-ON ACTIONS:

a. On approximately 27 January 1971, AMC will present a Type Classification briefing to DA. It will cover as a minimum:

(1) Definition of type classification categories.

(2) How categories apply to:

(a) Development items.

(b) Non-developmental items.

(c) Product-improved items.

(3) Annual volume of TC/R actions.

(4) Past experience with AR 700-20 and AR 71-6.

(5) Our recommendations to DA for improving the type classification process.

b. As a continuing action; the HQ, AMC focal points, in concert with other Type Classification focal points throughout AMC will actively monitor the type classification process, cueing responsible organizations as appropriate to maintain an effective type classification system.

I. TASK TITLE: Identification/Budgeting for Engineering Cost.

II. TASK OBJECTIVE: To identify and control Engineering Costs in support of Army Weapon Systems Acquisition by (1) determining type and level of effort required, improving costing and contracting procedures, and developing means for evaluating effectiveness and (2) establishing guidelines for level of effort considering such variables as commodity differences, urgency of requirements, facilities, production quantities, and year of production.

III. BACKGROUND DISCUSSION: The necessity for controlling costs was strongly expressed in Secretary Packard's 31 July 1969 Memorandum concerning improvement in weapons systems acquisition. As part of this guidance, the Services were directed to improve their cost estimating and validating capability, and to impress firmly on defense contractors the need for cost realism in their proposals. This subject is interrelated with other improvements in Weapons Systems Acquisition as outlined by the Secretary of Army Memorandum dated 2 October 1969 to the Deputy Secretary of Defense. During informal discussions of these two Memorandums between DCG, AMC and the Director, AMCRD, they decided that the problem of identifying and controlling contractors' engineering cost warranted establishing a PROMAP Task. Therefore, by AMC letter dated 16 March 1970, the MSC's were informed of the establishing of this Task and directed them to initiate this Task in their organizations. This letter set forth the objectives, planned actions and milestones. In August 1970, the scope was enlarged to cover all engineering costs, in-house government effort as well as outside contractors'.

IV. ACCOMPLISHMENTS:

a. Initial studies - two types of studies were accomplished in the execution of this task. First a review was completed by each MSC task director and HQ, AMC task director of the regulations and instructions pertaining to budgeting, planning, controlling and reporting engineering costs as well as reviewing the objectives of other cost related PROMAP-70 tasks. Eight DODI's, seven AR's, five AMCR's and MIL-STD-881 were reviewed. This study revealed that (1) engineering costs are reported in many different parts of numerous reports, but no reports present costs in a manner that the contracting officer or project manager could see how much and what kind of engineering design effort was planned to be used and what cost and type of engineering design effort was actually expended. (2) The DOD Instruction 7000.9 procurement information reporting (PIR) system dated 30 April 1970 and the Army 37-200 Management Control Systems for use in the Acquisition Process appeared to offer the best vehicle to obtain the engineering cost information to control

contractors' engineering costs. After reviewing these two documents with the Subordinate Command Task Directors it was concluded that by adding the necessary coverage to the AMC Supplement implementing these regulations would provide the necessary direction and procedures for forecasting, planning, identification, tracking and control of the contractors' engineering effort. This was accomplished by the publication of AMC Supplement dated 1 December 1970 to Change 4 of AR 37-200 dated 27 October 1970. The reporting system prescribed in Para b(6) of AMC Supplement will use the Work Breakdown Structure elements as presented in AR 37-18 (Weapon/Support Systems Cost Categories and Elements) and MIL-STD-881. On all contracts of $2 million and having at least one-half million dollars engineering cost, the contractor will be required to forecast in detail his engineering design effort, and cost and to submit a plan of action. This information will enable the Government to see the planned design engineering work and to track and validate this design engineering work and costs. Chart I shows an acceptable method to be used.

This new system for identifying and controlling engineering costs will,

(1) Require the contractor to prepare better estimates for his engineering effort.

(2) Provide more accurate and defensible engineering budgets.

(3) Surface early detection of potential engineering problems.

(4) Help minimize and control growth of engineering costs.

Second, PROMAP-70 Task Directors at AMC Major Subordinate Commands conducted detailed cost studies on two materiel projects of their respective commands. The primary purpose was to develop a comparison of the budgeted costs vs. actual costs and determine the causes of engineering cost growth. These studies revealed that cost growths ranged from 15% to 250% of the original budgeted dollars.

Some of the more prevalent reasons for these cost growths were: (1) lack of appropriate knowledge at start of program, (2) failure to assess difficulty of task before starting, (3) estimating errors, (4) acceleration of development, (5) system performance changes, and (6) unforeseen need for additional testing.

b. Management Audit System - After reviewing the method used by the eight AMC MSC's in budgeting and controlling their in-house engineering effort, it was concluded that the TACOM Management

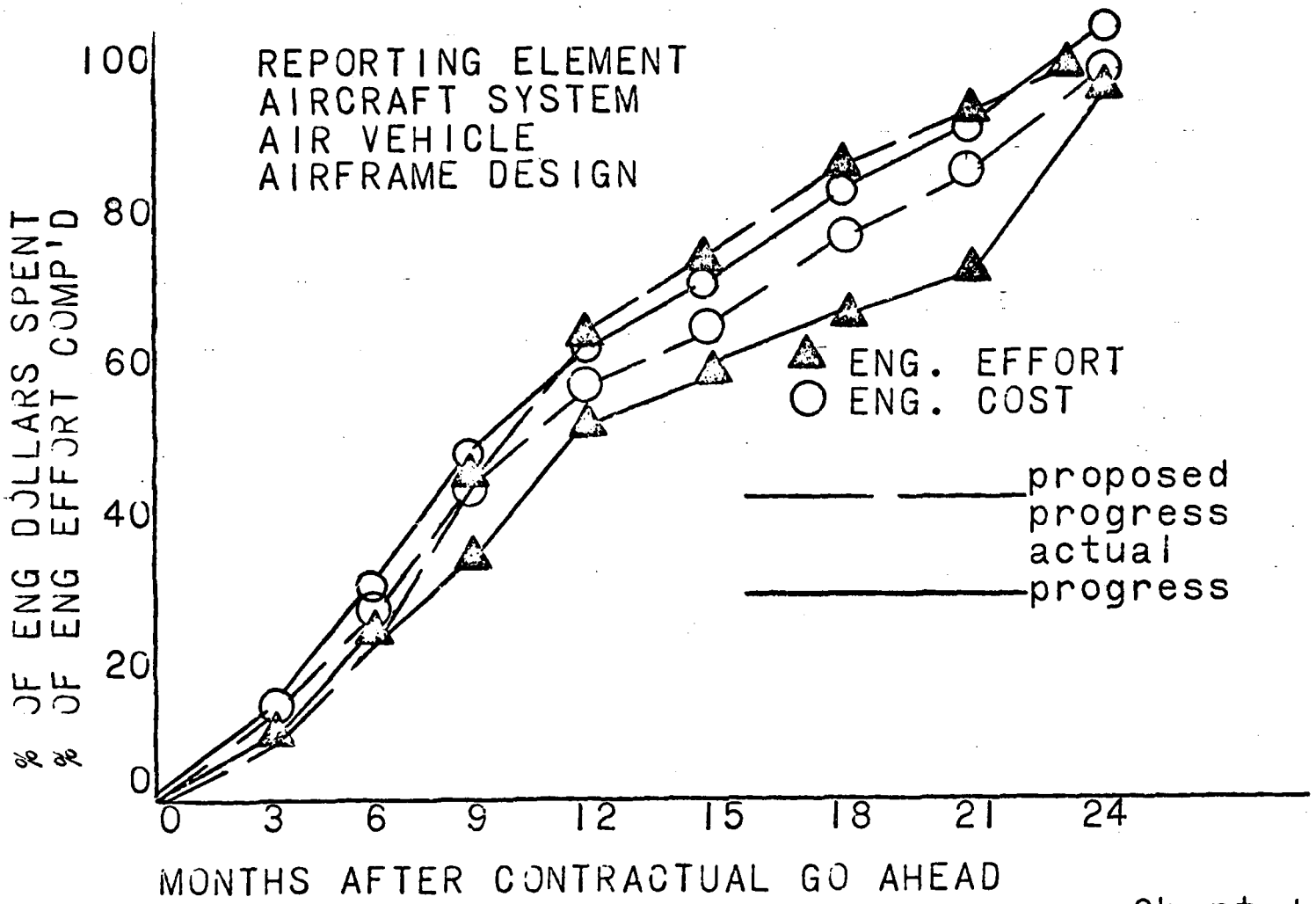

REPORTING ELEMENT
AIRCRAFT SYSTEM
AIR VEHICLE
AIRFRAME DESIGN
% OF ENG DOLLARS SPENT
% OF ENG EFFORT COMP'D
100
80
60
40
20
0
0
3
6
9
12
15
18
21
24
MONTHS AFTER CONTRACTUAL GO AHEAD
ENG. EFFORT
ENG. COST
proposed progress
actual progress

Chart I

Audit System (MAS) provided them the best method. It is very simple and requires only about 1% of the project engineer's time to fill out the forms and maintain his engineer's data book. TACOM's top management personnel regularly review the output from this system and consider that it gives engineering cost the required degree of visibility to surface problem areas, improve their planning, improve their management overview and get better organizational coordination of their various projects. In the short time that TACOM has been using this system, 18 projects have been cancelled because the projects were not making satis actory progress and had major problems surfaced.

c. Orientation - In view of the simplicity of the TACOM System, it was decided to try their system on another command. On 4 November 1970, TACOM personnel presented a briefing on the TACOM system to MUCOM.

d. Training - No formal training program is considered necessary.

e. Chart II reflects the old and new coverage of the control and identifying of engineering cost elements.

f. Handbook for Engineering Support - Other significant actions being accomplished by AVSCOM and MECOM task directors is the development of a Handbook for Engineering Support of Materiel Acquisition. The handbook will present to the engineer an orderly progression of steps used in procurement so as to enable him to plan and organize his activities. AVSCOM's book is being reviewed and the MECOM book is still being assembled. These handbooks are tailored to the particular commands needs.

V. <u>FOLLOW ON ACTIONS</u>: The follow-on actions are considered necessary to obtain the full benefits from this Task.

1. After about three months have elapsed following publication of the AMC Supplement, a visit to each of the MSC's should be made to answer questions that may have arisen concerning the engineering portion of the PIR System.

2. Ascertain that the requirement for data on forecasted engineering work and its cost is being incorporated into the authorized data list (DD 1423) in contracts.

3. Determine after these visits if any formal training is necessary. AMC CEIS Office has conducted initial training on the PIR System.

IMPROVEMENT IN ENGINEERING COST CONTROL PROCEDURE

ITEM	OLD	NEW
Identify Eng Cost Elements	None	Yes
Tracking Eng Cost Elements	None	Yes
Collecting Eng Cost Elements	None	Yes
Validating Eng Cost Elements	None	Yes

OLD - AR 37-200 Rev 3

NEW - AR 37-200 Rev 4 and AMC Supplement dated 1 Dec 1970

Chart 2

4. Review quality of MSC in-house control of their engineering cost and effort and measuring the system effectiveness against the TACOM Management Audit System.

5. Obtain from each command two samples of data being collected in accordance with the PIR system. Review these samples for utility in identifying and tracking engineering costs.

6. Make a follow-up visit in about six months from initial visit to examine how well the PIR and MAS systems are serving their purposes.

I. TASK TITLE: Commercial Construction Equipment (CCE) Plan

II. TASK OBJECTIVE:

1. Obtain Department of the Army and Assistant Secretary of the Army approval of the Commercial Construction Equipment Plan.

2. Implement the Plan for the first pilot item: crane-shovel, truck mounted.

III. BACKGROUND DISCUSSION: Because of the unique characteristics of construction equipment, the similarity of application in both civilian and military construction projects, and the continuous modernization of equipment through research and development within the commercial construction industry, Department of the Army policy was established to equip construction type units with commercial construction equipment where advantageous. The above policy was established by a letter from the Office of the Adjutant General, Department of the Army, dated 19 August 1969. This letter defined procedures for acquisition, test, maintenance, utilization, and disposal of commercial construction equipment to satisfy Army requirements. The scope of this letter covered items of commercial construction equipment and systems normally found within combat service support units. In general, those items of construction equipment that are specifically designed (military design) for use by combat engineer units were excluded. The objectives to be attained by using commercial construction equipment are to:

a. Provide for improved responsiveness to Army requirements for construction equipment.

b. Insure that Army construction equipment is current with the latest technology.

c. Reduce diversification of end items and repair parts in the inventory.

d. Procure and support commercial equipment and equipment systems at the lowest life cycle costs.

e. Insure that equipment meets DA military performance, maintenance, and support requirements prior to authorizing release and issue to troops.

f. Provide for the disposal of materiel that is not economically repairable or ceases to perform at an acceptable level of reliability.

g. Obtain maximum availability, reliability, maintainability, adaptability, and versatility of employment of construction equipment.

Under this Plan equipment currently being used by the construction industry is evaluated in the field to determine whether it will meet the requirements of the army. Only those makes and models meeting specified criteria are considered for procurement. This method eliminates post award testing thereby saving dollars and time between contract award and issue of the end item to the user. The crane-shovel, truck mounted was the initial item selected for evaluation and procurement.

IV. ACCOMPLISHMENTS: Department of the Army approved the Commercial Construction Equipment Plan on 28 May 1970. Assistant Secretary of the Army approval was obtained on 7 October 1970.

Implementation of the Commercial Construction Equipment Plan has proceeded concurrent with approval staffing. The Combat Developments Command has developed the statement of requirements, tentative basis of issue, abbreviated performance characteristics, candidate selection and personnel lists. These items have been reviewed by Assistant Chief of Staff for Force Development, DA, and the requirement validated.

The Mobility Equipment Command developed technical evaluation handbooks which were submitted to industry sources for completion. The completed data was then analyzed to determine whether industry products appeared suitable for Army use. The handbooks for those which appeared suitable were forwarded to the Test and Evaluation Command for use in field evaluation of products. Field evaluation was completed on 15 December 1970.

V. FOLLOW ON ACTIONS:

The present schedule is for issue of a Request for Proposal during May 1971 with award of contract anticipated during October 1971. Initial delivery of Cranes is scheduled during July 1972.

APPENDIX 1

LIST OF PROMAP-70 TASKS

Acquisition Management:

1. Command Reviews - Major Weapon Systems
   Objective: To afford the top echelon of command in AMC the opportunity to determine the current status of the most important materiel acquisition projects.

2. Selected Acquisition Reports (SAR)
   Objective: To improve management by upgrading the quality, completeness, and timeliness of SAR's submitted in response to OSD/DA requirements.

3. AMC Cost Analysis/Cost Estimating Profile
   Objective: To establish a disciplined system for life cycle cost analysis/cost estimating in AMC.

4. Selection and Stabilization of Project Managers
   Objective: To improve project management by raising the selection qualifications of PMs and their staffs and stabilizing their tours.

5. Support of PM's by Commodity Commands
   Objective: To assure the integration of Project Management Actions with those of the functional elements of AMC.

6. Models for Cost Estimating (PILOT ICE)
   Objective: To provide meaningful Cost Information for decision making, provide training to personnel who prepare Cost Estimates, and establish Bank of Current Approved Life Cycle Cost Estimates.

7. Training for Improved Materiel Acquisition
   Objective: To improve the quality and quantity of materiel acquisition training.

8. Project Management Management Information System (PROMIS)
   Objective: To develop a more meaningful PM status report. To develop a library of analytical models to assist PM decision making.

9. Information Plan
   Objective: To provide a balanced and full account to personnel throughout AMC, DOD and industry-related activities, of the development and results of PROMAP-70.

10. Reduction of Nonessential Reporting in AMC
Objective: To evaluate essentiality of materiel acquisition reports and to eliminate non-essential reporting.

11. Improved Aircraft Engine Acquisition
Objective: To investigate the development and procurement process for aircraft engines with purposes of increasing engine life at time of introduction into inventory, minimizing modifications to in-service engines, and reduction of pipeline requirements.

12. Enhance Procurement Officer/Civilian Careers (Two Parts)
Objective: To improve the selection, training, and career development of military and civilian procurement officials.

13. Articles on Acquisition Management
Objective: To encourage the dissemination of new management techniques developed during PROMAP-70 throughout AMC and to give recognition to the originator of new ideas in Materiel Acquisition Management.

14. Standard Integrated Support Management System (SISMS)
Objective: Reduce duplication in and among the services by development and use of common logistic procedures.

15. Automation of R&D Data
Objective: To determine the current general status of automation of R&D data, and to identify the additional R&D data that should be automated for decision making at the AMC level.

Concept Formulation:

16. Program Timing (Milestones) and Reviews -- IPR & SSE
Objective: To improve major project/system reviews held at specified milestones during the development cycle by (1) reducing the number of reviews to the necessary minimum, (2) insuring the integration of all functional areas, and (3) reducing the review approval time.

17. Use of Prototypes
Objective: To increase the use of competitive hardware demonstration and critical component evaluation as a means of insuring: (a) feasibility studies are sound; (b) the system is reasonably well defined; (c) cost proposals are credible - all before the Army commits itself to full-scale development.

18. Adequate Technical Data Package and Request for Proposals
Objective: To assure provision of adequate Technical Data Packages to support procurement and production and to insure suitability/acceptability of the final product.

19. Initial Cost Estimates
Objective: To improve initial cost estimating capability through courses of instruction and personal awareness.

20. Analysis of Risk
Objective: To improve the quality of analysis of cost, schedule, and technical risks to maximize the trade-offs among these variables and provide an improved basis for decision.

21. Configuration Management
Objective: To improve Configuration Management within AMC to effectively control cost growth due to engineering changes.

22. System Engineering
Objective: To apply improved system engineering to the development of weapons systems.

23. Increase Reliability of Systems
Objective: To achieve reliability requirements in weapon system acquisition, to improve reliability of selected existing equipment, and improve effectiveness of product assurance activities.

24. Integrated Logistics Support (ILS) Program
Objective: To reduce requirements for logistic support resources and system changes by integrating the elements of logistic support into all phases of system acquisition.

25. Refinement of Requirements Documentation (QMDO/QMR)
Objective: To conduct a comprehensive review of existing formats/procedures/practices used in establishing Materiel Development Objectives/Requirements and to make recommendations for correcting identified deficiencies.

26. Improve AMC Quality Assurance System for Product Acquisition
Objective: To improve effectiveness of AMC Quality Assurance operations, to enhance AMC/DCAS quality assurance interface, to obtain increased hardware problem visibility.

Contract Definition and Source Selection:

27. Contractor Motivation
    Objective: To increase contractor motivation to control costs by providing a proper contract structure.

28. Independent Government Cost Estimates
    Objective: To stress cost realism in the development and use of Independent Government Cost Estimates.

29. Cost Realism in Proposal Evaluations
    Objective: To insure that Cost Realism is fully considered and included in all proposal evaluations and procurements.

30. Source Selection Roster
    Objective: To develop within AMC a roster of qualified cost estimators, cost analysts, price analysts, and industrial engineers for assignment to cost teams of Source Selection Evaluation Boards and Should Cost Analysis Teams.

31. Contract Performance Evaluation
    Objective: To upgrade the Quality of Army CPE Reports and to make more effective use of them.

32. "Should Cost" Analysis
    Objective: Develop capability for in-depth procurement cost analysis review to appraise the reasonableness of direct and indirect costs in contractor proposals.

33. Verification of Contractor's Capability to Perform/AMC Participation in Pre-Award Surveys
    Objective: To accomplish a comprehensive analysis and verification of contractor's capability to perform in accordance with contract requirements.

34. Revision of Profit Negotiation Techniques
    Objective: To develop and apply techniques for negotiating profit as a return on investment rather than as a percentage of cost.

35. Dollar Limitation of AMC Small Purchasing Offices
    Objective: To study and make recommendations regarding the placement of dollar limitation on purchase actions that may be accomplished by AMC Small Purchasing Offices.

36. Review of Special Provisions for Contracts
Objective: To assure that special contract clauses and provisions are reviewed by senior Procurement and Legal personnel prior to use.

37. Competitive - Formal Advertising Procurement
Objective: To maximize the effective use of competitive formal advertising procurement.

Engineering Research and Development:

38. Automated Army Materiel Plan (Two Parts)
Objective: To improve the quality and timeliness of the Army Materiel Plan through automation.

39. Letter Contracts and Change Orders
Objective: To reduce overage letter contracts to zero and overage change orders to zero.

40. Contractor Cost Reports
Objective: To expand the management data available to AMC through the Cost Information and Procurement Information Reporting System.

41. Contractor Cost and Schedule Performance Measurement
Objective: To apply the DOD Cost and Schedule Control Systems Criteria (C/SCSC) to new, large acquisition programs and to on-going programs where practicable.

Test and Evaluation:

42. Quality of Test/Evaluation Military Personnel
Objective: To improve the selection and stabilization of AMC Test/Evaluation military personnel.

43. Test/Evaluation Effectiveness:
Objective: To streamline Test/Evaluation by advanced planning, eliminating duplication, and more efficient use of facilities.

Production:

44. Mobilization Production Base
Objective: To develop an Army/Industrial Production Base capable of supporting military procurement requirements during either Limited War or Declared Mobilization.

45. Production Engineering Project Management
Objective: To improve Production Engineering Project Management (PEMA and O&MA) by devising and implementing a program formulation system and a follow-on work progress reporting method.

46. Product Improvement
Objective: To improve the organizational arrangements, regulations, and procedures used to approve and control product improvements.

47. The Army Procurement Research Office
Objective: To provide a procurement research facility to the Department of Army for in depth research into selected procurement problems to assist in the improvement of the acquisition of materiel.

48. Industrial Plant Equipment (IPE) and Facilities Management
Objective: Achieve a balance of IPE and ownership to maximize Army's ability to utilize contractor capability while minimizing facility costs.

49. Numerical Control/Computer Aided Manufacturing (NC/CAM)
Objective: Make maximum economic utilization of numerical control machines in the acquisition of AMC materiel. Develop and implement systematic time phased plans for the evolution to Computer Aided Manufacturing.

50. Type Classification Acceleration and Control
Objective: To accelerate and increase control over type classification/reclassification actions.

51. Identification/Budgeting for Engineering Cost
Objective: To identify and control engineering costs in support of Army Weapon Systems acquisition particularly those performed by the contractors.

52. Commercial Construction Equipment (CCE) Plan
Objective: To obtain DA/DOD approval of the Commercial Construction Equipment Plan and implement the Plan for the first pilot item: craneshovel, truck mounted.