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RESULTS OF A RESEARCH STUDY

TO

IDENTIFY HISTORICAL RDTE OBLIGATIONS AND EXPENDITURES

ON

MAJOR ARMY MATERIEL AND NON-MATERIEL SYSTEMS

OCTOBER 1983

DCA-P-97

COST ANALYSIS DIVISION

U.S. ARMY FINANCE AND ACCOUNTING CENTER

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19. ABSTRACT *(Continue on reverse if necessary and identify by block number)*

Results of a research study to determine the ability of the current Research, Development, Test and Evaluation (RDTE) Project Numbers to identify RDTE costs of major Army materiel and non-materiel systems from the Army's finance and accounting data.

Also includes three alternative architectures which were developed to examine ways to improve historical cost data collection.

The results of the study support an initial hypothesis that the project numbers, as currently defined, do not identify the total RDTE costs of major Army systems, but they can identify a significant portion of those costs.

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11. Results of a Research Study to Identify Historical RDTE Obligations and Expenditures on Major Army Materiel and Non-Materiel Systems. (UNCLASSIFIED)

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AND EXPENDITURES ON MAJOR ARMY MATERIEL AND NON-MATERIEL SYSTEMS

OBJECTIVES. This study was conducted as part of a continuing effort to obtain
actual (historical) life cycle costs of major Army systems from the Army's
finance and accounting data. The objectives were:

     a. Develop insights and information on the assignment and structure
of RDTE Project Numbers and their interface with related resource management
systems. Produce appropriate flow diagrams.

     b. Develop correlation tables to relate RDTE Project Numbers to the
total Army, with emphasis on Selected Acquisition Report (SAR) systems.

     c. Collect and compare RDTE costs of selected systems with their
Baseline Cost Estimates.

ACTIONS. An hypothesis was formulated and tested concerning the ability of
RDTE Project Numbers to identify total RDTE costs of major Army systems.
Efforts also included research of rules and practice on assignment and
structure of RDTE Project numbers, development of correlation tables relating
the project numbers to the total Army, and formulation of three alternative
approaches to obtaining system RDTE costs.

FINDINGS.

     a. RDTE Project Numbers are converted to RDTE AMS Code which can be
used to obtain RDTE costs. Both numbering systems are project oriented; the
projects of a system must be identified and their costs summed to obtain
system RDTE costs. It was determined that a significant portion, but not all
of a system's RDTE costs can be identified if the system's projects can be
identified.

     b. RDTE project costs can be "tracked" for only four years in the
finance and accounting system. At the end of the fourth year, any funds not
disbursed are placed in an RDTE "M" account. After the balances are merged,
funds may be disbursed to satisfy Government liabilities; however,
transactions cannot be associated with specific projects/systems. Thus, total
RDTE costs of a system are not available even if the system is well-defined.

     c. As a consequence of system fragmentation, it was found that a set of
"rules" was needed for defining systems. The criteria for selection of such a
set of "rules" necessarily were that the list of systems produced be both
totally exhaustive and mutually exclusive in capturing the total Army.

RESTRUCTURE. Three alternative architectures were developed to examine ways
to improve historical data collection. The first approach does not involve
restructure; rather, it uses the current project numbers, augmented by other
PPBES data to obtain an approximation of total system RDTE costs. The second

approach addresses a change in Budget Structure; and the third involves changes in the numbering systems also.

CONCLUSIONS. In order to satisfy the need for cost feedback by major Army system, the following are required:

    a. A unified "Systems Language". Consensus is required on what constitutes a system - as opposed to a non-system - and what is included with respect to modifications, armament, ammunition, support equipment, etc.

    b. A "Common Architecture". Numbering systems vary among appropriations (BLIN's for Procurement, AMS Code for RDTE, etc.). System life cycle costs cut across appropriation lines. A common architecture should be prerequisite to development of "system" identification coding schemes.

RESULTS OF A RESEARCH STUDY

TO

IDENTIFY HISTORICAL RDTE OBLIGATIONS AND EXPENDITURES

ON

MAJOR ARMY MATERIEL AND NON-MATERIEL SYSTEMS

CHAPTER 1

INTRODUCTION

1-1. Purpose. The purpose of this report is to provide the results of a study conducted to determine the ability of the current Research, Development, Test and Evaluation (RDTE) Project Numbers to identify RDTE costs of major Army systems.

1-2. Background.

a. The Army has a need to link downstream "execution" (accounting data which come from the finance and accounting system) with upstream "deciding" (cost data which come from the cost estimating and analysis system), i.e., a feedback mechanism. The Army's finance and accounting system evolved along lines required to report financial information by appropriation (funds accounting). However, managers within the Army need information that is system-oriented and that, by necessity, cuts across appropriation lines. Efforts to date to obtain the actual (historical) life cycle costs of major Army systems have not been successful, but attention recently has been directed toward the possibility that a significant portion of a system's research and development (R&D) costs could be captured if its RDTE Project Numbers could be identified.

b. The RDTE program is approved by Congress at the program element level, with funding authority issued at the same level; however, RDTE program approval and reprogramming actions are in terms of the RDTE projects. These projects hold the promise of providing RDTE costs by system, especially the costs of those major Army systems which are subject to Congressional calls for quarterly reports - the Selected Acquisition Reports (SAR's). Therefore, as part of a continuing effort to obtain the life cycle actual costs of major systems, a research project was initiated to study the current RDTE Project Numbers to determine their ability to provide cost data feedback.

1-3. Description of the Study. The study was conducted by analysts in the Cost Analysis Division, USAFAC, under the direction of the Chief, Mr. Noel B. Summers, Jr. The Point of Contact for this report is Mrs. Dina R. Philips. Alternate is Mrs. Mary Carson. POC's telephone number is AUTOVON 699-2674.

a. Objectives.

     (1) Develop insights and information on the assignment and structure
of RDTE Project Numbers and their interface with related resource management
systems. Produce appropriate flow diagrams.

     (2) Develop correlation tables to relate RDTE Project Numbers to the
total Army, with emphasis on Selected Acquisition Report (SAR) systems.

     (3) Collect and compare RDTE costs of selected systems with their
Baseline Cost Estimates.

     b. Scope. This study addresses only those RDTE Project Numbers which
were funded in FY 83, as listed in the May 1983 Five Year Defense Program
(FYDP) RDTE Project Listing.

     c. Initial Hypothesis. Project Numbers as currently defined do not
provide the total RDTE costs of major Army systems; however, they can provide
a significant portion of those costs if the Project Numbers can be identified
with specific systems.

2-1. What is an RDTE Project Number? It is a number established and used by the Army for internal control of RDTE programs. Two published definitions are:

> "A grouping of tasks or efforts directed toward a single end result. As such, a project will contain effort unique to a single Program Element and the Budget Activity of which the Program Element is a part."

> "A unit of RDTE effort or group of closely related efforts. Established to fulfill a stated or anticipated requirement."

    a. Personnel in the Office of the Deputy Chief of Staff for Research, Development and Acquisition (ODCSRDA) establish these numbers in coordination with Army agencies involved in RDTE activities such as DARCOM, Corps of Engineers, The Surgeon General, etc.

    b. RDTE Project Numbers are used in developing programs for which funds will be requested and to control approved programs. However, they do not appear in the President's Budget and they are not used in the Army's finance and accounting system.

    (1) The lowest element in the President's Budget is the Program Element. A given Program Element may contain more than one RDTE Project Number.

    (2) The Army Management Structure (AMS) Code is used in the finance and accounting system. There is a one-to-one relationship between RDTE Project Numbers and AMS Codes. ODCSRDA converts the RDTE Project Number to AMS Code for use in the finance and accounting system.

    (3) The AMS Code (AMSCO) is an element of the Accounting Classification. There is much confusion over what it is, the number of digits it contains and what they represent. The following information is taken from AR 37-100 (Financial Administration, Account/Code Structure). The RDTE AMS Code (AMSCO) has three parts and contains 20 digits:

RDTE AMS Code (AMSCO)	Digits
Basic Account	1-11
Functional Cost	12-16
Element of Expense	17-20

The part that closely relates to the RDTE Project Number is the Basic Account. In this study when the term, RDTE AMS Code, is used, we are referring to only the 11 digit Basic Account portion unless stated otherwise.

c. The purpose of this chapter is to provide the schemata of the RDT Project Number, Program Element, and RDTE AMS Code; and to show the close relationship between the code used in the Five Year Defense Program and the code used in the finance and accounting system

2-2. RDTE Project Number Schema. RDTE Project Numbers contain 14 alphanumeric characters (schema is at Figure 2-1) though sometimes shortened to 12 by omitting the last two digits. The RDTE Project Number for the M1 Tank (Abrams) is 1X464620DG2000. The RDTE Project Number for the M1 Block Improvement Program is 1X423735D33000. The characters that specify ' Tank Abrams are G20; the characters that specify M1E1 Block Improvement gram are 330. That is, the tenth, eleventh, and twelfth characters constitute the Project Serial Number. Other characters in the RDTE Project Number change, but the Project Serial Number generally remains the same throughout the life of the project. The Project Serial Number has no schema. There is no way to "break down" the number in order to identify the project. Initially there was an effort to assign certain blocks of alphanumeric characters to agencies involved in RDTE activities; however, some serial numbers were not properly assigned and adjustments were made. It should be noted here that some personnel who work with RDTE Project Numbers do not discriminate between the serial number and the project number; that is, if they are asked for the project number of the M1 Tank, they respond with the serial number (G20) instead of the entire project number. The serial number is easier to remember.

a. Positions One and Two. The number in the first position gives the organization:

                1 = DARCOM
                2 = Army Research Institute
                3 = The Surgeon General
                4 = Chief of Engineers
                5 = Army Security Agency
                6 = TRADOC
                etc.

The letter in the second position is an internal agency designation. For example, "X" generally is used to signify the Project Manager. However, other letters may be specific to an Agency. When an agency is reorganized, a revised list is sent to ODCSRDA for inclusion in the next issue of the Five Year Defense Program Project Listing.

b. The Third Position. This position gives the Budget Activity.

                1 = Technology Base
                2 = Advanced Technology Development
                3 = Strategic Programs
                4 = Tactical Programs
                5 = Intelligence and Communications
                6 = Defensewide Mission Support

c. Positions Four through Eight. These positions comprise the Program Element (see list of FY 83 funded RDTE Program Elements at Appendix F). The

SCHEMA
RDTE PROJECT NUMBER

EXAMPLE: 1X464620DG2000

```
1        X        4        64620        D        G20        00
|        |        |        |            |        |          |
|        |        |        |            |        |          |___ TASK
|        |        |        |            |        |              NUMBER
|        |        |        |            |        |
|        |        |        |            |        |___ PROJECT
|        |        |        |            |            SERIAL
|        |        |        |            |            NUMBER
|        |        |        |            |
|        |        |        |            |___ OSD
|        |        |        |                CLASS
|        |        |        |
|        |        |        |___ PROGRAM
|        |        |            ELEMENT
|        |        |
|        |        |___ BUDGET
|        |            ACTIVITY
|        |
|        |___ INTERNAL
|            AGENCY
|            DESIGNATOR
|
|___ RDTE
    AGENCY
```

Figure 2-1

2-3
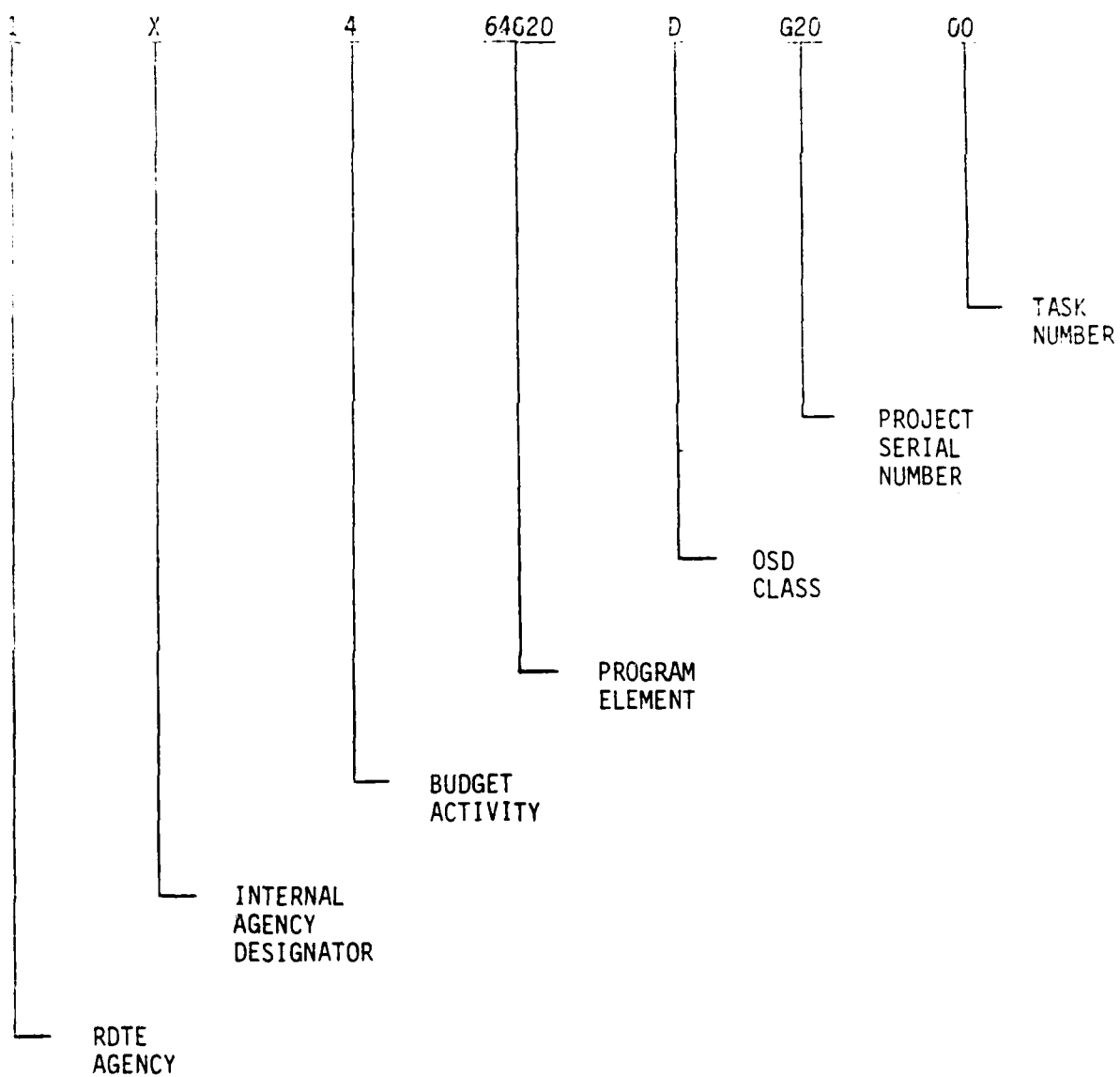
Program Element is defined as follows:

> "An integrated activity; combination of
> personnel, equipment and facilities which
> together constitute an identified military
> capability or support activity; a grouping
> of RDTE Projects which, while differing
> in their specific objectives, have a common
> purpose."

Program Elements in the FYDP Project Listing contain decimal points. For example, 63324 is shown as 6.33.24; however, the decimal points are not used when the Program Element is incorporated into the RDTE Project Number. In some listings the Program Element may be followed by a service designator: "A" for Army, "N" for Navy, etc. But since all RDTE Project Numbers relate to Army programs, the service designator is not used. The schema for the Program Element will be given later in this chapter.

d. The Ninth Position. The alpha character in this position may be called the DOD Classification, or it may be called the OSD Classification depending on the publication.

> A = Applied Research
> B = Basic Research
> D = Development-Test-Evaluation
> M = Management Support

e. The Tenth through Twelfth Positions. As mentioned earlier, these constitute the Project Serial Number. Following are a few examples:

> 697 = Chaparral
> H80 = Ballistics Technology
> 341 = 105 MM Tank Gun Enhancement
> G20 = M1 Tank (Abrams)

f. The Thirteenth and Fourteenth Positions. These positions are zero-filled (or simply not used) at DA level, but they are used in the field for the Project Task Serial Number, defined as:

> "A Project Task is part of a RDTE Project;
> a finite unit of effort which has unity
> of scope and purpose; may be divided into
> subtasks or work units."

2-3. Program Element Schemata. The Program Element is revisited to provide a closer look at its numbering system. Actually there are two numbering systems: one for Program 6 Research and Development, (schema at Figure 2-2), and one for programs other than 6 which may receive RDTE funding (schema at Figure 2-3). The first position of the Program Element gives the program number. Program Numbers in the May 83 FYDP Project Listing are:

> 1 = Strategic Forces
> 2 = General Purpose Forces

SCHEMA
RDTE PROGRAM ELEMENT
(Program 6 Only)

EXAMPLE: 64620

6   4   6   20

PROGRAM
ELEMENT
SERIAL
NUMBER

HISTORICAL
BUDGET
ACTIVITY

CATEGORY

PROGRAM
NUMBER

Figure 2-2

2-5
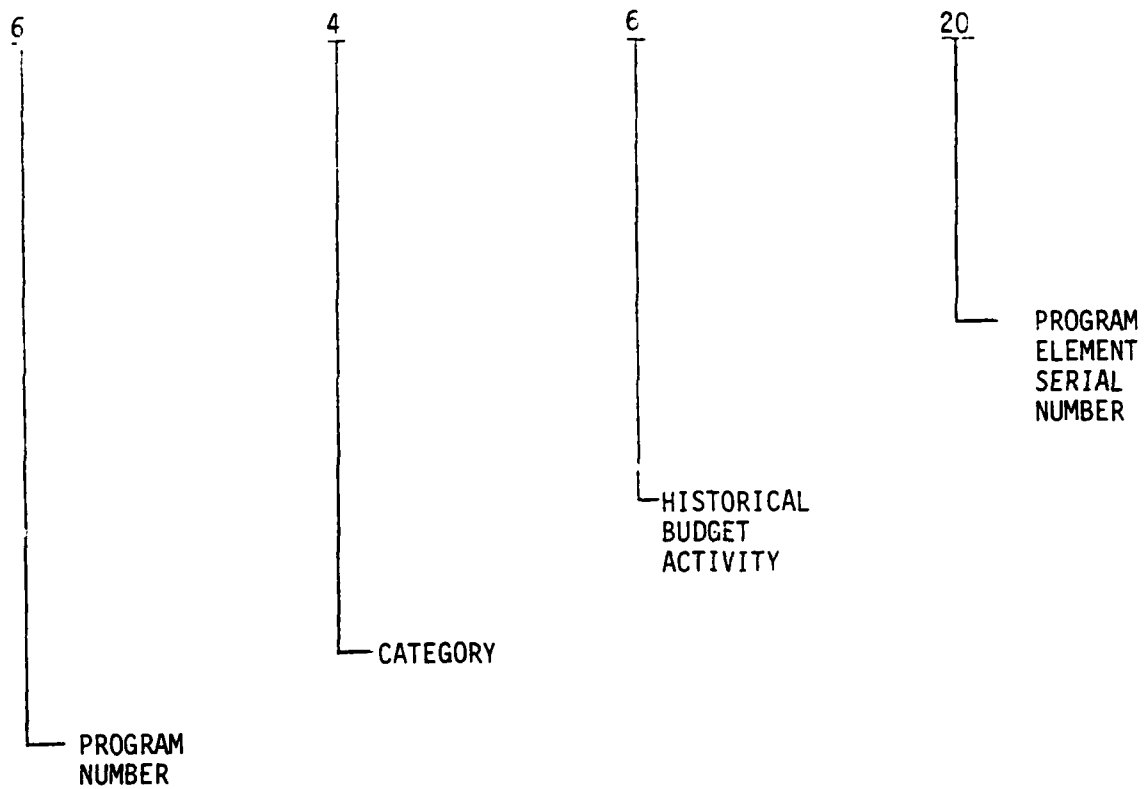
SCHEMA
RDTE PROGRAM ELEMENT
(Other Than Program 6

EXAMPLE: 23735

2   3735
| |
| |
| |
| |
| |
| └─ PROGRAM
| ELEMENT
| SERIAL
| NUMBER
|
|
└─ PROGRAM
   NUMBER

Figure 2-3

2-6
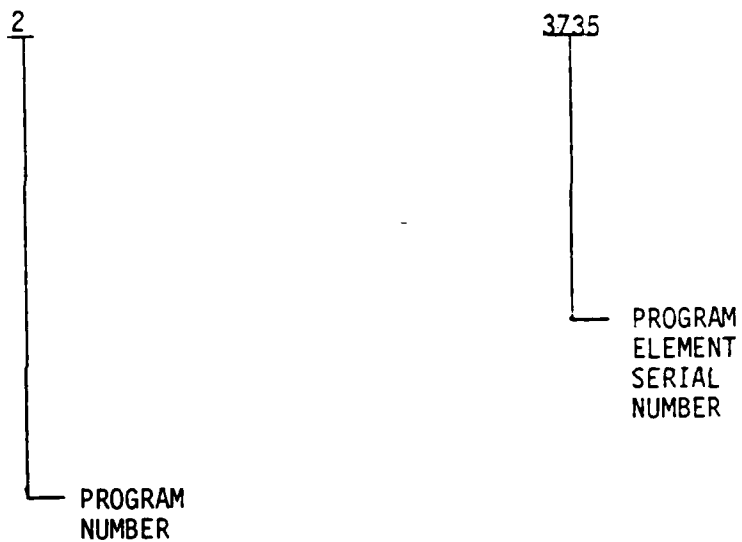
3 = Intelligence and Communications
                    6 = Research and Development

    a.   Schema for Program Elements in Program 6:

        (1) Position One. This is the Program Number (6).

        (2) Position Two. This is the R&D Category:

                    1 = Research
                    2 = Exploratory Development
                    3 = Advanced Development
                    4 = Engineering Development
                    5 = Management and Support

As an item of interest, it should be noted here that R&D Category 3 can be
subdivided. Subcategory 3A is Advanced Development - Non-System, and 3B is
Advanced Development - System. However, these subcategories were not used in
any listings available to this study.

        (3) Position Three. This is the Budget Activity that was used prior
to FY 78. It is used now only as an historical reference.

        (4) Positions Four and Five. These numbers constitute the Program
Element Serial Number that identifies a specific Program Element when used
with the first three digits. They cannot stand alone.

    b.   Schema for Program Elements in Other than Program 6. These Program
Elements are in an R&D Category called Operational Systems Development.

        (1) Position One. This is the Program Number. In the May 83 FYDP
Project Listing, these programs are 1, 2 and 3.

        (2) Positions Two through Five. These digits identify a specific
Program Element when combined with the first digit. The RDTE literature does
not provide further information with respect to a break-out of these digits.
One might expect that the second digit would give the number for the category
Operational Systems Development, which is "7". This is not the case. The
Program Elements in Programs 1, 2, and 3 do not give the category. Actually
none of these Program Elements has the digit 7 in the second position. The
literature states that category 7 includes research and development efforts
toward developing, engineering, and testing of systems, support programs,
vehicles and weapons that have been approved for production and service
employment; and that all items are major line item projects which appear as
RDTE costs in other programs (i.e., other than Program 6). However, in the
FYDP Project Listing these Program Elements and their RDTE Project Numbers are
listed under the 6.7 Program Category; that is, Program 6, Category 7; even
though the first digit of the Program Element is not 6. Research efforts
failed to produce an explanation; it appears that this is a case of "it's
always been done that way".

2-4. The RDTE AMS Code. RDTE Project Numbers are converted to RDTE AMS Code
by ODCSRDA personnel. ODCSRDA sends these RDTE AMS Codes to USAFAC for

                                   2-7

publication in AR 37-100-XX. They are used by the field to report execution
data to USAFAC. The field does not report execution data by RDTE Project
Number. However, some USAFAC personnel who work with these RDTE AMS Codes
call them project numbers. Also, USAFAC produces a printout (RIN HCG 320)
with a column heading "PROG/PROJ". Actually, there is a close relationship
between the RDTE Project Number and the RDTE AMS Code. Consider the
following:

<div align="center">PATRIOT (SAM-D)</div>

RDTE Project Number: 1 X 4 6 4 3 0 7 D 2 1 2 0 0
RDTE AMS Code: 644 3 0 7 . 2 1 2 0 0

Note that the RDTE AMS Code contains an extra digit between the first and
second positions of the Program Element 64307. This number always matches the
third digit of the RDTE Project Number which is the Budget Activity. Both
contain the Program Element 64307, Patriot (SAM-D), and both contain the
Project Serial Number 212, Patriot (SAM-D). The last two positions in each
case are zero-filled at DA level but are designed to give the RDTE Task Number
at other organizational levels. The first two positions in the RDTE Project
Number are agency designators (for Patriot, these are 1X, signifying DARCOM,
Project Manager). However, when DARCOM reports execution data to USAFAC,
DARCOM uses its Operating Agency Number, and reports by RDTE AMS Code. The
fiscal year when the project was funded also is reported since the AMS Code
above does not contain a fiscal year designator. It should also be noted that
the AMS literature calls the Program Element the "Program Element/Budget
Subactivity" although it does not contain the DOD Budget Subactivity Numbers.

2-5. RDTE Project. A project, represented by RDTE AMS Code, can be executed
in the Army's finance and accounting system. The RDTE Appropriation #2040 is
a multiple year appropriation (available for obligation for two years). For
example, FY 83 funds made available for this appropriation will expire for
obligation purposes on 30 September 1984, and lapse for disbursement purposes
on 30 September 1986. At the end of the fourth year, any funds not disbursed
are placed in an "M" account where they are merged with balances of other
closed accounts. After balances are merged, funds may be disbursed from the
"M" account to satisfy Government liabilities; however, the disbursements
cannot be "tracked" to obtain total costs of the project.

2-6. Observations.

    a. During the effort to collect information on the schemata of the RDTE
Project Number, Program Element, and RDTE AMS Code, and to crosswalk the
project number to the AMS Code the following observations were made.

        (1) In some cases, the information in the project number literature
did not agree with the information in the finance and accounting literature or
DOD budget guidance with respect to Budget Activities, Categories and
Programs. For example, four lists of Budget Activities were found:

(AR 70-6)

0 = RDT Support from Other Appropriations
1 = Research (Mil Science)
2 = Aircraft and Related Equipment
3 = Missiles and Related Equipment
4 = Military Astronautics and Related Equipment
5 = Ships, Small Craft and Related Equipment
6 = Ordnance, Combat Vehicles and Related Equipment
7 = Other Equipment
8 = Programwide Management & Support

(AR 70-9)

1 = Technology Base
2 = Advanced Technology Development
3 = Strategic Programs
4 = Tactical Programs
5 = Intelligence and Communication
6 = Defensewide Mission Support
7 = Other Equipment
8 = Programwide Management Expenses and RDTE Investment

(AR 37-112)

1 = Technology Base
2 = Advanced Technology Development
3 = Strategic Programs
4 = Tactical Programs
5 = Intelligence and Communications
6 = Defensewide Mission Support
9 = Reimbursable Orders

(DOD 7110-1-M)

1 = Technology Base
2 = Advanced Technology Development
3 = Strategic Programs
4 = Tactical Programs
5 = Intelligence and Communications
6 = Defensewide Mission Support
20 = Undistributed
35 = Reimbursable Programs

Personnel at ODCSRDA said to use the Budget Activities listed in AR 37-112 pending revision of the AR 70 series of which ODCSRDA is the proponent agency.

    (2) Similar disconnects were encountered with Categories and Programs.

Categories

(AR 37-112)

1 = Research
2 = Exploratory Development
3 = Advanced Development
4 = Engineering Development
5 = Management and Support

(AR 37-100-83)

1 = Research
2 = Exploratory Development
3 = Advanced Development
4 = Engineering Development
5 = Management Support
    (for Budget Activity 9, Reimbursable
    Orders, the Category position contains
    numbers 1-6 of the other Budget Activities;
    that is, they give Reimbursables by
    Budget Activity)
    (also for Budget Category 9, there are two
    special designators: B2 = Reimbursables
    Received for BASOPS SPT provided to others -
    for use by NARADCOM only; and B3 =
    Reimbursables Received for BASOPS SPT provided
    to others - for use by Aberdeen Proving
    Ground only)

(AR 70-1)

1 = Research
2 = Exploratory Development
3 = Advanced Development
    3A = Non-System
    3B = System
4 = Engineering Development
5 = Management Support
7 = Operational Systems Development

Programs (which may receive RDTE funds)

(AR 37-112)

1 = Strategic Forces
2 = General Purpose Forces
3 = Intelligence and Communications
6 = Research and Development
9 = Administration and Associated Activities

(AR 70-9)

1 = Strategic Forces
2 = General Purpose Forces
3 = Intelligence and Communications
6 = Research and Development
7 = Central Supply and Maintenance
8 = Training, Medical and General Personnel Activities
9 = Administration and Associated Activities
0 = Support of Other Nations

(AR 37-100-83)

Same as AR 37-112; however,
modified for use as follows:

1 = Strategic Forces
2 = Operational Systems Development - General Purpose
    Forces
3 = Operational Systems Development - Intelligence and
    Communications
6 = Research and Development
9 = Administration and Associated Activities

　　　　(3)　Some of the disconnects are necessary, i.e. the finance and
accounting system and Department of Defense (DOD) need an additional Budget
Activity for Reimbursables and DOD needs one for Undistributed Programs; but
the Budget Activity Numbers for Reimbursables differ. DOD's is #35,
Reimbursable Programs; and the F&A system's is #9, Reimbursable Orders. The
differences, even though justifiable, can be confusing.

　　　　(4)　Some information provided by the current literature appears to
be outdated. For example, AR 37-112 specifies that the fourth digit of the
RDTE AMS Code for Program 6 is a repeat of the second digit. However, the
fourth digit now is the historical Budget Activity.

　　　b.　These observations are presented here to preclude the possibility
that readers might be confused or misled by one or another of the referenced
publications if they have occasion to pursue independent research. In this
report the "disconnects" were resolved by questioning the POC's, by selecting
the AR with the latest date, or simply by accepting practice over publication.

CHAPTER 3

INTERRELATIONSHIP OF RDTE PROJECT NUMBERS TO THE PPBES

3-1. Introduction. The Army's Planning, Programming, Budgeting, and Execution System (PPBES) is a comprehensive, dynamic, and complex process. Its principal products are The Army Plan, the Five Year Defense Program, and the Budget. During the execution phase of the annual cycle, programs are executed and Army resources are managed. The intent of this chapter is to show the interrelationship of RDTE Project Numbers to the PPBES.

3-2. Revisions to the PPBES Handbook.

a. Prior to 1982, the name of the Army's primary resource management system was the Planning, Programming, and Budgeting System (PPBS). The execution phase was a part of the budgeting function. In 1982, when the third edition of the handbook was published, execution became a separate function and the name was changed to the Planning, Programming, Budgeting, and Execution System (PPBES):

> "Army and other defense managers more and
> more perceive that emphasis on planning,
> programming, and budgeting overlooks an
> essential system ingredient. The three-
> phase focus, they believe, subordinates
> concern for how well program and budget
> execution applies resources to achieve
> intended purposes. As a first step to
> reemphasize the need to review program
> and budget execution, the Army has renamed
> its primary resource management system."[1]

b. Another major change in the system is the replacement of mission areas by the following which were structured around basic Army functions:[2]

FUNCTIONS

Structure
Man
Equip
Train
Mobilize

---

[1] PPBES Handbook, 3d Ed., 1982, pps. xxv-xxvi

[2] Ibid. p. xvi

Deploy
Sustain
Provide Facilities

The above functions were used for prioritization in the May 1983 Program
Objective Memorandum (POM).

3-3. Planning. The principal product of the planning function is The Army
Plan. It conveys guidance and establishes operational priorities for program
construction, supporting preparation of command Program Analysis and Resource
Review (PARR) documents and the Program Objective Memorandum (POM).

ARMY PLANNING CYCLE

PHASE	PERIOD	PRODUCT
Requirements planning	Mid-February to Mid-August	Army planning force requirements
Objectives planning	July to late August	Constrained objective force
Planning decision	Mid-September	The Army Plan

There is no direct relationship with the RDTE Project Numbers; however, the
decisions made will determine programs which directly affect their structure
and usage.

3-4. Programming. The programming function translates planning decisions
into a balanced allocation of forces, manpower, materiel, and funds. Each
PPBES cycle advances the program one fiscal year. The baseline for each new
cycle is the Army portion of the Five Year Defense Program (FYDP), which is
the official summary of programs approved by the Secretary of Defense and
reflected in the President's budget. The Program Element is the basic
building block of the FYDP.

   a. The Program Element. The FYDP RDTE Project Number Listing published
by ODCSRDA lists all RDTE Project Numbers by Program Element. There may be
one or more RDTE projects in a Program Element. For example, in FY 83, the
Program Element #63712 (Mapping and Geodesy) contains RDTE Project Numbers
1S563712D580 (Field Army Mapping) and 1A563712DT44 (Digital Topographic
Support) but 136 of the 211 Program Elements funded in FY 83 contain only one
project. The RDTE Project Numbers - specifically their Project Serial Numbers
- identify the projects used to execute the Program Element. However, ODCSRDA
cautions that the FYDP is a programming document rather than an execution
document, and that Program Elements in the FYDP may not be the same used
during execution of a project, especially in the outyears.

   b. Program Development Increment Packages (PDIP's). Each program is
described by a PDIP. Most of the continuing programs are safe from serious
challenge; they form a program "core". Above the core, there is competition
for the limited resources. PDIP's are ranked, integrated into functional
programs, prioritized on the basis of functional analysis, and adjusted by the
Program and Budget Committee (PBC) through program review. ODCSRDA publishes

a listing of RDTE Project Numbers by PLIP.

3-5. Budgeting. There are two stages in the budgeting phase: Budget
Formulation which comprises development of Army budget estimates for review
and approval as part of the President's budget, and Budget Justification which
relates to the process of congressional review and approval. These activities
express the program need for dollars and manpower as requests for
congressional appropriations. Exhibit R-1 (Supporting Data for the
President's Budget) is at the Program Element level; RDTE Project Numbers are
not in this document. Exhibit R-1 contains the proposed RDTE portion of the
Army budget which is forwarded to the Office of the Secretary of Defense for
inclusion in the OSD Budget. Program Budget Decisions (PBD's) help translate
approved programs into budget estimates. This is an iterative process.

     a. Program Budget Decision (PBD). The PBD's distribute resources among
Budget Activities (See Figure 3-1). Project Numbers do not contain PBD
numbers. In the RDTE Appropriation #2040, the PBD's and the Budget
Subactivities (BSA) have the same nomenclature and use the same numbering
system. An ODAB representative advised that for all practical purposes they
are identical. See Table 3-1 for a list of RDTE Budget Subactivities taken
from DOD publication dated June 1982, and the Subactivities that were the
subjects of PBD's in FY 83. The differences simply may be a function of
time.

     b. DOD Budget Subactivities (BSA). These three digit numbers do not
appear in RDTE Project Numbers. However, it should be noted that their
nomenclature and that of Army Mission Areas (AMA) bear a striking
resemblance. Actually, many have the same names as Army Mission Areas as well
as Program Budget Decisions (PBD). For example:

NOMENCLATURE	PBD	BSA	AMA
Land Warfare	230	230	210
Air Warfare	235	235	220
Theater Nuclear Warfare	246	246	240
Chemical Warfare	248	248	270
Etc.			

Although "Missions Areas" have been replaced in the "deciding process" by
"Functions", it appears that Mission Areas will remain very much a part of the
PPBES unless the Budget Subactivities/Program Budget Decisions are renamed.

3-6. Execution. The Secretary of the Army is accountable for program
execution and day-to-day management of Army resources. In response to
initiatives introduced by the Reagan administration for better defense
management, concern has centered on how well program and budget execution
applies resources to achieve intended purposes. The Chief of Staff of the
Army directed that an execution function be incorporated into the PPBS in
order to encourage and accelerate needed procedures which has resulted in the

PDIP $\Longrightarrow$ PROGRAM $\Longrightarrow$ BUDGET

Program Development
Increment Packages.

Program Budget Decisions
help translate approved
program into Budget
Estimates.
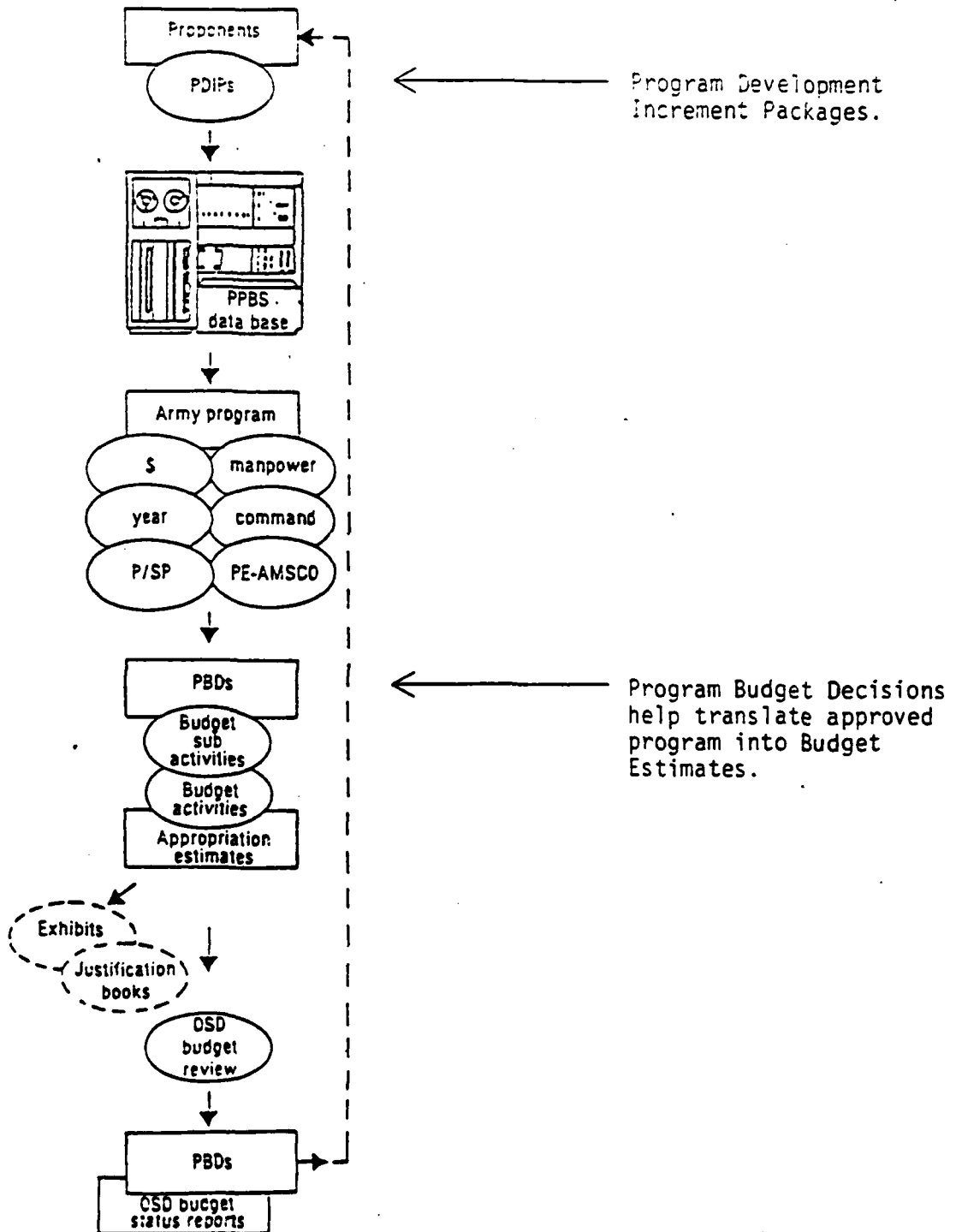
Figure 3-1

BUDGET SUBACTIVITIES/PROGRAM BUDGET DECISIONS

BSA	NOMENCLATURE	FY 83 PBD
100	Reimb Program	
197	Prod Invest Fnd	
200	Defense Research	200
204	Explor Develop	204
216	Avd Tech Demo	216
220	Strat Off-A&D	220
224	Strat Def-A&D	224
228	Strat C31 & Sup	228
230	Land Warfare	230
235	Air Warfare	235
246	Theater Nuc War	246
248	Chem Warfare	248
250	Defwide C31 Sup	250
252	Theater & Tac C31	252
254	Mobility	254
256	Warfare C&C	256
260	Defwide Mission	260
262	EW&C3 Cntermeas	
270	Mgmt & Support	270
275	Test & Evaluation	275
296	Cong Act - R&D, A	296
	Consolidated Crypt Prog	330
331	GDIP	331
	Foreign Counterintelligence	335
	Other Def Intel Prog Adj	336
	Emerg & Extra - Ord Exp Limit	340
350	Comm Sec Prog	350
401	Indust Fund, A	
697	JRWA	

Table 3-1

3-1.? The ... ... function includes the ... ... and allocating ... ... to carry ... approved programs, obligating and disbursing these fund... ... the ... ... reporting and review. It... long-standing procedure. ... ... activities during program and budget execution to finance unbudgeted requirements and to conduct selected resource management reviews.

a. Flow of Funds. After the President signs an appropriation act, the Treasury issues Appropriation Warrants to the Army. Concurrently, the Office of Management and Budget (OMB) apportions the funds and the Office of the Secretary of Defense (OSD) releases the programs. The Funds Control Officer at USAFAC assures that all elements balance; i.e., there is obligation authority with respect to given programs, and the cash is available for disbursement. Then, upon request of Appropriation Directors, the funds are allocated by USAFAC, and suballocated or allotted by Special Operating Agencies/General Operating Agencies (SOA/GOA) to installations in order to execute approved programs. Figure 3-2 shows this flow of funds.

b. The Army's finance and accounting system uses the RDTE AMS Code to account for RDTE funds. The RDTE Project Numbers are converted to RDTE AMS Code by ODCSRDA and sent to USAFAC for publication in AR 37-100-XX. The Army agencies involved in RDTE activities report to USAFAC in terms of the RDTE AMS Code, not by RDTE Project Numbers. (See Listing 1 for file dump of data received from the field.)

(1) Listing 1. The number "21" at the beginning of each line stands for "Army". The next field gives the last number of the fiscal year funds, followed by the RDTE Appropriation Symbol, 2040. The third field, 0000, currently is not used. Positions 3 and 4 of the fourth field give the Operating Agency Number (6D for the first line) of the reporting activity. The last eleven positions of that field contain the RDTE AMS Code (the decimal within the AMS Code is not printed). The fifth field repeats the Program Element and OSD Classification. The sixth field gives the data code:

BC = Funds Available - Direct
BJ = Obligations - Direct
BD = Deobligations of Prior Year Obligations
BK = Disbursements (Non-Interfund) Direct
BF = Commitments Outstanding
2B = DA Unobligated Balance
2E = DA Unliquidated Balance
etc.

The dollars and cents are in the next to last field. Example: 0000440900000 equals $4,409,000.00. The last field gives mode of transmission and processing data. This raw data is organized by USAFAC to produce another listing (see Listing 2).

(2) Listing 2. This listing gives the total amount per RDTE AMS Code obligated, disbursed, etc., reported by RDTE activities in the field.

---

[3]PPBES Handbook, 3d Ed., 1982, pps. 8-2,3

FLOW OF FUNDS

Figure 3-2

UNCLASSIFIED

REPORT GENERATION MASTER RECORDS

21	32040	0000	DC60C002437353200	237350	BC	00000440900000	T251
21	32040	0000	DC60C002437353200	237350	BJ	00000005231700	T251
21	32040	0000	DC60C002437353600	237350	BJ	00001874026818	T251
21	32040	0000	DC60C002437353000	237350	BK	00003026574133	T251
21	32040	0000	DC63C002437923300	237350	BP	00003131236100	T251
21	32040	0000	DC63C002437923300	237390	BA	00000189100000	T251
21	32040	0000	DC63C002437923300	237390	BC	00003189100000	T251
21	32040	0000	DC63C002437923300	237390	BJ	00001011196000	T251
21	32040	0000	DC63C002437923300	237390	BK	00000000252768	T251
21	32040	0000	DC62C002437048400	237390	BP	00C000300000	T251
21	32040	0000	DC62C002437048400	237400	BA	00014905000000	T251
21	32040	0000	DC62C002437048400	237400	BC	00014905000000	T251
21	32040	0000	DC62C002437048400	237400	BJ	00009808184465	T251
21	32040	0000	DC62C002437048400	237400	BK	00000677377477	T251
21	32040	0000	DC62C002437048400	237400	BP	00C0191129469	T251
21	32040	0000	DC6AC002801010400	280100	BA	00003008500000	T251
21	32040	0000	DC6AC002801010400	280100	BC	00000085000000	T251
21	32040	0000	DC6AC002801010400	280100	BJ	00000003399357	T251
21	32040	0000	DC6AC002801010400	280100	BK	00000002403003	T251
21	32040	0000	DC62C002801010400	280100	BA	00C0722800000	T251
21	32040	0003	DC62C002801011400	280100	BA	00002555500000	T251
21	32040	0000	DC62C002801017600	280100	BA	00000194000000	T251
21	32040	0000	DC62C002801022200	280100	BA	00000961400000	T251
21	32040	0000	DC62C002801011700	280100	BA	00000027300000	T251
21	32040	0000	DC62C002801011900	280100	BA	00000976400000	T251
21	32040	0000	DC62C002801010700	280100	BA	00005054000000	T251
21	32040	0000	DC62C002801011100	280100	BA	00003181000000	T251
21	32040	0000	DC62C002801011600	280100	BA	00000100000000	T251
21	32040	0000	DC62C002801017200	280100	RA	00000981000000	T251
21	32040	0000	DC62C002801011900	280100	RA	00000139000000	T251
21	32040	0000	DC62C002801011600	280100	BC	00000981000000	T251
21	32040	0000	DC62C002801011700	280100	BC	00000027300000	T251
21	32040	0000	DC62C002801011100	280100	BC	00000318100000	T251
21	32040	0000	DC62C002801011000	280100	BC	00000100000000	T251
21	32040	0000	DC62C002801010400	280100	BC	00000722800000	T251
21	32040	0000	DC62C002801010700	280100	RC	00005054000000	T251
21	32040	0000	DC62C002801011400	280100	RC	00002555000000	T251
21	32040	0000	DC62C002801017800	280100	RC	00000194000000	T251
21	32040	0000	DC62C002801017200	280100	RC	00000139000000	T251
21	32040	0000	DC62C002801011900	280100	BC	00009764000000	T251
21	32040	0000	DC62C002801022200	280100	RC	00000961400000	T251
21	32040	0000	DC62C002801011700	260100	BJ	00000019174265	T251
21	32040	0000	DC62C002801011600	280100	BJ	00000098100000	T251
21	32040	0000	DC62C002801017600	280100	BJ	00000037269947	T251
21	32040	0000	DC62C002801022200	280100	BJ	00000631011889	T251

UNCLASSIFIED

Listing 1

3-8

RIM DCG-???

CHAPARRAL

SAM HAWK/HIP

BASIC APPROPRIATION	DATA CODE	YEAR	AMOUNT FIELD	PROG/PROJ
32040	BJ	1	3,235,024.30	2437306970C
22040	JJ	2	196,900.00	2437306970C
12040	JJ	3	25,460.23	2437306970C
		TOTAL AMOUNT--	3,917,384.23	
32040	BK	1	55,037.14	2437306970C
22040	BK	2	649,038.97	2437306970C
12040	BK	3	2,493,383.35	2437306970C
		TOTAL AMOUNT--	3,207,955.96	
32040	BP	1	6,402,310.40	2437306970C
		TOTAL AMOUNT--	6,402,310.40	
22040	ZH	2	3,041,900.00	2437306970C
		TOTAL AMOUNT--	3,041,900.00	
22040	ZE	2	20,465,826.75	2437306970C
12040	ZE	3	6,216,481.89	2437306970C
		TOTAL AMOUNT--	26,682,308.64	
32040	bA	1	36,317,900.00	2437306970C
		TOTAL AMOUNT--	36,317,900.00	
32040	BC	1	36,317,000.00	2437316950C
22040	BC	2	38,102.61	2437316970C
		TOTAL AMOUNT--	56,355,102.61	
22022	C9	2	26,405.77-	2437316900C
		TOTAL AMOUNT--	26,405.77-	
32040	BJ	1	16,926,356.10	2437315900C
22040	JJ	2	12,993.38	2437316900C
12040	BJ	3	439.91-	2437316900C
		TOTAL AMOUNT--	16,938,909.57	
32040	BK	1	2,345,334.17	2437316950C
22040	BK	2	12,116,682.63	2437316950C
12040	BK	3	107,010.29	2437316950C
02040	BK	4	12,541.00	2437316950C
		TOTAL AMOUNT--	14,549,619.09	

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consider the excerpt, the last block of entries in Listing 1. The project is
SAM HAMI HIT. Disbursements have been made from FY 80, FY 62, FY 81, and FY
83 RDTE funds. RDTE funds are available for disbursement for four years. At
the end of FY 84, the FY 80 RDTE accounts will be closed and their balances
(if any) will be merged into an RDTE "M" account. Disbursements can be made
from the "M" account to satisfy Government liabilities; however, these
disbursements cannot be "tracked" by project. The audit trail ends.

c. USAFAC Accounting Reports. As programs are executed, the data
reported to USAFAC by the field is subjected to numerous analyses,
reconciliations and reviews before the data are consolidated and accounting
reports are prepared and distributed. (See Table 3-2 for a list of major RDTE
Accounting Reports.)

USAFAC

MAJOR RDTE ACCOUNTING REPORTS

Flash Report on Obligation Status

Report on Budget Execution

Appropriation Status by Fiscal Year Programs and Subaccount

Report on Obligations

Report on Reimbursable Transactions

Status of Approved Operating Budget

Table 3-2

RDTE PROJECT NUMBERS VIS-A-VIS SYSTEM CORRELATION

4-1. Approach. Following research on current rules, regulations, and practice in assigning, structuring and defining RDTE Project Numbers, an attempt was made to correlate FY 83 RDTE Project Numbers with the "Total Army" on a system basis in order to test the initial hypothesis that a significant portion of a major Army system's RDTE costs can be obtained if the system's projects can be identified.

    a. RDTE Project Number List. The list at Appendix B contains 411 project numbers. They were taken from the May 83 FYDP RDTE Project Listing. ODCSRDA advised that the entries containing dollars in the FY 83 column are valid (i.e., funded). A comparison was made between these project numbers and the RDTE AMS Codes listed in AR 37-100-83. The number of AR 37-100-83 entries was greater. Some of the projects represented by an RDTE AMS Code did not become funded - this regulation is published before the fact - and there were AMS Codes for Reimbursables and Carrier Accounts which are used in the finance and accounting system but have no counterpart in the RDTE Project Number system. Reimbursables are those accounts, by Budget Activity, which represent efforts in behalf of others, and Carrier Accounts are maintained as repositories of costs that cannot be identified with a project but that later may be transferred to accounts of specific projects. Field Two of the listing at Appendix B contains the RDTE AMS Codes specific to each RDTE Project Number; however, this listing of RDTE AMS Codes is not all-inclusive since it does not contain the Reimbursables and Carrier Accounts.

    b. System List. A list of Army systems was taken from Tables 4-3 and 4-4 of a draft paper prepared in the Office of the Director of Cost Analysis titled, "A Mission Area Structure for the Management of Army Resources", DCA-P-XX, September 1981. This list was used because it is the only one known to exist that is "totally exhaustive and mutually exclusive" in capturing the total Army. The System List is at Appendix C and gives the systems by class. The following shows the number of systems in each materiel and non-materiel class:

CLASS	NUMBER OF SYSTEMS
MATERIEL	
Aircraft	8
Missiles	18
Electronics	29
Tracked Combat Vehicles	7
Cannon, Artillery, Mortars and Guns	8
Engineering and Related Systems	5
Ground Vehicles	11
Ammunition	1
Other	9
Subtotal	96

NON-MATERIEL
    Health   -
    Installation Management   5
    Personnel and Related Services   5
    Support Outside Army   2
    Defense Research/Advanced Technical
      Development   1
    Intelligence Activities   3
    Army Headquarters   5
    Training   4
    Ground Combat/Combat Support   5
    Transportation/Traffic Management   2
    Engineer Services/Civil Works   3
    Police and Security   2
    Production Base Support   1
    Central Supply and Maintenance   5

                                      Subtotal   52

                                 Grand Total   148

An attempt was made to crosswalk the RDTE Project Numbers to the systems with emphasis on the Selected Acquisition Report (SAR) systems.

4-2. Observations. Several observations were made during the correlation efforts.

    a. Conflict of Rules. There is a "conflict of rules" for defining systems within the Army which indicates a need for a unified "Systems Language".

        (1) Comparison of Program Development Increment Packages (PDIP's), Baseline Cost Estimates (BCE's), Selected Acquisition Report (SAR) systems, and systems as defined by the Appropriation Directors at ODCSRDA showed variations as to what constitutes a system - as opposed to a non-system - and what that system includes with respect to modifications, support equipment, ammunition, armament, etc.

        (2) Some Appropriation Directors include modifications in their systems; some do not include modifications unless required in specific cases such as SAR's. Another variation is the inclusion in a system of only a portion of a project. For example, the Baseline Cost Estimate for Blackhawk contains portions of the following projects:

        1X464711D665   A/C Surveillance Equipment
        1A464268D106   A/C Component Improvement Program

The remaining funds in these "split" projects may or may not be included in other materiel system BCE's. Rules also differ on whether ammunition should be included. For purposes of this study, ammunition is a system which includes all RDTE costs relating to ammunition; however, others may consider ammunition to be a component of a system. For example, RDTE costs for 120MM Tank Gun Ammo Development are included in the M1 Abrams Tank system as defined

the Application Director and in the BDI.

The definitions in the draft paper which supplied the System List at Appendix C were used in this study; however, some systems were undefined and some were not clearly defined. In those cases and for purposes of this study, "working" definitions were formulated. For example, Defense Research would relate to projects providing joint benefits with Department of Defense, NATO, and other government agencies and industry; all other projects in categories 1 and 2 (Research and Exploratory Development) which could not be associated with other defined systems would be cross-walked to the system Materiel/Combat Development Activities. It should be noted, therefore, that this study may have contributed another set of rules to those now existing and that the correlation tables may not "track" with PDIP's, BCE's, etc.

b. Difficulty in Relating Schema to Systems. If the RDTE Project Number's nomenclature contained the name of a system (M1 Tank, Chaparral, Cobra TOW, UH-60A Blackhawk, etc.) or, if the Program Element's nomenclature contained the name of a system, then no difficulty was encountered in cross-walking the project number to the system. When these conditions did not prevail, then it was hoped that the schema would be helpful (see Chapter 2 for schema). Unfortunately, the combinations of Program, Budget Activity, Category, and OSD Classification did not provide much help in identifying systems:

PROGRAM	BUDGET ACTIVITY	CATEGORY	OSD CLASSIFICATION
1	3	None	D
2	4	None	D
3	4	None	D
3	5	None	D
6	1	1	A,B
6	1	2	A,D
6	2	3	A,D
6	3	3	D
6	4	3,4,5	D
6	5	3,4	D
6	6	3	A
6	6	4	D
6	6	5	M,D

(1) For example, consider the following combinations:

611A   Program 6   = Research & Development
       Budget Activity 1 = Technology Base
       Category 1 = Research
       OSDC A = Applied Research

665M   Program 6   = Research & Development
       Budget Activity 6 = Defensewide Mission Support
       Category 5 = Management & Support
       OSDC M = Management Support

35D   Program 3   = Intelligence & Communications
       Budget Activity 5 = Intelligence & Communications
       OSDC D = Development-Test-Evaluation

```
6331   Program 6         = Research & Development
       Budget Activity 1 = Strategic Programs
       Category 3        = Advanced Development
       OSDC D            = Development-Test-Evaluation
```

They provide information, often redundant, concerning the phase and nature of activity but few "clues" to system correlation.

      (a) All modifications/improvements were in Program 2 (General Purpose Forces), but not all of the projects in Program 2 appeared to be modifications/improvements. All were in Budget Activity 4 (Tactical Programs) and all were in the OSD Classification D (Development-Test-Evaluation).

      (b) All of the RDTE Project Numbers associated with materiel systems contained the OSD Classification D (Development-Test-Evaluation); however, the numbers associated with non-materiel systems could contain OSD Classification D, A, B, or M. Therefore, while this information provided a check on correlation with materiel systems, it was of little value for non-materiel systems.

      (2) There is a striking similarity/redundancy in nomenclature of Program Elements and RDTE Project Numbers. In FY 83, there were 211 Program Elements and 411 RDTE Project Numbers (averaging 1.9 projects per element). However, 136 (approximately 33.0%) of the Program Elements contained only one RDTE Project Number each and, in almost all cases, they had the same nomenclature. Examples follow:

PROGRAM ELEMENT	RDTE PROJECT
CHAPARRAL	CHAPARRAL
MATERIALS	MATERIALS
MISSILE TECHNOLOGY	MISSILE TECHNOLOGY
GRASS BLADE	GRASS BLADE
PERSHING II	PERSHING II

Examples of a few cases where there was only one project to an element and their nomenclature was not the same:

PROGRAM ELEMENT	RDTE PROJECT
TANK SYSTEMS	M1 TANK (ABRAMS)
JOINT TACTICAL FUSION PROG	ALL SOURCE ANALYSIS SYS
COMBAT SUPPORT SYS	SMOKE MUNITIONS & MATERIAL

Fewer Program Elements would be needed if they were generic rather than specific in nomenclature.

      (3) When a project progresses from one category to another category (such as from Advanced Development to Engineering Development) the Program Element changes because the category designator is the second digit of the Program Element. For example, the Pershing II Program Element was 63311. Now it is 64311. The nomenclature remained the same; the number changed. Sometimes the Program Element Serial Number also changes. In FY 78, the Program Element for GRASS BLADE was 63317. It changed to 64313 (the second

... .

4. The RDTE Project Serial Number also may change. If a project changes category during a fiscal year, one could be 1X463620D998 and the other listed as 1X464620D99 . Changes in Program Element and Project Serial Number could obstruct audit trails in tracking system costs.

5) Some RDTE Project Numbers proved extremely difficult to cross-walk to a system; however, the problem may be attributable to the list of systems, not necessarily to the project numbers. For example, consider the RDTE Project Number 1X463723D335 (Communicative Technology). There are several systems in the system list that might be appropriate:

SYSTEM	SYSTEM CLASS
Automation/Communications Systems	Installation Management
Tactical Satellite Communications	Electronics
Communications Intelligence Systems	Electronics
Communications Security Systems	Electronics
Theater/Tactical Communication Systems	Electronics
Communications Combat Support	Ground Combat/Combat Support

The first step is to get any information possible from the schema. For RDTE Project Number 1X463723D335, the schema gives the following:

```
Organization = DARCOM
Internal Designator X = Project Manager
Budget Activity = Tactical Programs
Program Element 63723 = Command and Control
    6 = Program 6 (Research and Development)
    3 = Category 3 (Advanced Development)
    7 = Historical Budget Activity (Other Equipment)
    23 = Program Element Serial Numbers when used with
            the first three digits.
OSD Classification = Development-Test-Evaluation
Project Serial Number 335 = Communicative Technology
```

The schema does not solve the problem which is to select one of the above systems. However, the Program Element provides a clue. There is a system class named Installation Management which "sort of" relates to Command and Control. A search is made for other RDTE Project Numbers containing Program Element #63723 (Command and Control). The following are located:

```
1X463723D101 (Tactical Automation)
1X463723D185 (Military Software Standardization)
1X463723D186 (Military Computer Family)
```

A decision is made to place RDTE Project Number 1X463723D335 (Communicative Technology) in the Automation/Communications Systems. This decision is based on the fact that other RDTE Project Numbers in the same Program Element contain words such as Automation, Software, and Computer; therefore, it follows that Communicative Technology also pertains to automation. Granted, the argument may be tenuous; however, this case is presented to show the

nature of problems encountered in the correlation efforts and to underscore the need for a unified "Systems Language" within the Army and a coding scheme which would effectively identify projects to those systems.

4-3. Correlation Statistics. This section attempts through the use of some statistical data to show the degree of correlation achievable with today's RDTE Project Number structure.

    a. Correlation Tables are at Appendices D, and E:

        Appendix D - Correlation Table One
               (Materiel Systems)

        Appendix E - Correlation Table Two
               (Non-Materiel Systems)

    b. There were 411 FY 83 RDTE Project Numbers and 148 Systems:

NUMBER		PERCENTAGE
85	RDTE Project Numbers were identified with 32 of 96 Materiel Systems	20.7%
326	RDTE Project Numbers were identified with 22 of 52 Non-Materiel Systems	79.3%
411		100%

All RDTE Project Numbers were crosswalked to 54 of 148 systems, and account for 100% of the FY 83 RDTE funds in the Current Approved Program as of May 83. Projects were associated with 10 of 13 SAR systems.

    c. It should be noted again that RDTE costs (commitments, obligations, disbursements, etc.) must be tracked in the finance and accounting system by RDTE AMS Code. Although 100% of the RDTE Project Numbers were crosswalked to systems, 100% of RDTE costs cannot be tracked. At the end of the fourth year appropriation accounts expire and balances remaining (if any) are merged into "M" acounts. Further disbursements/adjustments cannot be tracked by project/system.

    d. The finance and accounting system also maintains RDTE AMS Codes for Carrier Accounts which contain costs not identifiable with a project/system, but which eventually should reach a zero balance. Until these costs are identified, total costs of a project/system cannot be tracked.

    e. The practice of "splitting" costs of a project between systems presents serious problems to tracking system costs. For example, portions of two RDTE projects are included in the Blackhawk Baseline Cost Estimate. The remaining costs of these are attributable to other material or non-materiel systems.

i. In order to present the correlation results pictorially, seven figures follow:

(1) Figure 4-1 shows the number and percentage of projects identified with materiel and non-materiel systems.

(2) Figure 4-2 shows the RDTE funds associated with materiel and non-materiel systems. Together, Figures 4-1 and 4-2 show that materiel systems account for 20.7% of the projects and 24.7% of RDTE funds; and that non-materiel systems account for 79.3% of the projects and 75.3% of the funds.

(3) Figures 4-3 and 4-4 show the distribution of projects among materiel and non-materiel system classes. The system class "Electronics" contains the most materiel system projects (29 of 85) and the system class "Defense Research/Advanced Technical Development" contains the most non-materiel system projects (216 of 326).

(4) Figure 4-5 shows the RDTE funds associated with these two large classes. Electronics represent only 4.5% of total RDTE funds; Defense Research/Advanced Technical Development represent 62.3% of total RDTE funds.

(5) Figures 4-6 and 4-7 show the distribution of projects by category for material and non-materiel systems.

4-4. Summary. Correlation efforts show that 100% of the RDTE Project Numbers can be crosswalked to a list of Army systems given that the list is "totally exhaustive and mutually exclusive" in capturing the total Army. However, there is a conflict of rules within the Army for defining systems, i.e. what constitutes a system as opposed to a non-system and what that system includes with respect to modifications, support equipment, ammunition, armament, etc. Also, the numbering systems (schemata) of RDTE Project Numbers, Program Elements and RDTE AMS Codes do not effectively identify projects to systems. These findings indicate a need for a unified "Systems Language" within the Army and a single schema that can effectively identify RDTE projects to those systems.

FY 83 PROJECT NUMBERS
CURRENT APPROVED PROGRAM (MAY 83)

MATERIEL SYSTEMS
85
20.7%

NON-MATERIEL SYSTEMS
326
79.3%
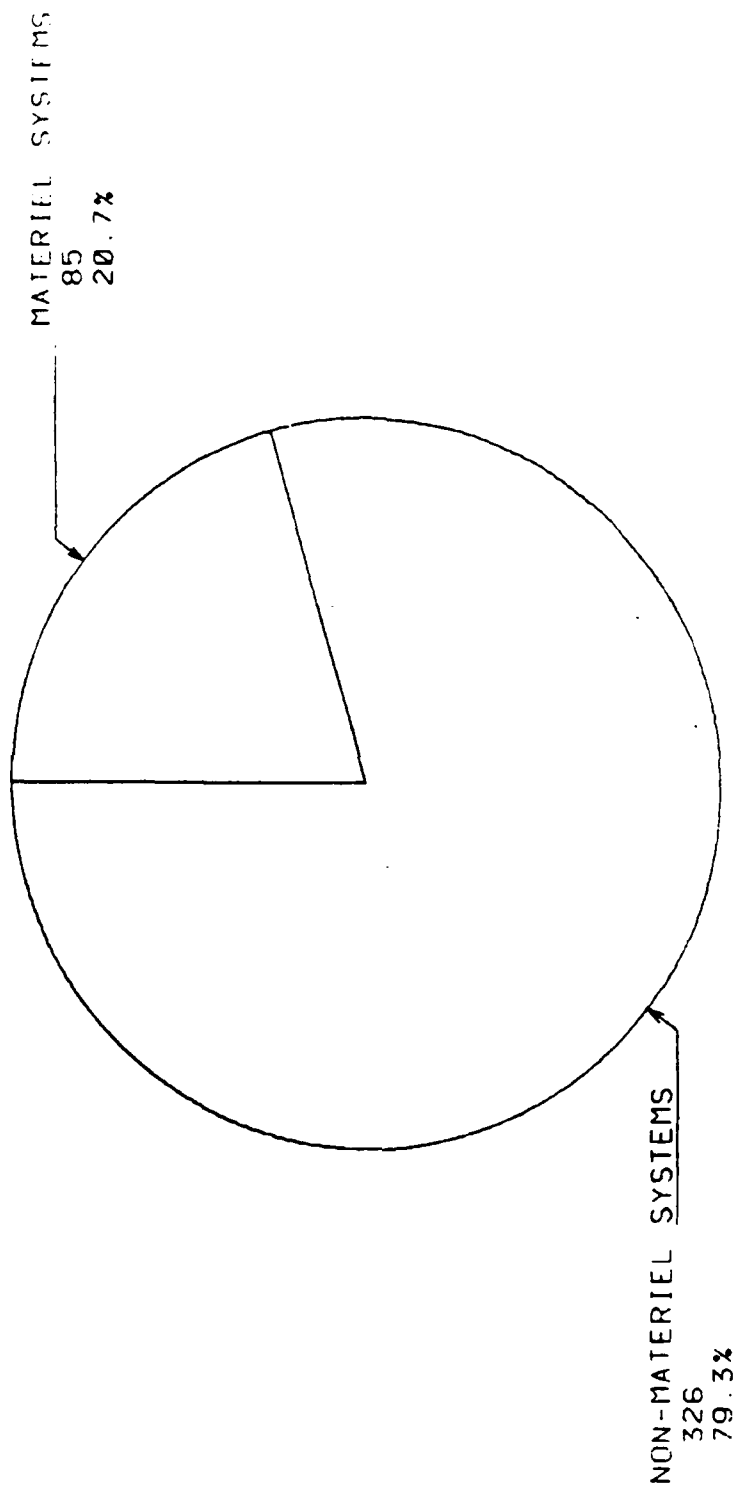
DISTRIBUTION OF RDTE PROJECT NUMBERS

FIGURE 4-1

FY 83 PROJECT NUMBERS
CURRENT APPROVED PROGRAM (MAY 83)

MATERIEL SYSTEMS
$960445
24.7%

NON-MATERIEL SYSTEMS
$2924338
75.3%
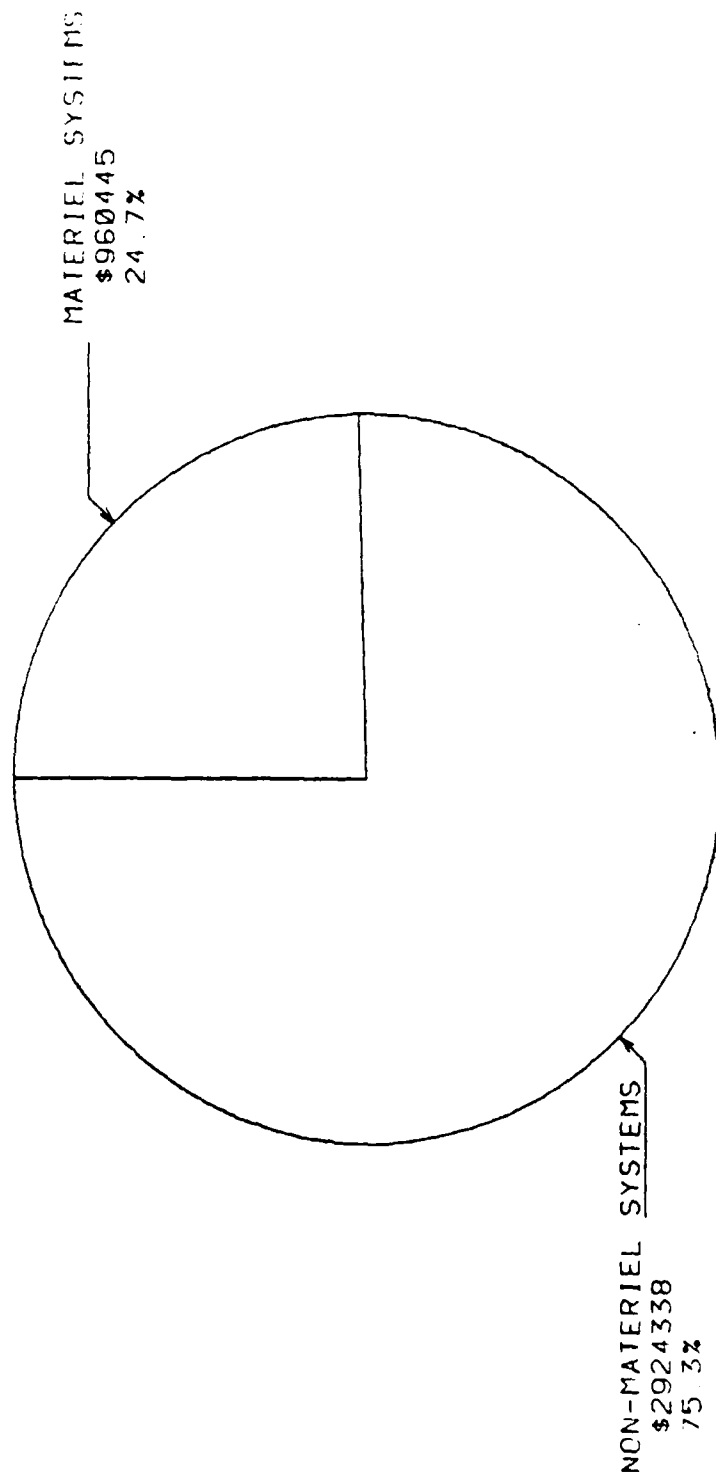
DISTRIBUTION OF RDTE PROJECT DOLLARS

FIGURE 4-2

FY 83 RDTE PROJECTS
CURRENT APPROVED PROGRAM (MAY 83)
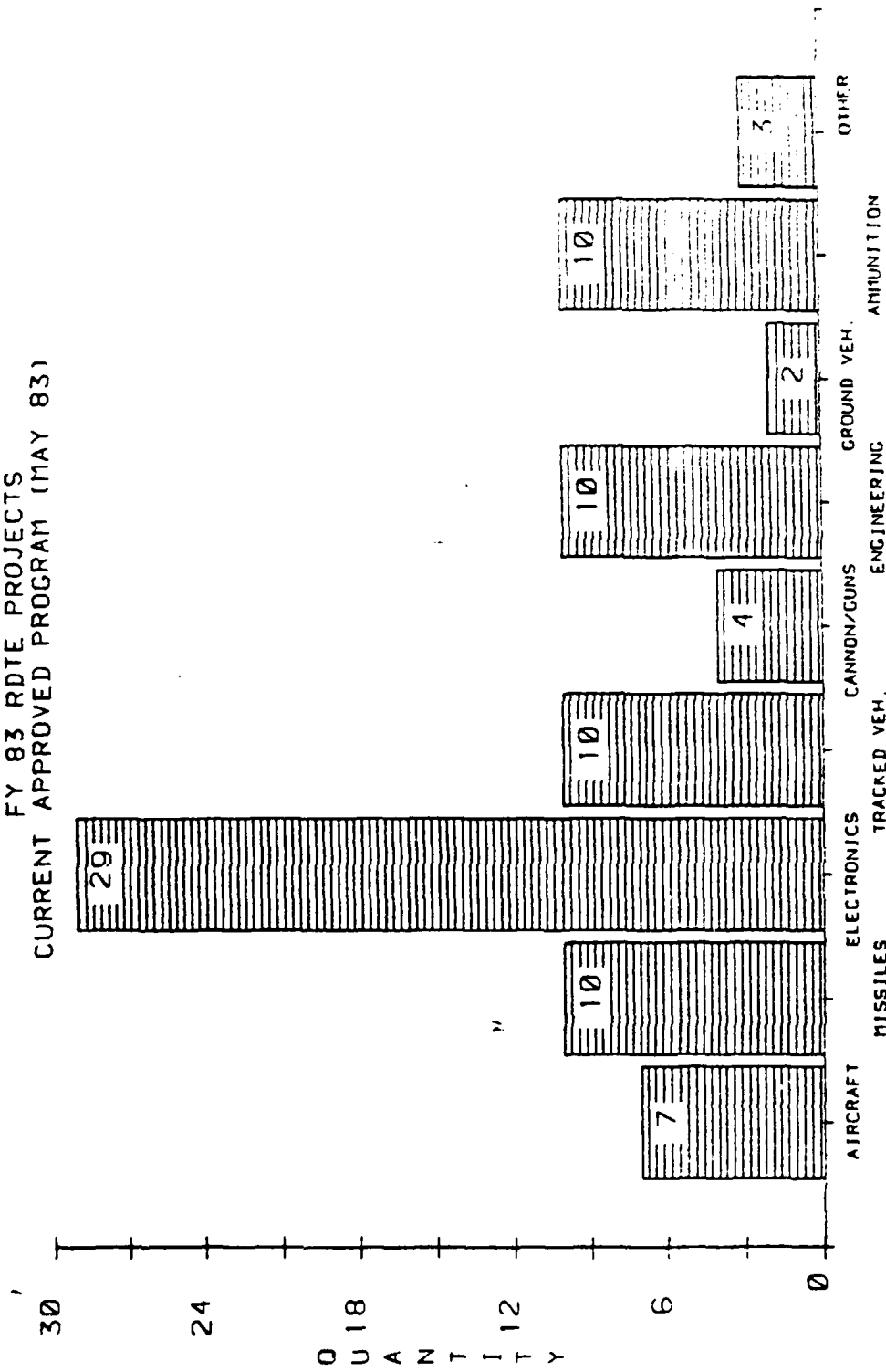
DISTRIBUTION OF RDTE PROJECT NUMBERS BY MATERIEL SYSTEM CLASS

FIGURE 4-3

FY 83 RDTE PROJECTS
CURRENT APPROVED PROGRAM (MAY 83)
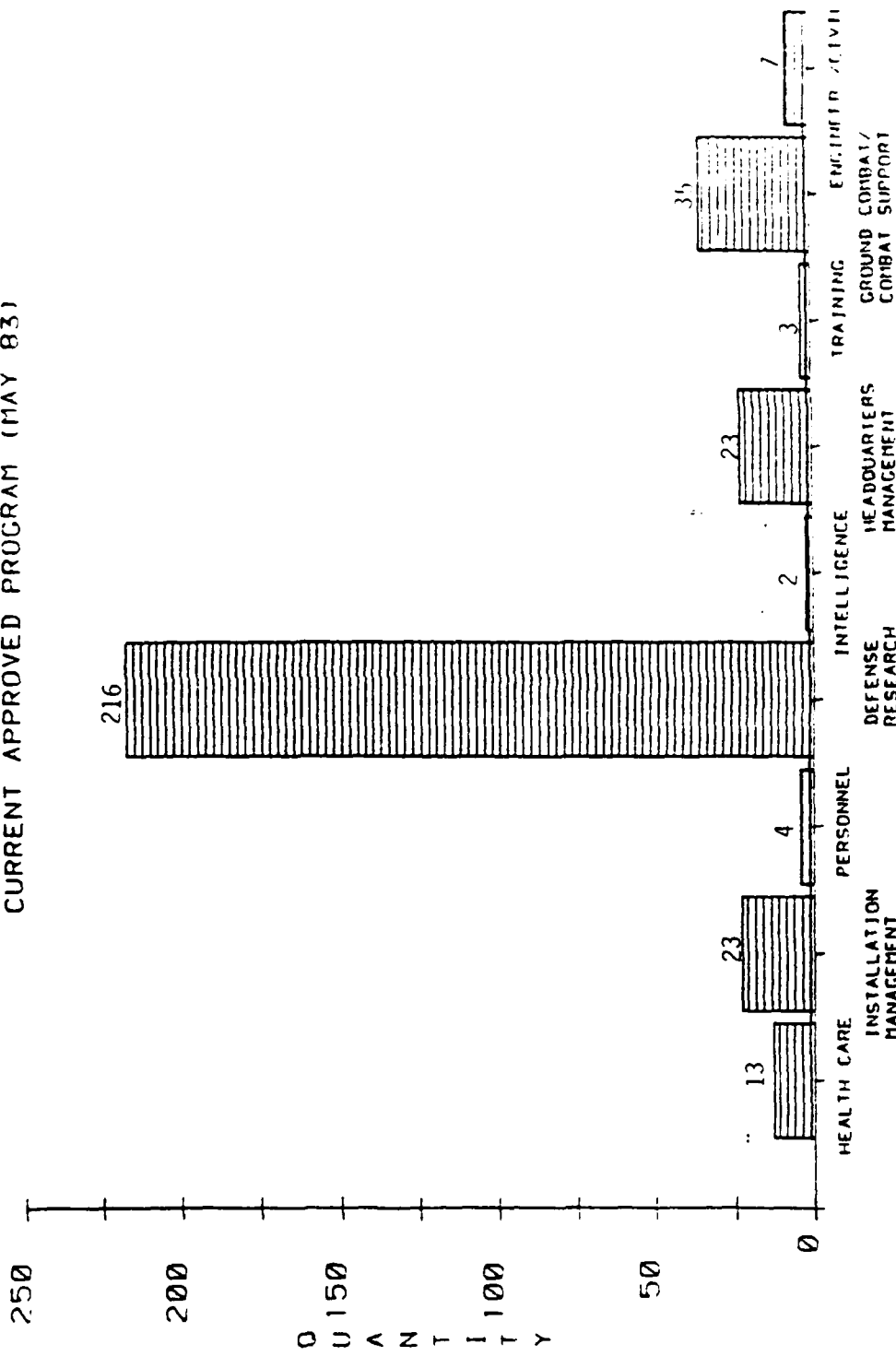
DISTRIBUTION OF RDTE PROJECT NUMBERS BY NON-MATERIEL SYSTEM CLASS

FIGURE 4-4

FY 83 PROJECT NUMBERS
CURRENT APPROVED PROGRAM (MAY 83)

DEFENSE ELECT AREA
$2410017
62.3%

OTHER MATERIEL
$787218
20.2%

OTHER NON-MATERIEL
$505391
13.0%

ELECTRONIC SYS
$173227
4.5%
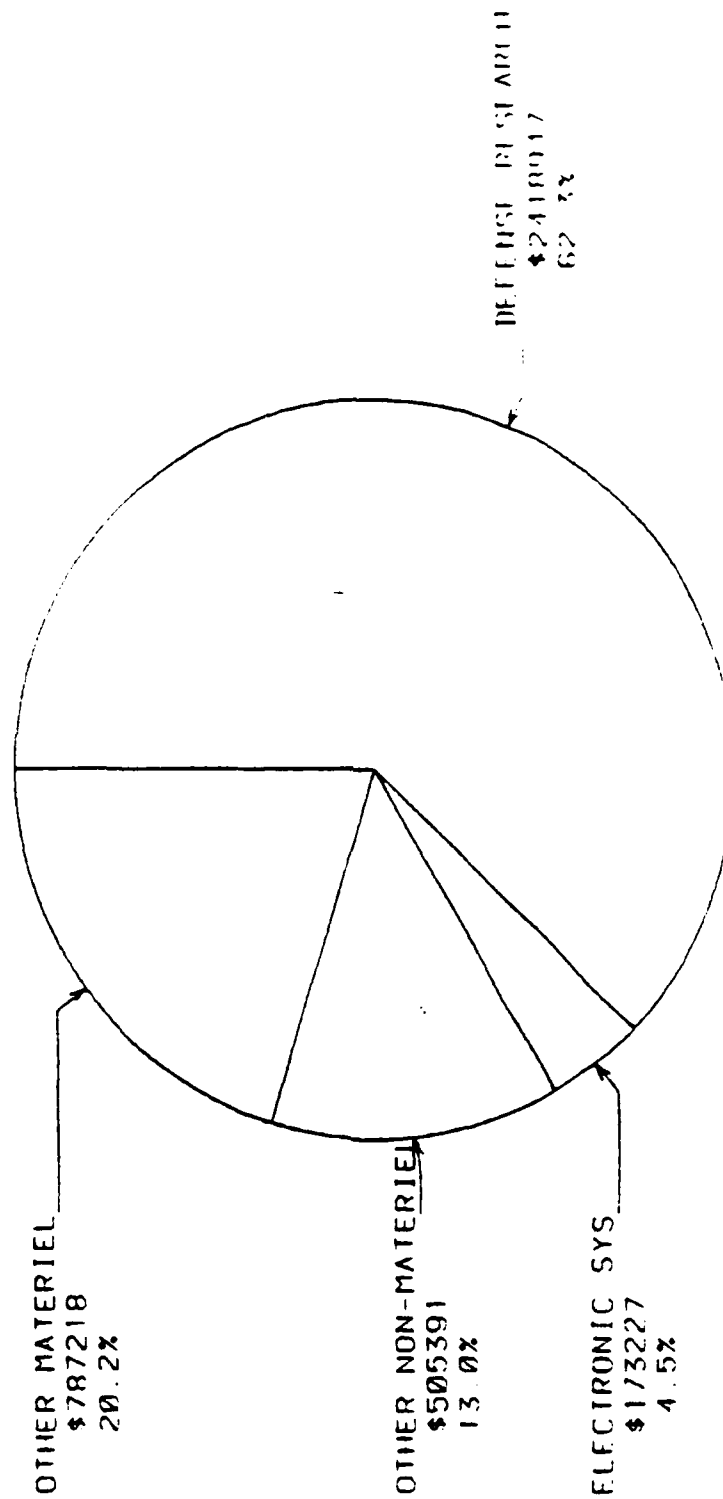
DOLLAR VALUE OF TWO LARGEST SYSTEM CLASSES

FIGURE 4-5

4-12

FY 83 PROJECT NUMBERS
CURRENT APPROVED PROGRAM (MAY 83)

ADV DEVELOPMENT
22
25.9%

OP SYS DEVLOPMENT
21
24.7%

ENG DEVELOPMENT
42
49.4%
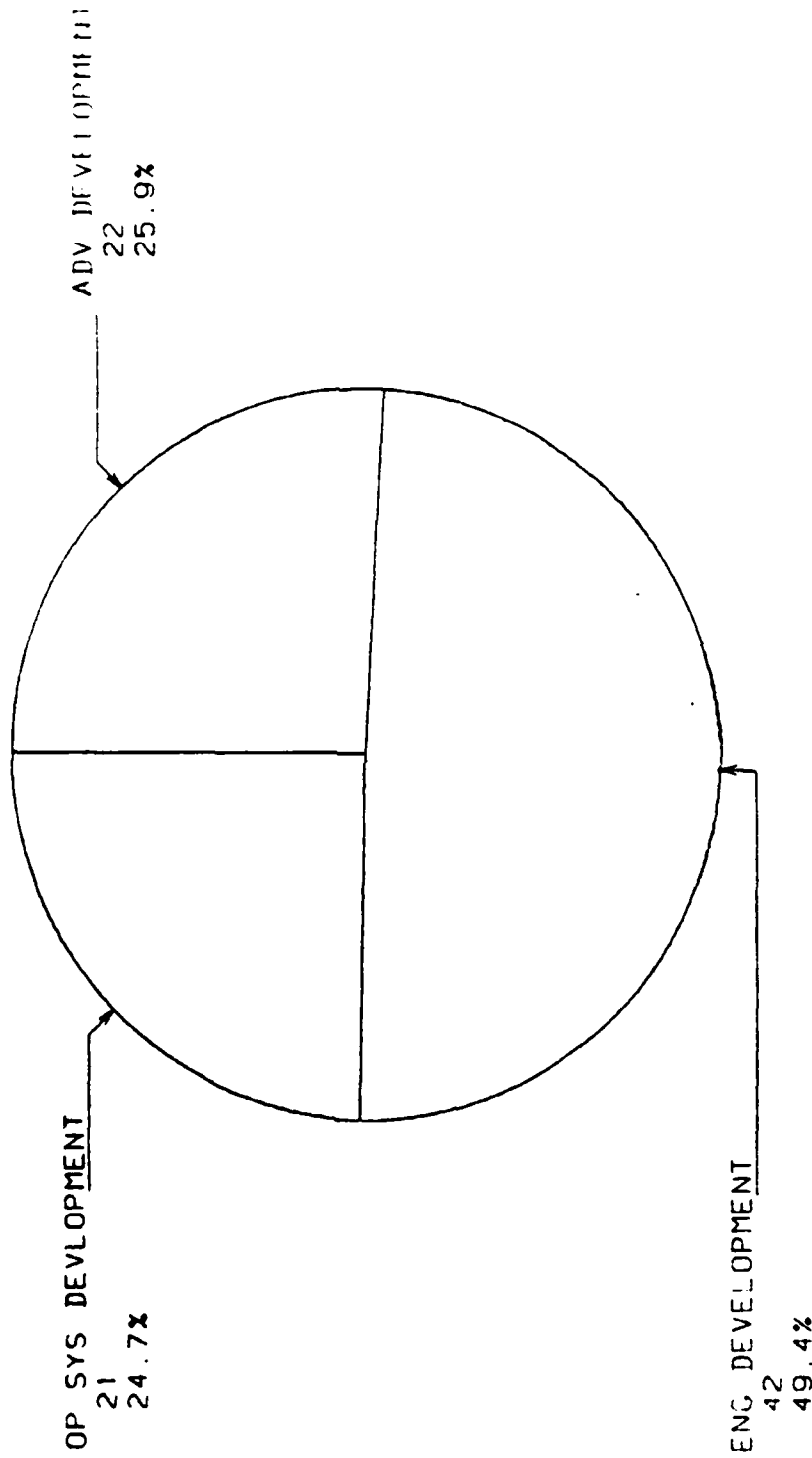
DISTRIBUTION OF MATERIEL SYSTEM RDTE PROJECT NUMBERS
BY FYDP PROGRAM CATEGORY

FIGURE 4-6

4-13

FY 83 PROJECT NUMBERS
CURRENT APPROVED PROGRAM (MAY 83)

RESEARCH
32
9.8%

EXPLORATORY DEV
50
15.3%

ADVANCED DEV
92
28.2%

ENGINEERING DEV
51
15.7%

OP SYSTEMS DEV
13
4.0%

MANAGEMENT & SUP
88
27.0%
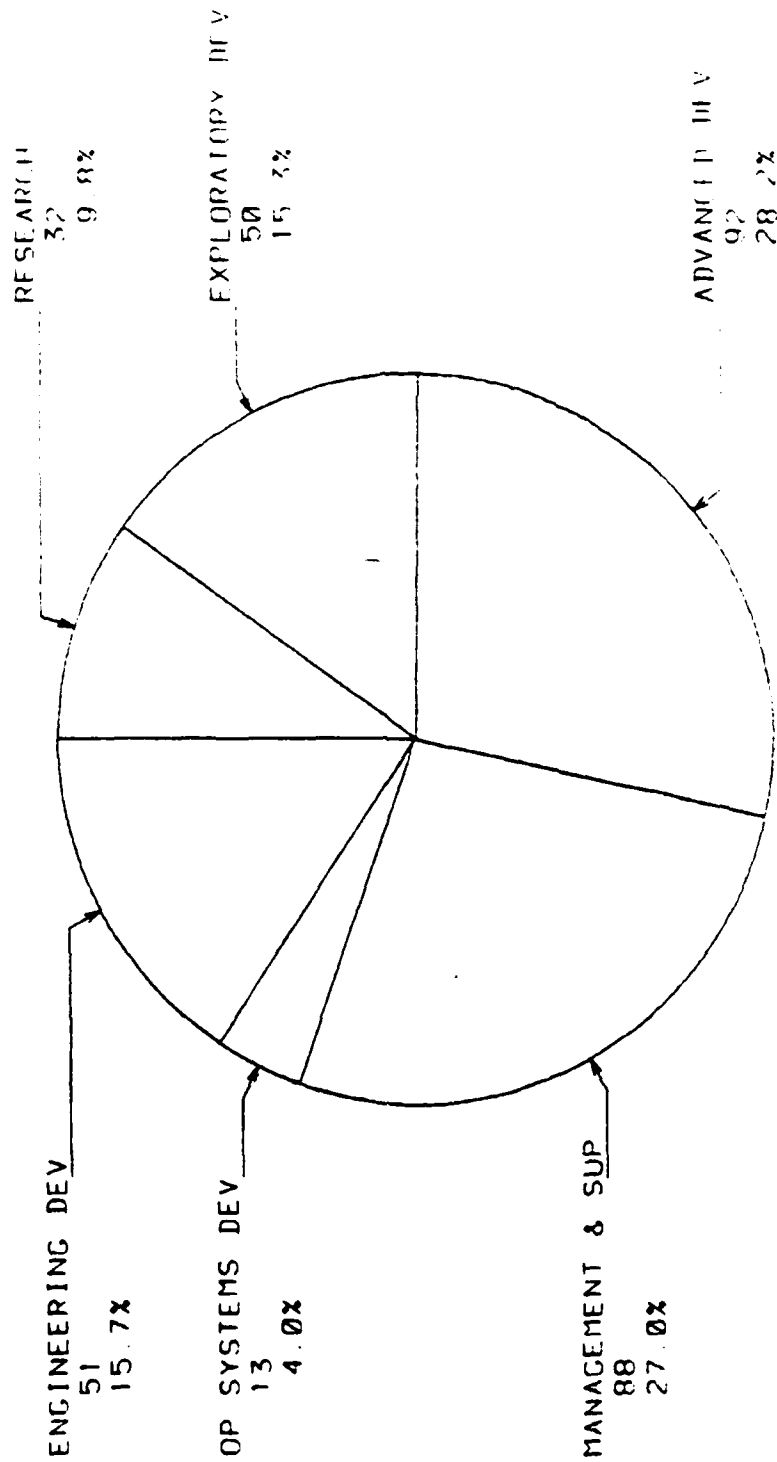
DISTRIBUTION OF NON-MATERIEL SYSTEM PROJECT NUMBERS
BY FYDP PROGRAM CATEGORY

FIGURE 4-7

4-14

ALTERNATIVE ARCHITECTURES

5-1. Feasibility of Architectural Change. The purpose of the study was to
determine the ability of the current RDTE Project Numbers to identify RDTE
costs of major Army materiel and non-materiel systems. It was determined that
100 percent of the RDTE Project Numbers could be correlated with total Army
systems, but that costs of systems as tracked by RDTE AMS Code would be less
than 100 percent and that system costs would be fragmented; i.e., in order to
track system costs it would be necessary to know how to put the "pieces"
together. The intent of this chapter is to present ways in which RDTE Project
Numbers and their RDTE AMS counterparts could be restructured/redefined and/or
used to assist in identifying RDTE costs of major Army systems.

5-2. Barriers to System Cost Monitorship. During the search for ways in
which the schema could be restructured/redefined, two constraints were
recognized. First, effort should be made to maintain or improve upon the
close relationship of the RDTE Project Numbers and their RDTE AMS Codes and,
second, effort should center on changes which would facilitate system
identification.

    a. Example 1. At present there is a close relationship between RDTE
Project Numbers and RDTE AMS Codes:

               RDTE Project Number   1 X 4 6 3 6 2 0 D G 2 0 0 0
               RDTE AMS Code   643 6 2 0 . G 2 0 0 0

The third digit and the second digit of the RDTE Project Number and the RDTE
AMS Code, respectively, match. They should be properly aligned; that can be
accomplished by advancing the number two positions to the right:

               RDTE Project Number   1 X 6 4 3 6 2 0 D G 2 0 0 0
               RDTE AMS Code   6 4 3 6 2 0 . G 2 0 0 0

The ninth position gives the OSD Classification (D). This position
corresponds to the decimal point in the AMS Code (the decimal point is not
used in USAFAC reports). Therefore, the OSD Classification could replace the
Budget Activity that was moved:

                              1 X D 6 4 3 6 2 0   G 2 0 0 0

No information has been lost. The result is a closer relationship:

               RDTE Project Number   1 X D 6 4 3 6 2 0 G 2 0 0 0
               RDTE AMS Code   6 4 3 6 2 0 G 2 0 0 0

Now that the numbers are aligned, consideration can be given to system
identification.

    b. Example 2. The following RDTE Project Numbers were funded in FY 83

for the M1 Tank as defined in the Baseline Cost Estimate:

1X423735D33000	M1E1 Block Improvement Program
1X464620DG2000	Tank, M1 ABRAMS)
1X464630D06400	120 MM Tank Gun Ammo Development
1X464630D06000	120 MM Gun Development
1X464630D28700	Tank Systems Integration
1X464632D17300	Tank Target Practice
1X463633D16100	Tank Ammunition and Fuzes

Even if the numbers were realigned, no information is available to identify the "piece-parts" of the system without some knowledge of how the system is defined. The result is that realignment, while "nice", has not provided system identification. Approaches should be formulated with a view to capturing RDTE costs on a system basis. Discussions on some approaches follow.

5-3. Approaches. Three approaches to obtaining system RDTE costs follow. The first does not involve restructure; rather, it is a procedure that employs data that are readily available to obtain an approximation of a major system's total RDTE costs. The second approach involves adding a new Budget Activity to provide system identification of major systems. The third approach also involves digit realignment to provide identification of the major system "class" as well as the specific system.

    a. Approach #1.

        (1) The concept of this approach is that by using system-unique project numbers (this term will be used to mean either RDTE Project Numbers or their related RDTE AMS Codes) in conjunction with other PPBES data, a high percentage of major systems' RDTE actual costs/obligations could be tracked/derived. Actually, five steps would have to be accomplished. The first step would be to identify all current fiscal year project numbers totally attributable to each major system. Next, the approved program amount associated with the identified project numbers would be obtained from USAFAC data files (information supplied by ODCSRDA) and summed for each system. The total approved program amount for each set of system project numbers would then be compared with the current fiscal year RDTE estimate in the latest Baseline Cost Estimate (BCE) for each system. The next step would be the identification/explanation of any difference between the systems' approved program and the BCE's. The last step is the actual tracking/derivation of the systems's RDTE actual cost/obligations.

        (2) A test of the above approach was conducted. Because the Current Approved Programs supplied to USAFAC by ODCSRDA are classifed, permission was received from ODCSRDA to use the amounts in the FY 83 column of the FYDP RDTE Project Listing of May 83, which at that point in time reflected the Current Approved Program. Three SAR (Selected Acquisition Report) systems were used in the test - the UH60 (BLACKHAWK) aircraft, the PATRIOT missile system, and the M1 (ABRAMS) tank. The criteria used in selecting the systems were that they had a significant FY 83 RDTE program, a recent BCE available, and represented three different materiel system classes. The BCE data used in this test were obtained from the following:

BASELINE COST ESTIMATES

BLACKHAWK	Total R&D Funding Profile, BCE, March 1983
PATRIOT	Program Manager's BCE, January 1982
ABRAMS	Program Manager's BCE, April 1982

(3) The Fy 83 current dollars expressed in the BCE's for PATRIOT and M1 ABRAMS Tank had been calculated with inflation indices promulgated by OSD and published in 1982. The FY 83 current dollars in the BLACKHAWK BCE had been calculated with updated indices published in early 1983. To provide consistency among systems, the BLACKHAWK data were deflated to constant dollars and then re-inflated with the index for FY 83, as published in 1982. The decision to change the BLACKHAWK data rather than the PATRIOT and M1 data was made in order to avoid bias. That is, the difference would have been smaller because the index published in 1983 showed a lower rate of inflation.

(4) The next step in the test was to determine how much of each systems's FY 83 RDTE estimate in the BCE could be identified from the projects in the current approved program and explain the differences if any. Differences were caused by "split" projects in the BCE (claiming only a portion of a project), and increases or decreases not reflected in both the BCE and current approved program due to timing of preparation. And, of course, errors in rounding would not be trackable. Figures 5-1, 5-2, and 5-3 graphically show the results in terms of the percentage of the BCE that the projects identified and percentages for some of the differences that are explainable. The data below supports the initial hypothesis that a significant percentage of a major system's RDTE costs could be tracked if the system's projects could be identified:

SYSTEM	PERCENT OF COSTS IDENTIFIED/EXPLAINED
BLACKHAWK Aircraft	94.40%
PATRIOT Missile System	99.15%
M1 ABRAMS Tank System	93.20%

(5) This approach could be implemented unilaterally because all the data sources needed are available, and it would not impact on any of the current procedures in the PPBES. The approach could satisfy to a great extent the need for RDTE cost data; however, it would not provide total RDTE dollars and would not address the system fragmentation inherent in the current project number structure and in the "M" accounting procedures which effectively obstruct efforts to collect total actual (historical) RDTE cost by system.

b. Approach #2. This approach would add a new Budget Activity - Major Systems - but would not involve realignment of digits. The Program Element Serial Number (last two digits of the Program Element) would give the specific major system. For example:

RDTE
FY 83 BLACKHAWK PROGRAM

CURRENT DOLLARS
(MILLIONS)

$19.8
$18.7

BASELINE COST
←NON-TRACKABLE (5.6%)
←EXPLAINABLE (52.0%)

RDTE PROJECT NUMBERS
1X4647I1D665
1A464268D106

$ 8.4

←TRACKABLE (42.4%)

RDTE PROJECT NUMBER
1X464206D069

FY 83

Figure 5-1

5-4
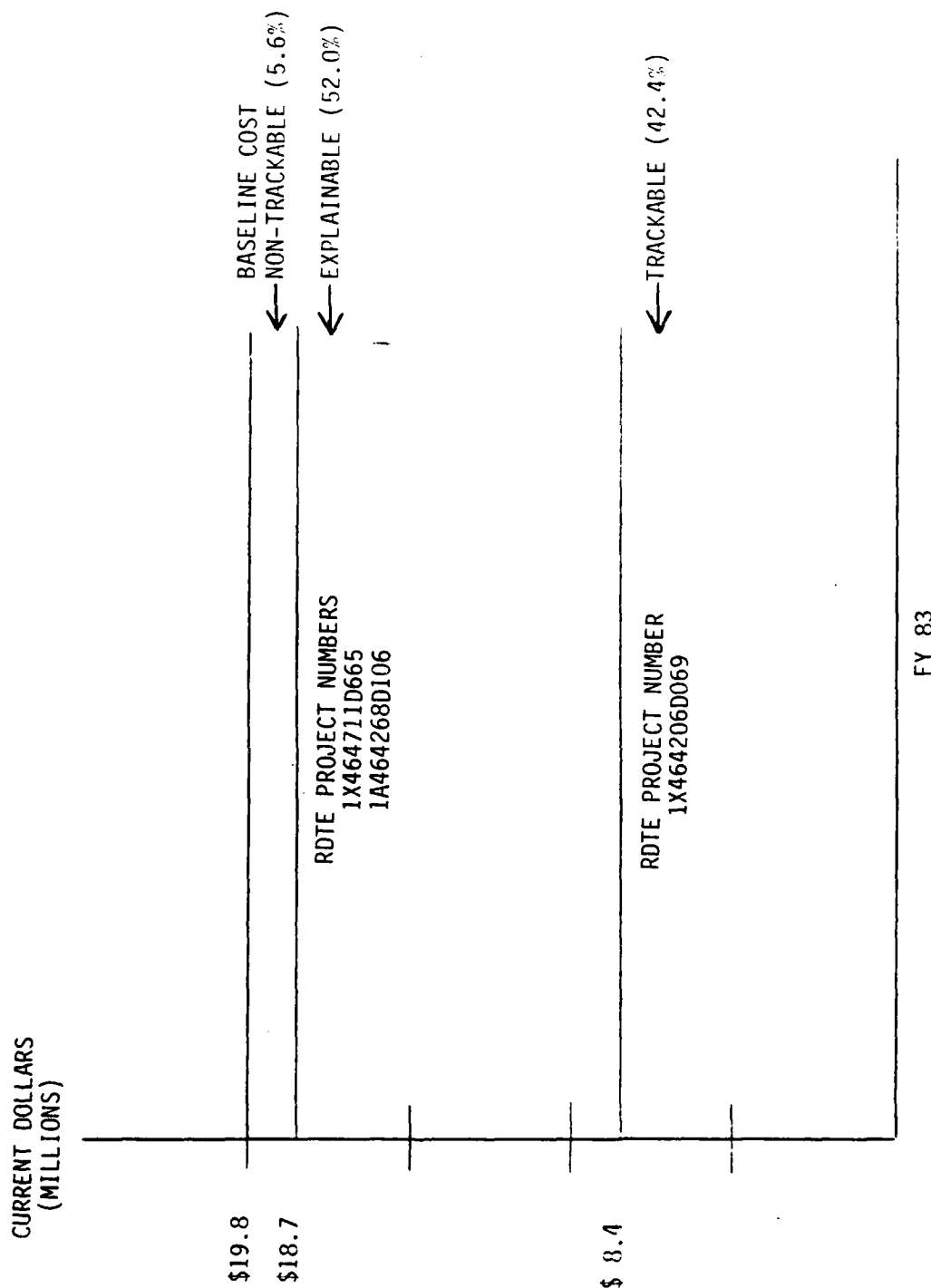
RDTE
FY 83 PATRIOT PROGRAM

CURRENT DOLLARS
(MILLIONS)

$47.3
$46.9

BASELINE COST ESTIMATE
NON-TRACKABLE (.85%)
TRACKABLE (99.15%)

RDTE PROJECT NUMBERS
1X464307D212
1X464307D213
1X464307D291

FY 83

Figure 5-2

RDTE
FY 83 M1 PROGRAM

CURRENT DOLLARS
(MILLIONS)

BASELINE COST ESTIMATE
NON-TRACKABLE (6.8%)

TRACKABLE (93.2%)

RDTE PROJECT NUMBERS
1X464620DG20
1X464630D287
1X423735D330
1X464630D060
1X464630D064
1X464632D173
1X463633D161

$117.4
$109.4

FY 83

Figure 5-3

Where: 7 = New Budget Activity, Major System.
        AA = Alphanumeric Characters for Specific Major
              System

Since Exhibit R-1 (Supporting Data for the President's Budget) is at Program
Element level, and arranged by Budget Activity, the major systems would be
visible and easily identified.

(i) It should be noted that there could be several Program Elements
per major system. Digit Number 5 in the RDTE Project Number (same as Digit
Number 3 in the RDTE AMS Code) gives the Category. Some projects in a system
could be in different categories (some in Advanced Development and others in
Engineering Development, for example). Each project with a different category
would mean another Program Element for the same system:

RDTE Project Number	1 X 7 I 6 **3** Advanced Development
	1 X 7 I 6 **4** Engineering Development
RDTE AMS Code	I 67**3** Advanced Development
	I 67**4** Engineering Development

Digit Number 4 in the RDTE Project Number (same as Digit Number 1 in the RDTE
AMS Code) gives the Defense Program. This is the first digit of the Program
Element. Some projects in a major system could be in different Programs.
Each project with a different program number would mean another Program
Element for the same system:

RDTE Project Number	1 X 7 I 6 Program 6, Research & Development
	1 X 7 I 2 Program 2, General Purpose Forces
RDTE AMS Code	I 6 Program 6, Research & Development
	I 2 Program 2, General Purpose Forces

For example, if the system code for the M1 Tank should happen to be "M1", then
in FY 83, there would have been two Program Elements:

PROGRAM ELEMENT	PROJECTS
646M1	G20 - Tank, M1 (ABRAMS)
	064 - 120 MM Tank Gun Ammo Development
	060 - 120 MM Gun Development
	287 - Tank Systems Integration
	173 - Tank Target Practice
	161 - Tank Ammunition and Fuzes

If the category is Systems Operational Development, the Program is 1, 2, or
3. It is not Program 6.

         (2) If there is no objection to having more than one Program
Element per major system in Exhibit R-1, then this would be a simple approach
to tracking RDTE costs of major systems.

         (3) However, there must be consensus on how a major system is
defined. If modifications (Operational Systems Development) are not to be
included in a system, then it would not matter that modifications are in
Program 2.

     c. Approach #3. This approach would add a Budget Activity - Major
Systems, involve realignment of digits in the project numbers, and provide
additional information to facilitate tracking of system RDTE costs. That
information would identify the following:

                         System Class
                         System
                         System Project(s)

At the present time, only the System Projects are identified. The revised
schema follows:

         RDTE Project Number   1 X D 4 6 7 6 A A B B C C 0 0
         RDTE AMS Code   6 7 6 A A B B C C 0 0

Where:		
1 = RDTE Agency	No change
X = Internal Designator	No change
D = OSD Clasification	Realigned
4 = Category	Realigned
6 = Program	No change
7 = Budget Activity	"7" for Major Systems
6 = Historical Budget Activity	No change
AA = System Class	Program Element Serial Number
BB = System	Added
CC = Project Serial Number	Two digits instead of three
00 = Task	No change

One digit has been added to the RDTE Project Number but no digits were added
to the RDTE AMS Code. Since the Project Serial Number will not stand alone
(it will be system-specific), two alphanumeric positions will be sufficient.
It should be noted that the Program Element still contains five digits. Even
the Program Element in the RDTE AMS Code which formerly contained an extra
digit now contains only five digits.

         (1) This approach would require coordination between agencies
involved in programming, budgeting and execution functions, since it impacts
on the Program Element which is common to both the RDTE Project Numbers and

2. The Program Element contributes greatly to system ... As mentioned in Chapter 4, many Program Elements contain only ... project and, in almost all cases, the nomenclature is identical. This has resulted in an excessive number of Program Elements (211 Program Elements to 4.. RDTE Project Numbers). The goal in this approach was to make the Program Element more generic in nature so that more projects could be included in the Program Element. This would reduce the number of Program Elements needed and would greatly reduce the activity required in maintaining the Program Element list. As it is now, the list must be revised whenever any of the Program Element's digits change. For example, a change in Category such as from Advanced Development to Engineering Development requires a new Program Element.

(3) Caveats. The realignment of digits as mentioned at the beginning of this chapter should cause little difficulty in implementation. No information is lost either to the RDTE Project Number or RDTE AMS Code. However, an additional realignment was made above. The Category digit, because it may change and generate another Program Element, was moved out of the Program Element. It is retained in the RDTE Project Number, but is no longer in the RDTE AMS Code. If the Category digit is critical to finance and accounting system processing, then this approach is sensitive in that respect. Also, since modifications always are in Program 2 (General Purpose Forces) while the other components of the system are in Program 6 (Research and Development), modifications could not be tracked as part of a system. This is because the first digit of the Program Element gives the Defense Program and, thus, there would be two Program Elements for the same system class.

(4) Although some turmoil might be expected as adjustments are made, and the addition of a new Budget Activity would require coordination with OSD, this approach would provide RDTE costs of major systems and satisfy to a significant degree the requirement for cost feedback.[4] The basic rationale for this approach is that major systems should be important enough to justify one separate Budget Activity and require identification of all RDTE funds/costs associated with specific major systems. This parallels the current concept of the ASARC/DSARC process, SAR reporting, and Functional (System) PDIP's.

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[4]Reference DACS-DPZ-A Memorandum, dated 29 Apr 83, subject: Integration of Weapons Systems Costing, Programming, and Execution Management Systems, which is just the latest of many requirements for cost feedback.

6-1. The Study. This study was conducted as part of a continuing effort to obtain actual (historical) systems' life cycle costs from the Army's finance and accounting data. The objectives of the study were:

> Develop insights and information on the assignment and structure of RDTE Project Numbers and their interface with related resource management systems. Produce appropriate flow diagrams.

> Develop correlation tables to relate RDTE Project Numbers to the total Army, with emphasis on Selected Acquisition Report (SAR) systems.

> Collect and compare RDTE costs of selected systems with their Baseline Cost Estimates.

a. The publications that were researched provided technical details on the assignment and structure of RDTE Project Numbers and the information systems employed to control RDTE funds; however, personal contact with operations personnel provided a "walk through" of the process that brought a broader understanding and a greater awareness of the tasks involved, and the opportunity to identify and investigate the related resource management systems.

b. There is a close relationship between RDTE Project Numbers and their RDTE AMS Codes:

RDTE Project Number	1 X 4 6 4 6 2 0 D G 2 0 0 0
RDTE AMS Code	644 6 2 0 . G 2 0 0 0

Both contain the Program Element (AMS Code Program Element contains an extra digit); both contain the Project Serial Number followed by two digits reserved for the Project Task (zero-filled at DA level):

Program Element	64620
Project Serial Number	G20
Task Number	00

c. The initial hypothesis was that a significant portion of RDTE costs of a major system could be tracked if the system's projects could be identified. Although RDTE Project Numbers are not used in the Army's finance and accounting system, their counterpart - RDTE AMS Code - is closely related and available for tracking RDTE costs. Research supports the initial hypothesis that although 100 percent of a system's RDTE costs cannot be identified, a significant portion can be identified.

c. .... costs are fragmented, i.e., a system's RDTE funds may be .... in several projects. For example, the M1 Tank system may include ..... or seven different projects depending on who is defining the system. ....refore, in order to track system costs, the projects pertaining to the ...stem must be identified. As a consequence of system fragmentation, it ....ame necessary to locate a set of "rules" which could be used to define a 'system". The set that was used yielded a list of systems that was both totally exhaustive and mutually exclusive in capturing the total Army. It was determined, however, that the Army does not have a unified "Systems Language". Comparisons were made with other resource management procedures such as Selected Acquisition Reports (SAR), Program Development Increment Packages (PDIP's), Baseline Cost Estimates, and Appropriation Manager's systems at DA level. System definitions were different.

e. Even if a "system" can be defined adequately, 100 percent of the RDTE costs of that system are not trackable in the finance and accounting system. RDTE projects can be tracked for only four years. At the end of the fourth year, the appropriation accounts are retired. Any funds not disbursed are merged into an "M" account. After the balances are merged, funds may be disbursed to satisfy Government liabilities; however, the transactions cannot be associated with an RDTE Project. Consequently, "total" RDTE costs of a system are not available even if the system is well-defined.

f. Correlation Tables were developed by attempting to crosswalk the FY 83 RDTE Project Numbers to a list of materiel and non-materiel systems taken from tables in a draft paper prepared in the Office of the Director of Cost Analysis titled, "A Mission Area Structure for the Management of Army Resources", DCA-P-XX, September 1981. A summary of the crosswalk statistics follows:

NUMBER		PERCENTAGES
85	RDTE Project Numbers were identified with 32 of 96 Materiel Systems	20.7%
326	RDTE Project Numbers were identified with 22 of 52 Non-Materiel Systems	79.3%
411	FY 83 RDTE Project Numbers	100.0%

All RDTE Project Numbers were crosswalked to 54 of the 148 available systems, and account for 100% of the FY 83 RDTE funds in the Current Approved Program as of May 83. Ten of 13 SAR systems were identified. It should be noted again that RDTE costs (commitments, obligations, disbursements, etc.) must be tracked in the finance and accounting system by RDTE AMS Code; and although 100% of RDTE Projects can be crosswalked to systems, 100% of the systems' RDTE costs cannot be identified since the appropriation accounts expire after the fourth year. At the present time, there is no way to track transactions in the "M" account by RDTE Project.

g. Three approaches to obtaining system RDTE costs were developed. The

first approach involves a procedure which uses the current RDTE Project Numbers, augmented by other data available in the PPBES, to obtain an approximation of total systems' RDTE costs. The second approach addresses a change in Budget Structure; and the third adds a new Budget Activity and realigns the digits in the project numbering systems.

Approach #1. This procedure evolved from an effort to use the current RDTE Project Numbers, augmented by information available in other PPBES documents, to obtain an <u>approximation</u> of total systems' RDTE costs. It can be implemented unilaterally because it does not require restructure of RDTE Project Numbers or RDTE AMS Code. The data sources are the RDTE Project Numbers in the Current Approved Program and the Baseline Cost Estimates. This procedure was tested on three SAR systems. A summary of the results is shown below:

SYSTEM	PERCENT OF BASELINE COST ESTIMATE IDENTIFIED/EXPLAINED
BLACKHAWK Aircraft	94.40%
PATRIOT Missile System	99.15%
M1 ABRAMS Tank System	93.20%

The results of the test indicate that a large portion of system RDTE costs could be determined with this procedure; and, as noted previously, it could be accomplished without the need to restructure/redefine the project numbers. It would not impact on any of the current procedures in the PPBES. This approach could be exercised in the short run since all of the data sources are at hand. It could satisfy to a large extent the need for RDTE cost data; however, it would not provide the total RDTE dollars, and it would not address the problems inherent in the current Budget Structure and in "M" accounting procedures which effectively obstruct efforts to collect actual (historical) cost data by system.

(2) Approach #2. This approach would add a new Budget Activity and reserve the last two digits of the Program Element (P.E.) as the system designator:

RDTE Project Number   1 X <u>7</u> 6 4 6 <u>A</u> <u>A</u> D G 2 0 0 0
RDTE AMS Code   <u>674</u> 6 <u>A</u> <u>A</u> . G 2 0 0 0

Where: 7 = New Budget Activity, Major Systems
         AA = Alphanumeric Characters Identifying
                 Specific Major System

The current, and new, Budget Activities are shown below:

      1.   Technology Base
      2.   Advanced Technical Development
      3.   Strategic Programs
      4.   Tactical Programs
      5.   Intelligence and Communications
      6.   Defensewide Mission Support
NEW------7.   Major Systems

The reasons for having a Budget Activity are: First, Exhibit P-1, Supporting Data for the President's Budget is at Program Element level. RDTE Project Numbers do not appear in Exhibit P-1. The Program Elements in Exhibit P-1 are arranged by Budget Activity. If there is only one Budget Activity for major systems, then these major systems would appear in one section, be highly visible and identifiable. Second, since the second digit in the RDTE AMS Code Program Element always matches the Budget Activity number and since the projects in a system normally may be in different Budget Activities, there could be more than one RDTE AMS Code Program Element per major system; however, a constant ("7") as a Budget Activity for major systems would solve this problem.

(b) The two alphanumeric digits reserved for specific system identification would be sufficient to identify the desired number of systems; the systems would be visible in the budget; and RDTE costs could be tracked by system in the Army's finance and accounting system.

(c) However, there are two other digits in the Program Element which may differ among a system's projects and generate additional Program Elements for a specific system: The FYDP Program (1st digit) and the FYDP Category (2d digit in the RDTE Project Number and 3d digit in the RDTE AMS Code). If there is no objection to having more than one Program Element per Major System, then this Approach would be appropriate. It does not involve realignment of digits either in the RDTE Project Number or RDTE AMS Code.

(3) Approach #3. This approach would add a new Budget Activity as above for Major Systems, but it also would involve realignment of digits (restructure) in order to improve the close relationship between the RDTE Project Numbers and RDTE AMS Code and to avoid generation of multiple Program Elements per major system. In addition to system identification, this approach also provides identification of Major System Class. That is, for the Blackhawk, for example, the Class is Aircraft, the System is Blackhawk, and the Project is UH-60 Feasibility Demonstration. The revised schema is shown below:

```
RDTE Project Number        1 X D 4 6 7 6 A A B B C C 0 0
RDTE AMS Code                      6 7 6 A A B B C C 0 0
```

Where:		
1 = RDTE Agency	No change
X = Internal Designator	No change
D = OSD Classification	Realigned
4 = Category	Realigned
6 = Program	No change
7 = Budget Activity	"7" for Major Systems
6 = Historical Budget Activity	No change
AA = System Class	Program Element Serial Number
BB = Major System	Added
CC = Project Serial Number	Two digits instead of three
OO = Task	No change

One digit has been added to the length of the Project Number but the AMS Code has not been lengthened. Since the Project Serial Number will be system-specific, two alphanumeric positions will be sufficient.

(a) This approach would require extensive coordination between agencies involved in programming, budgeting and execution functions, since it impacts upon the Program Element which is common to both the RDTE Project Numbers and their RDTE AMS Codes. Since ODCSRDA converts RDTE Project Numbers to RDTE AMS Codes for use in the finance and accounting system, it seems wise to maintain as close a relationship as possible between the RDTE Project Number and the RDTE AMS Code. Realignment of digits is needed to avoid generation of multiple Program Elements per major system. A new Budget Activity, for major systems, would insure that they are listed together in one section of the budget and are highly visible.

(b) This approach is sensitive with respect to system modifications and FYDP category. Modifications currently are not in Program 6 (Research and Development); they are in Program 2 (General Purpose Forces). Since the Program Element's first digit gives the program, there would be two Program Elements for systems which contained modification projects unless one of two courses was pursued. First, all modifications could be moved to Program 6; or, modifications could be recognized apart from the major system in a Budget Activity called "Modifications". It depends on how a major system is defined: with or without modifications. As the result of realignment, one bit of information, the FYDP Category, does not now appear in both the RDTE Project Number and RDTE AMS Code. It is missing from the RDTE AMS Code. If the category digit is critical to finanace and accounting system processing, then this approach is sensitive in that respect.

6-2. Concluding Thoughts. In order to satisfy the many expressions of need for cost feedback, the following are required:

1. A unified "Systems Language"
2. A "Common Architecture"

a. Unified Systems Lanaguage. System codes have no value if consensus does not exist as to exactly what constitutes a system - as opposed to a non-system - or what a system includes with respect to modifications, ammunition, armament, support equipment, etc. There are a number of procedures used within the Army to manage its major systems; however, system definitions vary. There is no definitive set of "rules" to follow.

b. Common Architecture. Reporting schemata used in the Army's finance and. accounting system vary by appropriation. For example, BLIN's are used in Procurement while RDTE AMS Code is used for Research, Development, Test and Evaluation. A common architecture would facilitate the identification of system costs which cut across appropriation lines.

c. Together, a unified systems language and a common architecture would serve to repair the disconnects, and restore communication/feedback, between the functional areas of the Planning, Programming, Budgeting and Execution System to insure that Army resources are managed efficiently and effectively.

APPENDIX A

LIST OF REFERENCES

OMB CIRCULARS

A-11   Preparation and Submission of Budget
                            Estimates, June 1981
A-34   Instruction on Budget Execution, July 1976
                            (as amended)
A-109   Major System Acquisition, 5 April 1976
                            (as amended)

ARMY REGULATIONS

AR 1-1   Planning, Programming and Budgeting within
                            the Department of the Army, 25 May 1976
AR 11-13   Cost Analysis Program, 10 October 1975
AR 37-100   Army Management Structure Code, 1 August 1980
AR 37-100-83   The Army Management Structure (AMS),
                            July 1982
AR 37-108   General Accounting and Reporting for Finance
                            and Accounting Offices, 15 Nov 1975
                            (as amended)
AR 37-112   Management Accounting for the RDTE
                            Appropriation, 15 March 1982
AR 37-151   Accounting and Reporting for Operating
                            Agencies, September 1975 (as amended)
AR 37-200   Selected Acquisition Reports, 1 March 1979
AR 70-1   Army Research, Development and
                            Acquisition, 1 May 1975
AR 70-6   Management of the Army Research, Development,
                            Test and Evaluation Appropriation,
                            12 November 1974
AR 70-9   Army Research and Development Information
                            System Program Planning and On-Going
                            Work Reporting, 1 May 1981
AR 1000-1   Basic Policies for System Acquisition,
                            1 May 1983

DEPARTMENT OF DEFENSE

DOD 5000.1   Major Systems Acquisition, 29 March 1983
DOD 5000.2   Major Systems Acquisition Procedures,
                            8 March 1983
DOD 7000.1   Resourse Management Systems of the
                            Department of Defense, 22 August 1966
DOD 7110.1-M   Budget Guidance Manual, 4 August 1981

A-1

DOD 7220.9-H   Accounting Guidance Handbook,
                                      1 February 1979

OTHER REFERENCES

1. Army Guidance, Volume II, 3 September 1982
2. CSR 11-5 Army Program (Chief of Staff Regulation), 17 August 1982
3. DA Budget Directive, 5 July 1983
4. Departmental Budgetary Reporting System, Functional Description,
     19 February 1983
5. Five Year Defense Program RDTE Project List, May 1983
6. Internal Working System, Users' Manual, 1 October 1981
7. Planning, Programming, Budgeting, and Execution System Handbook,
     3d Edition, 1982
8. Program Development Increment Package Procedures, 1981

In addition to the above publications, information was obtained from personnel
assigned to the following:

            U.S. Army Finance and Accounting Center

            Office of the Deputy of Staff for
              Research, Development, and Acquisition

            U.S. Army Research, Development and
              Acquisition Information Systems Agency

            Office of the Chief of Staff (Program
              Analysis and Evaluation Directorate)

APPENDIX B

PROJECT NUMBER - AMS CODE LIST

The following list contains FY 83 Funded RDTE Project Numbers, their

associated RDTE AMS Codes, and common nomenclature. The RDTE Project Numbers

were taken from the Five Year Defense Program RDTE Project Listing dated May

83. RDTE AMS Codes are from AR 37-100-83.

		HEALTH...
		B-...
	343735.15300	ADVANCED...
		...
	343735.64100	... ANTI...
	343731.67700	CHAPARRAL
1X433? ?28?100	3-2731.69000	SAM HAWK HIP
1X433?3553300	243735.33000	M60A1 BLDG IMPROVEMENT PROGRAM
1X433?F03?300	243735.33300	FIGHTING VEHICLE IMPROVEMENT
1?433????3?-?10	243735.34100	105 MM TANK GUN ENH.
1X433?3F03330?	243739.33300	AN/TSQ - 73 MODIFICATIONS
1S4237-0048400	243740.48400	MANEUVER CONTROL SYSTEM
1G4237-3000800	243743.00800	155 MM SP HOPS IMPROVEMENT
1X428???10400	248010.10400	JOINT TACTICAL COMMUNICATIONS (TRI-TAC) OFFICE
1X428??????0700	248010.10700	MODIFICATION TO ARMY TRI-TAC INTERFACE
1X428???0011000	248010.11000	MOBILE SUBSCRIBER EQUIPMENT
1X428???0011100	248010.11100	DIGITAL GROUP MULTIPLEXERS(TRI-TAC)
1X428??0D11400	248010.11400	OTHER SERVICES ASSIGNED TRI-TAC TASKS
1X428??0D11600	248010.11600	FACILITY SUPPORT ELEMENT(TRI-TAC)
1X428??0D11700	248010.11700	SHORT RANGE WIDE-BAND RADIO (SRWBR) ASSEMBLAGES
1X428010D11900	248010.11900	MODULAR RECORD TRAFFIC TERMINAL
1X428010D17200	248010.17200	NET RADIO INTERFACE
1X428010D17800	248010.17800	JOINT TEST SUPPORT (TRI-TAC)
1X428010D22200	248010.22200	AUTOMATIC COMMUNICATIONS CENTRAL OFFICE
1F531307D38100	351307.38100	SCIENTIFIC/TECHNICAL INTELLIGENCE
1H531327D38200	351327.38200	TECRAS (TECH RECON & SURVIVAL)
1X531334DH8700	351334.H8700	GENERAL DEFENSE INTELLIGENCE PROGRAM (GDIP)
1X533111D48100	353111.48100	STRATEGIC COMMUNICATIONS (STARCOM)
1X533126D14900	353126.14900	LONG HAUL COMMUNICATIONS (DCS)
1X533142D25300	353142.25300	DEFENSE SATELLITE COM SYS, DCS (PHASE II)
1X533142D45000	353142.45000	SATELLITE COMMUNICATIONS
1X533142D45600	353142.45600	TACTICAL SATELLITE COMMUNICATIONS (TACSATCOM)
1T433145DH5800	343145.H5800	EUCOM C3 SYSTEMS
1CS33401D49100	353401.49100	COMMUNICATIONS SECURITY EQUIP AND TECHNIQUES
1L161101A91A00	611101.91A00	IN-HOUSE LABORATORY-DARCOM
2T161101A91B00	611101.91B00	IN-HOUSE LABORATORY-ARI
3A161101A91C00	611101.91C00	IN-HOUSE LABORATORY-MEDICAL R&D
4A161101A91D00	611101.91D00	IN-HOUSE LABORATORY-COE
1L161102AF2200	611102.F2200	RESEARCH IN VEHICLE MOBILITY

		RESEARCH IN AIRCRAFT ELEC TARGET ACQ
		ELECTRONIC DEVICES RESEARCH
		COMMUNICATIONS RESEARCH
		MISSILE AND HIGH ENERGY LASER RESEARCH
		COMBAT SUPPORT RESEARCH
		RESEARCH I SPT OF EQUIP FOR THE IND SOLDIER
1L1 .2BH5700	611102.H5700	RESEARCH IN SCIEN PROB WITH MIL APPL
	2AH6000	611102.H6000	RESEARCH IN LARGE CALIBER ARMAMENTS
1L1 12AH6100	611102.H6100	RESEARCH IN FIRE CONT & IN SMALL CAL ARMAMENT
1L1 102AH6300	611102.H6300	RESEARCH IN ELECTRONIC WARFARE
1L1 102AH6800	611102.H6800	PROCESSES IN POLLUTION ABATEMENT TECHNOLOG
1L1 102BS0400	611102.S0400	IDENT & HEALTH EFFECTS OF MIL POLLUTANTS
3L1 102BS1000	611102.S1000	RESEARCH ON MIL DISEASE INJURY& HEALTH HAZARDS
4A1 102AT2200	611102.T2200	RESEARCH IN SOIL AND ROCK MECH
4A1 102AT2300	611102.T2300	BASIC RESEARCH IN MILITARY CONSTRUCTION
4A1 102AT2400	611102.T2400	RESEARCH IN SNOW, ICE, & FROZEN GROUND
1 102A31500	611102.31B00	NIGHT VISION AND ELECTROOPTICS RESEARCH
4A1 02BS2000	611102.52C00	RESEARCH IN GEODETIC GEOGRAPHICS MAPPING SCIENCES
1L16 102BS3A00	611102.53A00	RESEARCH IN ATMOSPHERIC SCIENCES
1L161102A71A00	611102.71A00	RESEARCH IN DEF SYS FOR CHEM WARFARE/BIO WARFARE
1L1 102B74A00	611102.74A00	RESEARCH IN HUMAN ENGINEERING
201 1102B74F00	611102.74F00	PERSONNEL PERFORMANCE AND TRAINING
1L162105AH8400	612105.H8400	MATERIALS
1L162111AH7100	612111.H7100	ATMOSPHERIC INVESTIGATIONS
1L162120AH2500	612120.H2500	NUC WEAP EFF RES, NEAR MM WAVE TECH, FLUID TECH
1L162201DH9600	612201.H9600	AIRCRAFT WEAPONS TECHNOLOGY
1L162202AH8500	612202.H8500	AIRCRAFT AVIONICS TECHNOLOGY
1L162209AH7600	612209.H7600	AERONAUTICAL TECHNOLOGY
1L162210D28300	612210.28300	AIRDROP TECHNOLOGY
1L162303A21400	612303.21400	MISSILE TECHNOLOGY
1L162307A13900	612307.13900	LASER WEAPONS TECHNOLOGY

		SMAL...
		PH...
	612632.55...	S...
1L62732-65400	612632.65400	CHEMICAL...
1L62633AH2100	612633.H2100	JSSAP
1L62701AH9200	612701.H9200	COMMUNICATIONS TECHNOLOGY
1L62703AH9300	612703.H9300	COMBAT SURVEILLANCE TARGET ACQ
		...
1L62704AF2500	612704.F2500	MILITARY ENVIRONMENTAL CRITERIA
		DEVELOPMENT
1L62705AH9400	612705.H9400	ELECTRON AND ELECTRONIC DEVICES
1L62706A55300	612706.55300	CB DEFENSE AND GENERAL INVESTIGATIONS
4A62707A85500	612707.85500	TOPOGRAPHIC AND GEODETIC TECHNOLOGY
1L62709DH9500	612709.H9500	NIGHT VISION AND ELECTRO-OPTICS
		INVEST
1L62715A04200	612715.04200	TACTICAL ELECTRONIC WARFARE
		TECHNOLOGY
1L62715A90400	612715.90400	TACTICAL ELECTRONIC WARFARE
		TECHNIQUES
1L62716AH7000	612716.H7000	HUMAN FACTORS ENGINEERING IN SYS
		DEVELOPMENT
2062717A79000	612717.79000	HUMAN PERFORMANCE EFFECTIVENESS&
		SIMULATION
4A62719AT4000	612719.T4000	MOBILITY AND WEAPONS EFFECTS
		TECHNOLOGY
1L62720D04800	612720.04800	ENVIRONMENTAL QUALITY RESEARCH&
		DEVELOPMENT
3E62720A83500	612720.83500	MILITARY MEDICAL ENVIRONMENTAL
		QUALITY
4A62720A89600	612720.89600	ENVIRONMENTAL QUALITY FOR CONST&
		OPR OF MIL FAC
2062722A79100	612722.79100	MANPOWER, PERSONNEL AND TRAINING
1L62723AH9800	612723.H9800	CLOTHING AND EQUIPMENT TECHNOLOGY
1L62723A42700	612723.42700	TACTICAL RIGID-WALL SHELTERS
1L62724AH9900	612724.H9900	JOINT SERVICES FOOD/NUTRITION
		TECHNOLOGY
5X62725DY1000	612725.Y1000	RESEARCH AND DEVELOPMENT
		MULTI-COMMAND DATA SYS
1X62727A23000	612727.23000	NON-SYSTEMS TRAINING DEVICES
		TECHNOLOGY
4A62730AT4200	612730.T4200	COLD REGIONS ENGINEERING TECHNOLOGY
4A62731AT4100	612731.T4100	MILITARY FACILITIES ENGINEERING
		TECHNOLOGY
1L62733AH2000	612733.H2000	MOBILITY EQUIPMENT TECHNOLOGY
1L62733AHH200	612733.HH200	DECEPTION DEVICES (MTLD)
3M62734A37500	612734.37500	MEDICAL DEFENSE AGAINST CHEMICAL

	6127??.????	DATA OF COMBAT CASUALTIES
	6127?8.????	COMBAT PHYSIOLOGICAL INJURY
	6127??.8750?	HEALTH HAZARDS OF MILITARY MATERIAL
	6127??.87?0?	MEDICAL FACTORS LIMITING EFFECTIVENESS
	61279?.?450?	MILITARY ENERGY TECHNOLOGY
	623102.0680?	PRODUCIBILITY/RELIABILITY
	623102.07100	MATERIALS SCALE-UP/STRUCTURES DEMONSTRATION
	623104.15000	FUELS AND EQUIPMENT
	623201.44700	DEMONSTRATOR ENGINES
	623201.87200	PROPULSION COMPONENTS
	623207.B9700	AVIONICS EQUIPMENT
	623209.B3300	CARGO HANDLING EQUIPMENT
	623209.B4500	AVIATION LIFE SUPPORT EQUIPMENT
	623211.B4100	ADVANCED STRUCTURES
	623211.31300	RESEARCH AIRCRAFT SYSTEMS
	623211.31400	ADVANCED ROTOR SYSTEMS
	623211.31500	ADVANCED FLIGHT CONTROLS
1L463215D07900	643215.07900	JOINT SURVIVABILITY INVESTIGATIONS
1L263216DB3400	623216.B3400	ROTORCRAFT SYS INTEGRATION SIMULATOR (RSIS)
1L263216DB3900	623216.B3900	FLIGHT SIMULATOR COMPONENT
1X463217D02400	643217.02400	GREATER SLOPE
1L263218D26600	623218.26600	AIRDROP EQUIPMENT AND TECHNIQUES
1A263221D31200	623221.31200	NAP-OF-THE-EARTH ESSENTIAL EQUIPMENT
1?463302D09900	643302.09900	ANTI-TACTICAL MISSILE
1L463303D21600	643303.21600	MLRS TERMINALLY GUIDED WARHEAD
8X363304D21500	633304.21500	BALLISTIC MIS DEF ADV TECH PROGRAM
1L263306D23200	623306.23200	155MM FIRE AND FORGET
8X363308099100	633308.99100	BALLISTIC MIS DEF SYS TECH PROGRAM
1L263313D08700	623313.08700	MISSILES AND ROCKET COMPONENTS
1L263313D26100	623313.26100	FIBER OPTICS GUIDANCE
1X263324D18000	623324.18000	HTTB-DISTRIBUTION DATA TEST
1L263602D11800	623602.11800	COMBAT VEHICLE TECHNOLOGY
1N463604D13500	643604.13500	NUCLEAR WEAPON DEVELOPMENT SUPPORT
1N463604D15300	643604.15300	NUCLEAR EFFECTS SUPPORT TEAM
1N463604D48300	643604.48300	RADIOLOGICAL DETECTION MEASURING EQUIPMENT
1X263606D00600	623606.00600	LANDMINE WARFARE DEVELOPMENT
1?263606D60800	623606.60800	COUNTERMINE AND BARRIER DEVELOPMENT
1L263607D62700	623607.62700	JOINT SERVICE SMALL ARMS PROGRAMS (JSSAP)

	623... .03500	LASER VEHICLE ...
	633... .30750	LASER VEHICLE ...
1N4636... .E8500	643637.E8500	SMOKE MUNITIONS AND MATERIAL
1N4636286U0700	643628.00700	FIELD ARTILLERY AMMUNITION AND FUZES
1N4636290D27600	643628.27600	SENSE AND DESTROY ARMOR (SADARM)
1L263631D11400	623631.01400	COMBAT VEHICLE HULL AND TURRET
1L363631D42400	623631.42400	COMBAT VEHICLE TRACK AND SUSPENSION
1L463632D10900	643632.10900	FIELD ARTILLERY AND SPT VEHICLE (FAASV)
1X4636330 16100	643633.16100	TANK AMMUNITION AND FUZES
1X4636330 16400	643633.16400	LONG ROD PENETRATOR
1X4636350 16600	643635.16600	MOBILE PROTECTED GUN-FAR TERM
1X4636350 17000	643635.17000	MOBILE PROTECTED GUN-NEAR TERM
1W263636022100	623636.22100	COMBAT VEHICLE SURVIVAL-ARMOR
1W263636022300	623636.22300	COMBAT VEHICLE ANTI-ARMOR
1E463702DG1000	643702.G1000	ADVANCED TACTICAL POWER SOURCES
1E463702DG1100	643702.G1100	ADVANCED ELECTRICAL ENERGY SOURCES
1J463705DK8200	643705.K8200	PHYSICAL SECURITY
1L463706D24300	643706.24300	IFF DEVELOPMENTS
1L463706D29700	643706.29700	IFF (NATO)
1C463707D24600	643707.24600	TACTICAL COMMUNICATIONS DEVELOPMENT
1C463707D43700	643707.43700	TACTICAL RADIO COMMUNICATIONS SYSTEM
1L263710DK7000	623710.K7000	NIGHT VISION ADVANCE DEVELOPMENT
1L263710DK8600	623710.K8600	NIGHT VISION AIRBORNE SYSTEMS
1L263710DK8700	623710.K8700	NIGHT VISION COMBAT VEHICLES
1X463711D65300	643711.65300	AIRCRAFT SURVIVABILITY EQUIPMENT
1S563712D58000	653712.58000	FIELD ARMY MAPPING
1A563712DT4400	653712.T4400	DIGITAL TOPOGRAPHIC SUPPORT
1X463713D37000	643713.37000	PLRS/JTIDS HYBIRD
1L463718D23400	643718.23400	SURFACE/SURFACE WEAPON ELECTRONIC WARFARE
1L463718D26700	643718.26700	AIR DEF MIS VULNERABILITY/SUSCEP-TIBILITY
1L363718D62600	643718.62600	C3 SYS VULNERABILITY/SUSCEPTI-BILITY
1N463720D60100	643720.60100	CHML DET & WARNING CONCEPT
1N463721D60400	643721.60400	COLLECTIVE CHEMICAL PROTECTION MATERIEL
1N463721DE8100	643721.E8100	CHEMICAL DECONTAMINATION MATERIEL
1N463721DJ3000	643721.J3000	COLLECTIVE PROTECT MAT FOR ARMORED VEHICLES
1N463723D10100	643723.10100	TACTICAL AUTOMATION
1N463723D18500	643723.18500	MILITARY SOFTWARE STANDARDIZATION

		...ALL SHELTER
	6____.__900	TACTICAL SURVEILLANCE & SYS...
	62379?.79200	MANPOWER AND PERSONNEL
	6-3733.83600	COMBAT MEDICAL MATERIEL
	623734.70800	MILITARY CONSTRUCTION AND ENGINEERING
	62373?.70900	ENERGY SYSTEMS TEST
1L263738-22400	663738.22400	NSTD ARMOR/ANTI-ARMOR
	623739.79300	HUMAN FACTORS IN TNG & OPERATIONAL EFFECT
	643740.59300	SHORAD-C2 SYSTEMS
	623742.F3200	ADVANCED ELECTRONIC DEVICES
	623743.79400	EDUCATION AND TRAINING
	623744.79500	TRAINING SIMULATION
	643745.?2500	ALL SOURCE ANALYSIS SYSTEMS
	643746.55500	SINCGARS-V
	643747.61000	FOOD ADVANCED DEVELOPMENT
	643747.66900	CLOTHING AND EQUIPMENT
1T263748C24400	623748.24400	ATSS LANGUAGE UTILIZATION AND STANDARDS
1T263748CJ2900	623748.J2900	AUTOMATIC TEST SUPPORT SYSTEMS (ATSS)
1L263749D46200	623749.46200	TECHNICAL VULNERABILITY REDUCTION
3M463750D80800	643750.80800	DRUG AND VACCINE DEVELOPMENT
3M463751D99300	643751.99300	MEDICAL DEFENSE AGAINST CHEMICAL WARFARE
1L263752A99400	623752.99400	DEMILITARIZATION CONCEPTS
1E463755D25100	643755.25100	PROTECTIVE EW EQUIPMENT
1E463755DHH300	643755.HH300	AIRBORNE RADAR JAMMER
1H463755DK1300	643755.K1300	NON-COMM ELEC COUNTERMEASURES SYS
1H463755DK1400	643755.K1400	EXPENDABLE JAMMERS
1L263761D19000	623761.19000	ELECTRONIC WARFARE SUSCEPTIBILITY SUPPORT
1X263761D23500	623761.23500	MISSILE CCM TECHNOLOGY
1L263762DK1500	623762.K1500	ADV COMMUNICATIONS ELECT COUNTERMEASURE DEMON
1L263762DK1600	623762.K1600	COMBAT VEHICLE SELF-PROTECT DEMONSTRATION
3M263763D80700	623763.80700	INDUST BASE BIOLOGICAL WARFARE VACCINES/DRUGS
3M463764D99500	643764.99500	MEDICAL CHEM DEFENSE LIFE SPT MATERIAL
1_____5D90700	643766.90700	TACTICAL ELECTRONIC SURVEILLANCE SYS

	644...	
	644...	LIGHT...
	644...0420	SEMI...
	644...0830	CH-47...
	644...0480	AVIATION LIFE...
1X464...0490	644206.0490	UH-60 RELIABILITY DEMONSTRATION
1X464107042500	644207.42500	AAH
1X4643 2063900	644212.63900	COBRA ...
1X464217027500	644217.27500	SYNTHETIC FLIGHT TRAINING SYSTEM
1X464... 27900	644218.27900	AIRSHIP EQUIPMENT DEVELOPMENT
1X464... 51800	644220.51800	ARMY HELICOPTER IMPROVEMENT PROGRAM
1C464223021100	644222.21100	JOINT SVCS VERT LIFT AIRCFT DEV PROG
1A4..258010600	644268.10600	AIRCRAFT COMPONENT IMPROVEMENT PROGRAM
1X464307021200	644307.21200	PATRIOT (SAM-D)
1X464307021300	644307.21300	PATRIOT (EICM ENHANCEMENT)
1X464307029100	644307.29100	PATRIOT (NATO)
1X464310067400	644310.07400	HELIBORNE MISSILE-HELLFIRE
1X464311059900	644311.59900	PERSHING II
1X464313011200	644313.11200	GRASS BLADE
1X464314056400	644314.56400	MLRS
1X464319064800	644319.64800	DIVAD GUN
1H464321092600	644321.92600	ALL SOURCE ANALYSIS SYSTEM (ASAS)
1X464323026800	644323.26800	AWACS INTERFACE
1X464323034700	644323.34700	MOBILE HEAVY MORTAR
1M464601003000	644601.03000	MULTIPURPOSE AMMUNITION
1X464601014400	644601.14400	SMOKE MORTAR ROUNDS
1G464601022700	644601.22700	BATTALION MORTAR SYSTEMS
1X464603038500	644603.38500	IMPROVED 155MM NUCLEAR PROJECTILE
1X464603058400	644603.58400	COMMAND CONTROL AND SECURITY SYSTEM
1X464609019100	644609.19100	SMOKE MUNITIONS AND MATERIAL
1M464612014500	644612.14500	SLUFAE
1M464612041500	644612.41500	MINE NEUTRALIZATION/DETECTION
1X464616025800	644616.25800	FVS
1M464619001600	644619.01600	MINE SYSTEMS
1X464619008800	644619.08800	MODULAR PACK MINE SYSTEM
1M464619056800	644619.56800	GEMSS AT/AP MINES
1X464620032000	644620.32000	TANK, M1 (ABRAMS)
1X464623006800	644623.06800	LIGHT ANTITANK LEAP TEST & EVAL
1E464624DH1700	644624.H1700	HMMWV
1E464624DHH400	644624.HH400	HMMWV (MTLB)
1X464626DF2300	644626.F2300	FISTV
1M464628025000	644628.25000	INDIRECT FIRE TNG MUNITIONS
1X464630006000	644630.06000	120MM GUN DEVELOPMENT
1X464630006400	644630.06400	120MM TANK GUN AMMO DEVELOPMENT
1X464630026700	644630.26700	TANK SYSTEMS INTEGRATION
1X464631029800	644631.29800	FIELD ARTILLERY AMMUNITION (NATO)

	644705.26700	RICMS
	644706.E1700	RADIAC EQUIP ENGINEERING DEVELOPMENT
	644709.E3700	IFF EQUIPMENT
	644710.L7300	NIGHT VISION DEVICES
	644711.66500	AIRCRAFT SURVIVABILITY EQUIPMENT
	644712.32300	SYSTEMS ENGINEERING FOR TACT C3 SYSTEMS
	644712.32400	USA/NATO TACTICAL C3 SYSTEMS INTEROPERABILITY
	644713.54800	MILITARY SUBSISTENCE SYSTEMS
	644713.L4000	CLOTHING AND EQUIPMENT
	644714.19600	SILENT POWER GENERATING SOURCES
	644715.23700	NSTD ARTILLERY/AIR DEFENSE/ENGINEER
	644715.23900	NSTD INFANTRY
	644715.24100	NSTD COMBINED ARMS
	644715.57300	PM-TRADE & NAVAL TNG EQUIP CTR SPT
	644717.42900	TACTICAL RIGID-WALL SHELTERS
	644717.83200	COMBAT MEDICAL MATERIEL
	644717.H0100	COMBAT ENGINEER EQUIPMENT
	644717.L3900	GENERAL SUPPORT EQUIPMENT
	644718.L8200	PHYSICAL SECURITY
	644724.F4500	BIOLOGICAL DEFENSE MATERIEL (DET& WARNING)
	644725.01700	CB COLLECTIVE PROTECTION
	644725.01900	INDIVIDUAL CHEMICAL PROTECTION
	644725.02300	COLLECTIVE PROTECTION MAT FOR ARMORED VEH
	644725.F9700	CHEMICAL DEFENSE MATERIEL (DET& WARNING)
	664726.51100	METEOROLOGICAL DATA SYSTEMS
	644727.18300	TACTICAL DISPLAY SYSTEMS
	644727.18400	TACTICAL COMPUTER SYS/TACTICAL COMP TERMINAL
	644727.C9800	POSITION LOCATION REPORTING SYSTEM
	644730.04000	RPV
	644740.66200	TACTICAL SURVEILLANCE SYSTEM
	644746.53600	ATSS FAMILY
	644750.HH500	MULTI-ECM (HTLD)
	644750.L1200	COMMUNICATIONS ELECTR COUNTERMEASURES SYS
	644750.L1400	EXPENDABLE JAMMERS

1A665102.98200	665102.98200	ARMY MODEL IMPROVEMENT PROGRAM-DARCOM
1A665201.06600	665201.06600	AVIATION ENGINEERING FLIGHT ACTIVITY
1_665301.61400	665301.61400	KWAJALEIN MISSILE RANGE
1W665702.02600	665702.02600	TEST DESIGN AND EVALUATION
1B665702.12700	665702.12700	METEOROLOGICAL SPT TO RDTE ACTIVITIES
1>665702.20400	665702.20400	FIELD SMOKE ASSESSMENT
1W665702.57500	665702.57500	F&D FIELD SUPPORT ACTIVITY
1W665702.61800	665702.61800	AVIATION DEVELOPMENT TEST ACTIVITY
1W665702.62100	665702.62100	US ARMY TEST FACILITIES REGISTER
1W665702.62300	665702.62300	INSTRUMENTATION DEV, USA TEST& EVAL CMD(TECOM)
1W665702.62500	665702.62500	TEST METHODOLOGY TECOM
1W665702.E9500	665702.E9500	COLD REGIONS TEST CENTER
1W665702.E9600	665702.E9600	TROPIC TEST CENTER
1W665706.54100	665706.54100	MATERIEL SYSTEMS ANALYSIS
1F665709.65000	665709.65000	EXPLOITATION OF FOREIGN ITEMS
1T465710.04900	645710.04900	JOINT CHEMICAL CONTACT POINT & TEST
1A665712.00100	665712.00100	OTEA INT OPERATIONAL TEST & EVAL
6A665712.91800	665712.91800	COMMUNICATIONS-ELECTRONICS USER TESTING
6A665712.97600	665712.97600	DEVELOPMENT/ACQUISITION OF THREAT SIMULATORS
6A665712.98500	665712.98500	CONCEPTS EVALUATION OF MATERIEL
6A665712.98600	665712.98600	TRADOC SUPPORT EQUIPMENT
6A665712.99200	665712.99200	NATIONAL TRAINING CENTER SUPPORT
1A665712.N0100	665712.N0100	OTEA SUPPORT EQUIPMENT
6A665712.V0200	665712.V0200	TEST BOARDS
6A665712.V0300	665712.V0300	TRADOC INT OPERATIONAL TEST &EVAL (IOTE)
1P665801.M1100	665801.M1100	GENERAL ADMINISTRATION ACTIVITY-DARCOM
2T665801.M1500	665801.M1500	GENERAL ADMINISTRATION STAFF SUPPORT-ARI
1P665801.M1600	665801.M1600	STANDARDIZATION GROUPS
1P665801.M1900	665801.M1900	RDTE-AUTOMATED DATA PROCESSING EQUIP(DARCOM)
1P665801.M2100	665801.M2100	SPECIAL PURPOSE EQUIPMENT-DARCOM
3A665801.M2200	665801.M2200	SPECIAL PURPOSE EQUIPMENT-TSG
4A665801.M2300	665801.M2300	SPECIAL PURPOSE EQUIPMENT-OCE

	665803.??400	
	665803.??500	
	665803.??600	
	665803.??400	
	665803.??500	ER-?COM-PROJ. ACT.
	665803.??600	?ICOM-PROG. ACT.
	665803.??700	TACOM-PROG. ACT.
1P66589?????00	665803.?5100	MERADCOM-PROG. ACT.(OPER & SPT)
	665803.?5200	NATICK R&D LAB(OPER & SPT/PROG ACT)
	665803.?5300	TECOM-PROG. ACT.(OPER & SPT)
3T665803??9800	665803.?9800	INTERNATIONAL COOPERATIVE RES AND DEV
3?665803??1100	665803.?1100	MARDIS SUPPORT
?T665803??1400	665803.?1400	MARDIS PROPONENT SUPPORT
1?665803?72000	665803.72000	TECHNICAL INFORMATION FUNCTIONAL ACTIVITIES
1?665803?72800	665803.72800	INFORMATION TECHNOLOGY
1?665803?72900	665803.72900	SYMPOSIA-CONFERENCE/YOUTH SCIENCE ACTIV
1?665803?73100	665803.73100	GOVT. INDUST DATA EXCHG PROG/ADV GRP ON ELECT DEVS
1?665803?76100	665803.76100	TECH INFORMATION ANALYSIS CENTERS
1?665803?90300	665803.90300	SIGNAL INTELL/ELECT WARFARE TECH INFORMATION
1W665804DE9000	665804.E9000	YUMA PROVING GROUND
1W665804DE9100	665804.E9100	ABERDEEN PROVING GROUND
1W665804DE9200	665804.E9200	DUGWAY PROVING GROUND
1W665804DE9300	665804.E9300	WHITE SANDS MISSILE RANGE
1W665804DE9400	665804.E9400	ARMY ELECTRONIC PROVING GROUND
1?665805D62000	665805.62000	DOD MUNITIONS EFFECTIVENESS
4A665805M85700	665805.85700	EXPLOSIVE SAFETY STANDARDS
1?665805DF2100	665805.F2100	NATO SMALL ARMS EVALUATION
1W665806DE9700	665806.E9700	HELSTF (DOD)
1P665807D61600	665807.61600	MAINSITE
1P665808DE8600	665808.E8600	MMT/MACI
1P665808DHH700	665808.HH700	FAST ATTACK VEHICLE (HTLD)
1P665872ME8800	665872.E8800	RESHAPE-DARCOM
1P665872DE8900	665872.E8900	PIF-DARCOM (DRIP & RECIP)
1W665872DE9800	665872.E9800	PIF-OSD (PIF DARCOM)
3X665872DW0100	665872.W0100	PIF-BMD (OSD)
1P665890MM8200	665890.M8200	ARRADCOM-INST.AUDIOVISUAL
1P665890MM8300	665890.M8300	CECOM-INST.AUDIOVISUAL
1P665890MM8400	665890.M8400	ERADCOM-INST.AUDIOVISUAL
1P665890MM8500	665890.M8500	MERADCOM-INST.AUDIOVISUAL
1P665890MM8600	665890.M8600	MICOM-INST.AUDIOVISUAL
1P665890MM8700	665890.M8700	NATICK R&D LABORATORIES
1P665890MM8800	665890.M8800	TACOM-INST.AUDIOVISUAL

APPENDIX C

SYSTEM LIST

The following list of Army systems (materiel and non-materiel) was used in
constructing the correlation tables. It was taken from Tables 4-3 and 4-4 of
an ODCA draft paper, titled "A Mission Area Structure for the Management of
Army Resources," DCA-P-XX, dated September 1981.

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               ***  SYSTEM LIST  ***

MATERIEL SYSTEMS

      CLASS              SYSTEM

      AIRCRAFT
                      AH-1S
                      AAH-64
                      OH-58C
                      RPV
                      UH-1
                      UH-60A
                      CH-47D
                      AHIP

      MISSILES
                      TOW
                      IMAAWS
                      DRAGON
                      PERSHING
                      MLRS
                      LANCE
                      HONEST JOHN
                      SERGEANT
                      CSWS
                      DSWS
                      REDEYE
                      STINGER
                      CHAPARRAL
                      ROLAND
                      HAWK
                      NIKE HERCULES
                      PATRIOT
                      HELLFIRE

      ELECTRONICS
                      PEWS
                      MILES
                      IRETS
                      ARTBASS
                      TACFIRE
                      RADAR CHRONOGRAPH, M90
                      BCS
                      GLLD
                      FIREFINDER
                      AN/TMQ-31
                      FORWARD AREA LASER WEAPON
                      SOTAS
                      TRAILBLAZER
                      QUICKLOOK
                      QUICKFIX
                      GUARDRAIL
                      TEAMPACK
                      ELECTRONICS COUNTERMEASURES SYSTEMS
```

*** SYSTEM LIST ***

MATERIEL SYSTEMS

CLASS   SYSTEM

ELECTRONICS
            COMMUNICATIONS INTELLIGENCE SYSTEMS
            INTEL DATA COLL & PROCESSING SYS
            AN/MYQ-4
            COMPUTER SYSTEMS
            TRITAC
            CNCS
            LOCATION SYSTEMS
            TACSATCOM
            THEATER/TACTICAL COMMUNICATIONS SYSTEMS
            COMMUNICATION SECURITY SYSTEMS
            MANUEVER CONTROL SYSTEM

TRACKED COMBAT VEHICLES
            M1
            M60A3
            M113/M557
            IFV/CFV
            MPG/AMAS
            FISTV
            FAASV

CANNON ARTILLERY, MORTARS & GUN
            MORTAR SYSTEMS
            M198
            M109
            M101
            M102
            OFT
            VULCAN
            DIVAD

ENGINEERING & RELATED SYSTEMS
            CEV
            UET
            IMPROVED FLOAT BRIDGE SYS
            MINE/COUNTERMINE SYS
            WATER PURIFICATION EQUIP

GROUND VEHICLES
            SUSV
            FORKLIFTS
            M88
            M578
            LACV-30
            M809
            M915
            M878
            SEMI TRAILER, 34 TON

```
            ***  SYSTEM LIST  ***

MATERIEL SYSTEMS

      CLASS           SYSTEM

GROUND VEHICLES
                HEMTT
                HMMWV

   AMMUNITION
                AMMUNITION

   OTHER
                UNIT WEAPONS SYSTEMS
                PROTECTIVE MASKS
                DECONTAMINATION APPARATUSES
                BIOLOGICAL DETECT & WARNING SYS
                NBC SHELTER SYSTEM, MS1
                DSU/GSU MAINTENANCE SYSTEMS
                SLEEP
                MOBILE FIELD KITCHEN TRAILER
                TOPOGRAPHIC SUPPORT SYSTEM
```

```
              ***  SYSTEM LIST  ***
```

NON-MATERIEL SYSTEMS

    <u>CLASS</u>   <u>SYSTEM</u>

HEALTH CARE
```
              FIELD MEDICAL SUPPORT
              HEALTH CARE IN FACILITIES
              MEDICAL MANAGEMENT HQ
              MEDICAL PROFESSIONAL DEVELOPMENT
              MEDICAL MANPOWER/PERSONNEL MGT
              MEDICAL MATERIEL MANAGEMENT
              MISC MEDICAL ACTIVITIES
```

INSTALLATION MANAGEMENT
```
              INSTALLATION MGT HQ
              HOUSING SUPPORT
              INSTALLATION MAINT/SVC OPS
              MORALE & WELFARE OPS
              AUTOMATION/COMMUNICATIONS SVCS
```

PERSONNEL & RELATED SERVICES
```
              TACTICAL PERSONNEL & ADMIN OPS
              PSYOPS/CIVIL AFFAIRS OPS
              PERSONNEL/ADMIN/FIN SVCS
              RECRUITING
              RESERVE COMPONENT SUPPORT  .
```

SUPPORT OUTSIDE ARMY
```
              DOD/JOINT SUPPORT
              SUPPORT TO OTHER GOVT AGENCIES
              SUPPORT TO OTHER NATIONS
```

DEFENSE RSCH/ADV TECH DEV
```
              DEFENSE RESEARCH
              MATERIEL/COMBAT DEV ACTIVITIES
```

INTELLIGENCE ACTIVITIES
```
              THEATER/TACTICAL INTELLIGENCE
              ARMY-WIDE INTELLIGENCE
              DOD/NATIONAL INTELLIGENCE
```

ARMY HEADQUARTERS
```
              ARMY MANAGEMENT HEADQUARTERS
              CLOSE COMBAT COMMAND & CONTROL
              FIRE SUPPORT/AIR DEF COM & CONT
              COMBAT SUPPORT COMMAND & CONTROL
              COMBAT SVC SUPPORT COM & CONT
```

TRAINING
```
              PRECOMMISSIONING TRAINING
              TRAINING MGT/DEVELOPMENT
              UNIT TRAINING ACTIVITIES
              ACCESSION/PROFESSIONAL TRAINING
```

```
                   ***  SYSTEM LIST  ***

NON-MATERIEL SYSTEMS

     CLASS             SYSTEM

  GROUND COMBAT/COMBAT SUPPORT
                  CLOSE COMBAT
                  FIRE SUPPORT
                  AIR DEFENSE
                  NBC COMBAT SUPPORT
                  COMMUNICATIONS COMBAT SUPPORT

  TRANSPORTATION/TRAFFIC MGT
                  TRANS COMBAT SVC SUPPORT OPS
                  TRANSPORTATION OPS

  ENGINEER SVCS/CIVIL WORKS
                  ENGINEER COMBAT SUPPORT
                  BASE/FACILITY ENG SUPPORT
                  ENGINEER COMBAT SVC SUPPORT

  POLICE & SECURITY
                  POLICE COMBAT SUPPORT
                  NON-TACTICAL POLICE SUPPORT

  PRODUCTION BASE SUPPORT
                  PRODUCTION BASE SUPPORT

  CENTRAL SUPPLY & MAINT
                  TACTICAL SUPPLY OPS
                  TACTICAL MAINT OPS
                  WHOLESALE SUPPLY
                  SERVICE OPERATIONS
                  DEPOT MAINTENANCE
```

APPENDIX

CORRELATION TABLE ONE
(Materiel System

This table gives the RDTE Project Numbers associated with the materiel

systems.

*** CORRELATION TABLE ONE ***

MATERIEL SYSTEMS

CLASS	SYSTEM	PROJECT NUMBER	NOMENCLATURE
AIRCRAFT			
	AH-1S	1X464312D63900	COBRA/TOW
	*AAH-64	1X464307D42500	AAH
		1A464317D27500	SYNTHETIC FLIGHT TRAINING SYSTEM
	RPV	1A263725DK6100	RPV/DRONES
		1A464730D04000	RPV
	*UH-60A	1X464206D06900	UH-60 FEASIBILITY DEMONSTRATION
	AHIP	1X464220D51800	ARMY HELICOPTER IMPROVEMENT PROGRAM
MISSILES			
	TOW	1X423724D33600	HEAVY ANTITANK ASSAULT WEAPON SYSTEM (TOW)
	*PERSHING	1X464311D59900	PERSHING II
	*MLRS	1L463303D21600	MLRS TERMINALLY GUIDED WARHEAD
		1X464314D56400	MLRS
	CHAPARRAL	1X423730D69700	CHAPARRAL
	HAWK	1X423731D69000	SAM HAWK/HIP
	*PATRIOT	1X464307D21200	PATRIOT (SAM-D)
		1X464307D21300	PATRIOT (ECCM ENHANCEMENT)
		1X464307D29100	PATRIOT (NATO)
	*HELLFIRE	1X464310D07400	HELIBORNE MISSILE-HELLFIRE
ELECTRONICS			
	ELECTRONICS COUNTERMEASURES SYSTEMS	1L263762DK1500	ADV COMMUNICATINS ELECT COUNTERMEASURE DEMONSTRATION
		1E463755D25100	PROTECTIVE EW EQUIPMENT
		1E463755DHH300	AIRBORNE RADAR JAMMER
		1H463755DK1200	COMMUNICATIONS ELECTRONIC COUNTERMEASURES SYSTEMS
		1H463755DK1300	NON-COMM ELECTRONIS COUNTERMEASURES SYSTEMS
		1H463755DK1400	EXPENDABLE JAMMERS
		1F464750DHH500	MULTI-ECM (HTLD)

*Selected Acquisition Report (SAR) Systems

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MATERIEL SYSTEMS

CLASS   SYSTEM PROJECT NUMBER NOMENCLATURE

ELECTRONICS (CONT)
        ELECTRONICS COUNTERMEASURES SYSTEMS (JOINT)
                1X464750DL1200 COMMUNICATIONS ELECTRONIC
                                COUNTERMEASURES SYSTEM
                1H464750DL1400 EXPENDABLE JAMMERS
        COMMUNICATIONS INTELLIGENCE SYSTEMS
                1X464704DL7300 REMOTELY MONITORED BATTLEFIELD
                                SENSOR SYSTEM(REMBASS)
        *TRITAC
                1X428010D10400 JOINT TACTICAL COMMUNICATIONS
                                (TRI-TAC) OFFICE
                1X428010D10700 MODIFICATION TO ARMY
                                TRI-TAC INTERFACE
                1X428010D11000 MOBILE SUBSCRIBER EQUIPMENT
                1X428010D11100 DIGITAL GROUP MULTIPLEXERS
                                (TRI-TAC)
                1X428010D11400 OTHER SERVICES ASSIGNED
                                TRI-TAC TASKS
                1X428010D11600 FACILITY SUPPORT ELEMENT
                                (TRI-TAC)
                1X428010D11700 SHORT RANGE WIDE-BAND
                                RADIO (SRWBR) ASSEMBLAGES
                1X428010D11900 MODULAR RECORD TRAFFIC TERMINAL
                1X428010D17200 NET RADIO INTERFACE
                1X428010D17800 JOINT TEST SUPPORT (TRI-TAC)
                1X428010D22200 AUTOMATIC COMMUNICATIONS
                                CENTRAL OFFICE
        LOCATION SYSTEMS
                1X464727DC9800 POSITION LOCATION REPORTING
                                SYSTEM
                1X564778D16800 NAVSTAR GPS EQUIPMENT
        TACSATCOM
                1X533142D25300 DEFENSE SATELLITE COM
                                SYS, DCS (PHASE II)
                1X533142D45000 SATELLITE COMMUNICATIONS
                1X533142D45600 TACTICAL SATELLITE COMMUNICATIONS
                                (TACSATCOM)
        THEATER/TACTICAL COMMUNICATIONS SYSTEMS
                1X463746D55500 SINCGARS-V
        COMMUNICATION SECURITY SYSTEMS
                1C533401D49100 COMMUNICATIONS SECURITY
                                EQUIP AND TECHNIQUES
        MANUEVER CONTROL SYSTEM
                1S423740D48400 MANEUVER CONTROL SYSTEM

TRACKED COMBAT VEHICLES
        *M1 (ABRAMS)
                1X423735D33000 M1E1 BLOCK IMPROVEMENT PROGRAM

MATERIEL SYSTEMS

CLASS	SYSTEM	PROJECT NUMBER	NOMENCLATURE

TRACKED COMBAT VEHICLES (CONT)

    M1 (ABRAMS) (CONT)

        1X464630DG2000   TANK, M1 (ABRAMS)

        1X464630D06000   120MM GUN DEVELOPMENT

        1X464630D28700   TANK SYSTEMS INTEGRATION

    IFV/CFV

        1X423735D33200   FIGHTING VEHICLE IMPROVEMENT

        1X464616D25800   FVS

    MPG/AMAS

        1G463635D16600   MOBILE PROTECTED GUN-FAR TERM

        1X463635D17000   MOBILE PROTECTED GUN-NEAR TERM

    FISTV

        1X464626DF2300   FISTV

    FAASV

        1L463632D10900   FIELD ARTILLERY AMO
                               SPT VEHICLE (FAASV)

CANNON ARTILLERY, MORTARS & GUN

    MORTAR SYSTEMS

        1X464323D34700   MOBILE HEAVY MORTAR

        1X464601D14400   SMOKE MORTAR ROUNDS

        1G464601D22700   BATTALION MORTAR SYSTEMS

    *DIVAD

        1X464318D64800   DIVAD GUN

ENGINEERING & RELATED SYSTEMS

    MINE/COUNTERMINE SYS

        1X263606D00600   LANDMINE WARFARE DEVELOPMENT

        1G263606D60800   COUNTERMINE AND BARRIER
                               DEVELOPMENT

        1X463619D00500   LANDMINE SYSTEMS

        1M463619D60600   COUNTERMINE AND BARRIER SYSTEMS

        1X463619DHH600   VOLCANO (HTLD)(LANDMINE
                               BARRIER SYSTEM)

        1M464612D14500   SLUFAE

        1M464612D41500   MINE NEUTRALIZATION/DETECTION

        1M464619D01600   MINE SYSTEMS

        1X464619D08800   MODULAR PACK MINE SYSTEM

        1M464619D56800   GEMSS AT/AP MINES

GROUND VEHICLES

    HMMWV

        1E464624DH1700   HMMWV

        1E464624DHH400   HMMWV (HTLD)

MATERIEL SYSTEMS

CLASS	SYSTEM	PROJECT NUMBER	NOMENCLATURE

AMMUNITION

AMMUNITION

		1M463528D00700	FIELD ARTILLERY AMMUNITION AND FUZES
		1X463528D27600	SENSE AND DESTROY ARMOR (SADARM)
		1X463633D16100	TANK AMMUNITION AND FUZES
		1X463633D16400	LONG ROD PENETRATOR
		1M464601D03000	MULTIPURPOSE AMMUNITION
		1X464603D38500	IMPROVED 155MM NUCLEAR PROJECTILE
		1X464630D06400	120MM TANK GUN AMMO DEVELOPMENT
		1X464631D28600	FIELD ARTILLERY AMMUNITION (NATO)
		1X464632D17300	TANK TARGET PRACTICE
		1X464632DG2100	105MM TANK AMMUNITION

OTHER

PROTECTIVE MASKS

    1N464725D01900 INDIVIDUAL CHEMICAL PROTECTION

TOPOGRAPHIC SUPPORT SYSTEM

    1S563712D58000 FIELD ARMY MAPPING
    1A563712DT4400 DIGITAL TOPOGRAPHIC SUPPORT

APPENDIX E

CORRELATION TABLE TWO
(Non-Materiel Systems)

This table gives the RDTE Project Numbers associated with the non-materiel
systems.

MATERIEL SYSTEMS

CLASS	SYSTEM	PROJECT NUMBER	NOMENCLATURE

HEALTH CARE
    FIELD MEDICAL SUPPORT
        3S162772A87400   CARE OF COMBAT CASUALTIES
        3S162775A83500   COMBAT MAXILLOFACIAL INJURY
        3S463732D53600   COMBAT MEDICAL MATERIEL
        3S464747D83200   COMBAT MEDICAL MATERIEL
    HEALTH CARE IN FACILITIES
        3A161101A91000   IN-HOUSE LABORATORY-MEDICAL R&D
        3M161102BS1000   RESEARCH ON MIL DISEASE,
                          INJURY & HEALTH HAZARDS
        3M162734A87500   MEDICAL DEFENSE AGAINST
                          CHEMICAL AGENTS
        3M162770A87000   RISK ASSESSMENT OF MILITARY
                          DISEASE HAZARDS
        3M162770A87100   PREVENTION OF MILITARY
                          DISEASE HAZARDS
        3E162777A87800   HEALTH HAZARDS OF MILITARY
                          MATERIAL
        3E162777A87900   MEDICAL FACTORS LIMITING
                          EFFECTIVENESS
        3M463750D80800   DRUG AND VACCINE DEVELOPMENT
    MISC MEDICAL ACTIVITIES
        3E162720A83500   MILITARY MEDICAL ENVIRONMENTAL
                          QUALITY

INSTALLATION MANAGEMENT
    INSTALLATION MAINT/SVC OPS
        1E463747D61000   FOOD ADVANCED DEVELOPMENT
        1L463747D66900   CLOTHING AND EQUIPMENT
    AUTOMATION/COMMUNICATIONS SVCS
        1X463723D10100   TACTICAL AUTOMATION
        1X463723D18500   MILITARY SOFTWARE STANDARDIZATION
        1X463723D18600   MILITARY COMPUTER FAMILY
        1X463723D33500   COMMUNICATIVE TECHNOLOGY
        1C464701D48700   TACTICAL MULTICHANNEL
                          COMMUNICATIONS
        1C464701D48800   TACTICAL NET RADIO COMMUNICATIONS
        1X464727D18300   TACTICAL DISPLAY SYSTEMS
        1S464727D18400   TACTICAL COMPUTER SYS/
                          TACTICAL COMP TERMINAL
        1P665801MM1900   RDTE-AUTOMATED DATA
                          PROCESSING EQUIP(DARCOM)
        1P665801MM2100   SPECIAL PURPOSE EQUIPMENT-DARCOM
        3A665801MM2200   SPECIAL PURPOSE EQUIPMENT-TSG
        4A665801MM2300   SPECIAL PURPOSE EQUIPMENT-OCE
        5X665803MY1100   MARDIS SUPPORT
        5X665803MY1400   MARDIS PROPONENT SUPPORT
        1P665890MM8200   ARRADCOM-INST.AUDIOVISUAL

NON-MATERIEL SYSTEMS

CLASS   SYSTEM   PROJECT NUMBER   NOMENCLATURE

INSTALLATION MANAGEMENT (CONT)
        AUTOMATION/COMMUNICATIONS SVCS (CONT)
                1P665890MM8300   CECOM-INST.AUDIOVISUAL
                1P665890MM8400   ERADCOM-INST.AUDIOVISUAL
                1P665890MM8500   MERADCOM-INST.AUDIOVISUAL
                1P665890MM8600   MICOM-INST.AUDIOVISUAL
                1P665890MM8700   NATICK R&D LABORATORIES
                1P665890MM8800   TACOM-INST.AUDIOVISUAL

PERSONNEL & RELATED SERVICES
        TACTICAL PERSONNEL & ADMIN OPS
                20161102B74F00   PERSONNEL PERFORMANCE
                                  AND TRAINING
        PSYOPS/CIVIL AFFAIRS OPS
                20263739A79300   HUMAN FACTORS IN TNG
                                  & OPERATIONAL EFFECT
        PERSONNEL/ADMIN/FIN SVCS
                20162722A79100   MANPOWER, PERSONNEL AND TRAINING
                20263731A79200   MANPOWER AND PERSONNEL

DEFENSE RSCH/ADV TECH DEV
        DEFENSE RESEARCH
                1L162623AH2100   JSSAP
                1L162724AH9900   JOINT SERVICES FOOD/
                                  NUTRITION TECHNOLOGY
                1M263607D62700   JOINT SERVICE SMALL
                                  ARMS PROGRAMS (JSSAP)
                1L463215D07900   JOINT SURVIVABILITY
                                  INVESTIGATIONS
                1L463706D29700   IFF (NATO)
                1C464222D21100   JOINT SVCS VERT LIFT
                                  AIRCFT DEV PROG
                1T464702D45100   ARMY SUPPORT OF JTIDS
                1X464712D32400   USA/NATO TACTICAL C3
                                  SYSTEMS INTEROPERABILITY
                1X464779D29800   JINTACCS (NATO)
                1X464779D30900   JINTACCS (ARMY)
                1X464779D31000   JINTACCS (EXECUTIVE AGENT)
                1T465710D04900   JOINT CHEMICAL CONTACT
                                  POINT & TEST
                8X665301D61400   KWAJALEIN MISSILE RANGE
                2T665802M79800   INTERNATIONAL COOPERATIVE
                                  RES AND DEV
                1Z665803M73100   GOVT, INDUST DATA EXCHG
                                  PROG/ADV GRP ON ELECT DEVS
                1W665805D62000   DOD MUNITIONS EFFECTIVENESS
                1G665805DF2100   NATO SMALL ARMS EVALUATION
                1W665806DE9700   HELSTF (DOD)

NON-MATERIEL SYSTEMS

CLASS	BUDGET	PROJECT NUMBER	NOMENCLATURE

DEFENSE RSCH/ADV TECH DEV (CONT)
      DEFENSE RESEARCH (CONT)

| | | 1W665872DE9800 | FIF-OSD |
| | | 8X665872DW0100 | FIF-BTD (OSD) |

      MATERIEL/COMBAT DEV ACTIVITIES

		1X312814D33300	SPECIAL PROGRAM
		1X312821D33800	CLASSIFIED PROGRAM
		1X423726D32200	ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM
		1X423726DHH100	FATDS (HTLD)
		1X423735D34100	105 MM TANK GUN ENH.
		1X423739D23300	AN/TSQ - 73 MODIFICATIONS
		1G423743D00800	155 MM SP HDRS IMPROVEMENT
		1H531327D38200	TECRAS (TECH RECON & SURVIVAL)
		1X533111D48100	STRATEGIC COMMUNICATIONS (STARCOM)
		1X533126D14900	LONG HAUL COMMUNICATIONS (DCS)
		1L161101A91A00	IN-HOUSE LABORATORY-DARCOM
		2T161101A91B00	IN-HOUSE LABORATORY-ARI
		4A161101A91D00	IN-HOUSE LABORATORY-COE
		1L161102AF2200	RESEARCH IN VEHICLE MOBILITY
		1L161102AH4000	SIGNALS WARFARE LABORATORY
		1L161102AH4200	RESEARCH IN MATERIALS AND MECHANICS
		1L161102AH4300	RESEARCH IN BALLISTICS
		1L161102AH4400	RESEARCH IN FLUIDIC NUCLEAR EFFECTS & ORD ELECT
		1L161102AH4500	AIR MOBILITY RESEARCH
		1L161102AH4600	RESEARCH IN COMBAT SURV/ TARGET ACQ
		1L161102AH4700	ELECTRONIC DEVICES RESEARCH
		1L161102AH4800	COMMUNICATIONS RESEARCH
		1L161102AH4900	MISSILE AND HIGH ENERGY LASER RESEARCH
		1L161102AH5100	COMBAT SUPPORT RESEARCH
		1L161102AH5200	RESEARCH IN SPT OF EQUIP FOR THE IND SOLDIER
		1L161102BH5700	RESEARCH IN SCIEN PROB WITH MIL APPL
		1L161102AH6000	RESEARCH IN LARGE CALIBER ARMAMENTS
		1L161102AH6100	RESEARCH IN FIRE CONT & IN SMALL CAL ARMAMENT
		1L161102AH6300	RESEARCH IN ELECTRONIC WARFARE
		1L161102AH6800	PROCESSES IN POLLUTION ABATEMENT TECHNOLOGY
		3E161102BS0400	IDENT & HEALTH EFFECTS OF MIL POLLUTANTS

NON-MATERIEL SYSTEMS

CLASS   SYSTEM   PROJECT NUMBER   NOMENCLATURE

DEFENSE RSCH/ADV TECH DEV (CONT)
         MATERIEL/COMBAT DEV ACTIVITIES (CONT)
                    4A161102AT2200   RESEARCH IN SOIL AND ROCK MECH
                    4A161102AT2300   BASIC RESEARCH IN MILITARY
                                     CONSTRUCTION
                    4A161102AT2400   RESEARCH IN SNOW, ICE,
                                     & FROZEN GROUND
                    1L161102A31800   NIGHT VISION AND ELECTROOPTICS
                                     RESEARCH
                    4A161102B52C00   RESEARCH IN GEODETIC,
                                     GEOGRAPHIC & MAPPING SCIENCES
                    1L161102B53A00   RESEARCH IN ATMOSPHERIC SCIENCES
                    1L161102A71A00   RESEARCH IN DEF SYS
                                     FOR CHEM WARFARE/BIO WARFARE
                    1L161102B74A00   RESEARCH IN HUMAN ENGINEERING
                    1L162105AH8400   MATERIALS
                    1L162111AH7100   ATMOSPHERIC INVESTIGATIONS
                    1L162120AH2500   NUC WEAP EFF RES, NEAR
                                     MM WAVE TECH, FLUID TECH
                    1L162201DH9600   AIRCRAFT WEAPONS TECHNOLOGY
                    1L162202AH8500   AIRCRAFT AVIONICS TECHNOLOGY
                    1L162209AH7600   AERONAUTICAL TECHNOLOGY
                    1L162210D28300   AIRDROP TECHNOLOGY
                    1L162303A21400   MISSILE TECHNOLOGY
                    1L162307A13900   LASER WEAPONS TECHNOLOGY
                    1L162601AH9100   TANK AND AUTOMOTIVE TECHNOLOGY
                    1L162603AH1800   LARGE CALIBER AND NUCLEAR
                                     TECHNOLOGY
                    1L162617AH1900   SMALL CALIBER AND FIRE
                                     CONTROL TECHNOLOGY
                    1L162618AH8000   BALLISTICS TECHNOLOGY
                    1M162622A55200   SMOKE AND OBSCURANT MUNITIONS
                    1L162622A55400   CHEMICAL MUNITIONS
                    1L162701AH9200   COMMUNICATIONS-TECHNOLOGY
                    1L162703AH9300   COMBAT SURVEILLANCE,
                                     TARGET ACQ & IDENT
                    1L162704AF2500   MILITARY ENVIRONMENTAL
                                     CRITERIA DEVELOPMENT
                    1L162705AH9400   ELECTRON AND ELECTRONIC DEVICES
                    1L162706A55300   CB DEFENSE AND GENERAL
                                     INVESTIGATIONS
                    4A162707A85500   TOPOGRAPHIC AND GEODETIC
                                     TECHNOLOGY
                    1L162709DH9500   NIGHT VISION AND ELECTRO-OPTICS
                                     INVEST
                    1L162715A04200   TACTICAL ELECTRONIC
                                     WARFARE TECHNOLOGY

NON-MATERIEL SYSTEMS

CLASS	SYSTEM	PROJECT NUMBER	NOMENCLATURE

DEFENSE RSCH/ADV TECH DEV (CONT)
   MATERIEL/COMBAT DEV ACTIVITIES (CONT)

		1L162715A90400	TACTICAL ELECTRONIC WARFARE TECHNIQUES
		1L162716AH7000	HUMAN FACTORS ENGINEERING IN SYS DEVELOPMENT
		2D162717A79000	HUMAN PERFORMANCE EFFECTIVENESS & SIMULATION
		4A162719AT4000	MOBILITY AND WEAPONS EFFECTS TECHNOLOGY
		1L162720D04800	ENVIRONMENTAL QUALITY RESEARCH & DEVELOPMENT
		4A162720A89600	ENVIRONMENTAL QUALITY FOR CONST & OPR OF MIL FAC
		1L162723AH9800	CLOTHING AND EQUIPMENT TECHNOLOGY
		1L162723A42700	TACTICAL RIGID-WALL SHELTERS
		5X162725DY1000	RESEARCH AND DEVELOPMENT MULTI-COMMAND DATA SYS
		1X162727A23000	NON-SYSTEMS TRAINING DEVICES TECHNOLOGY
		4A162730AT4200	COLD REGIONS ENGINEERING TECHNOLOGY
		4A162731AT4100	MILITARY FACILITIES ENGINEERING TECHNOLOGY
		1L162733AH2000	MOBILITY EQUIPMENT TECHNOLOGY
		1L162733AHH200	DECEPTION DEVICES (HTLD)
		1L162746A09400	TACTICAL ADP TECHNOLOGY
		4A162781AT4500	MILITARY ENERGY TECHNOLOGY
		1L263102D06500	PRODUCIBILITY/RELIABILITY
		1L263102D07100	MATERIALS SCALE-UP/STRUCTURES DEMONSTRATION
		1L263104D15000	FUELS AND EQUIPMENT
		1L263201D44700	DEMONSTRATOR ENGINES
		1L263201DB7200	PROPULSION COMPONENTS
		1A263207DB9700	AVIONICS EQUIPMENT
		1L263209DB3300	CARGO HANDLING EQUIPMENT
		1L263211DB4100	ADVANCED STRUCTURES
		1L263211D31300	RESEARCH AIRCRAFT SYSTEMS
		1L263211D31400	ADVANCED ROTOR SYSTEMS
		1L263211D31500	ADVANCED FLIGHT CONTROLS
		1L263216DB3400	ROTORCRAFT SYS INTEGRATION SIMULATOR (RSIS)
		1L263216DB3900	FLIGHT SIMULATOR COMPONENT
		1L263218D26600	AIRDROP EQUIPMENT AND TECHNIQUES
		1A263221D31200	NAP-OF-THE-EARTH ESSENTIAL EQUIPMENT
		1L263313D008700	MISSILES AND ROCKET COMPONENTS

NON-MATERIEL SYSTEMS

CLASS   SYSTEM   PROJECT NUMBER   NOMENCLATURE

DEFENSE RSCH/ADV TECH DEV (CONT)
       MATERIEL/COMBAT DEV ACTIVITIES (CONT)

1L263313DZ6100	FIBER OPTIC GUIDANCE
1X263324D18000	HTTB-DISTRIBUTION DATA TEST
1L263710DK7000	NIGHT VISION ADVANCE DEVELOPMENT
1L263710DK8600	NIGHT VISION AIRBORNE SYSTEMS
1L263742DF3200	ADVANCED ELECTRONIC DEVICES
2C263743D79400	EDUCATION AND TRAINING
1T263748DJ2900	AUTOMATIC TEST SUPPORT SYSTEMS (ATSS)
1T263748D24400	ATSS LANGUAGE UTILIZATION AND STANDARDS
1L263749D46200	TECHNICAL VULNERABILITY REDUCTION
1L263752A99400	DEMILITARIZATION CONCEPTS
1L263761D19000	ELECTRONIC WARFARE SUSCEPTIBILITY SUPPORT
1X263761D23500	MISSILE CCM TECHNOLOGY
8X363304D21500	BALLISTIC MIS DEF ADV TECH PROGRAM
8X363308D99100	BALLISTIC MIS DEF SYS TECH PROGRAM
1X463217D02400	GREATER SLOPE
1A463302D09900	ANTI-TACTICAL MISSILE
1N463604D15300	NUCLEAR EFFECTS SUPPORT TEAM
1N463615DE7600	LETHAL CHEM MATERIEL
1X463627DE8200	SMOKE MUNITIONS AND MATERIAL
1E463702DG1000	ADVANCED TACTICAL POWER SOURCES
1E463702DG1100	ADVANCED ELECTRICAL ENERGY SOURCES
1S463705DK8200	PHYSICAL SECURITY
1L463706D24300	IFF DEVELOPMENTS
1X463711D65300	AIRCRAFT SURVIVABILITY EQUIPMENT
1X463713D37000	PLRS/JTIDS HYBRID
1L463718D23400	SURFACE/SURFACE WEAPON ELECTRONIC WARFARE
1E463726DG1400	CONTAINER DISTRIBUTION EQUIPMENT
1E463726DK4100	PET, OIL AND LUB DISTRIBUTION SYS
1E463726D42800	TACTICAL RIGID-WALL SHELTER
1K463730D56000	TACTICAL SURVEILLANCE SYSTEMS
1T463745D92500	ALL SOURCE ANALYSIS SYSTEMS
1K463766D90700	TACTICAL ELECTRONIC SURVEILLANCE SYS
1A464202DL6200	AIRCRAFT ROCKET SUBSYSTEMS
1A464204DC3200	GROUND SUPPORT EQUIPMENT
1A464204DC3300	CARGO HANDLING EQUIPMENT
1A464204DC4500	AVIATION LIFE SUPPORT SYSTEM

MATERIEL SYSTEMS

| APC | SYSTEM PROJECT NUMBER | NOMENCLATURE |

DEFENSE RSCH ADV TECH DEV (CONT)
    MATERIEL/COMBAT DEV ACTIVITIES (CONT)

	1A464318D027900	AIRCRAFT EQUIPMENT DEVELOPMENT
	1A464365D10600	AIRCRAFT COMPONENT IMPROVEMENT PROGRAM
	1H464321D092600	ALL SOURCE ANALYSIS SYSTEM (ASAS)
	1X464323D026800	AWACS INTERFACE
	1X464609D19100	SMOKE MUNITIONS AND MATERIAL
	1X464623D06800	LIGHT ANTITANK WEAP TEST & EVAL
	1X464705D20700	MICNS
	1N464706D51700	RADIAC EQUIP ENGINEERING DEVELOPMENT
	1S464709D53000	IFF EQUIPMENT
	1L464710DL7000	NIGHT VISION DEVICES
	1X464712D032300	SYSTEMS ENGINEERING FOR TACT C3 SYSTEMS
	1E464713DL4000	CLOTHING AND EQUIPMENT
	1E464713D54800	MILITARY SUBSISTENCE SYSTEMS
	1E464714D19600	SILENT POWER GENERATING SOURCES
	1E464717DL3900	GENERAL SUPPORT EQUIPMENT
	1E464717D42900	TACTICAL RIGID-WALL SHELTERS
	1S464718DL8200	PHYSICAL SECURITY
	1K464740D66200	TACTICAL SURVEILLANCE SYSTEM
	1T464746D53600	ATSS FAMILY
	1K464766D90900	TACTICAL ELECTR SURVEILLANCE SYS
	1X564201DC9600	AIRCRAFT NAVIGATION AND CONTROL SYSTEMS
	1A564201DC9700	AVIONICS SYSTEMS
	1L663738A22400	NSTD ARMOR/ANTI-ARMOR
	1X664715D24100	NSTD COMBINED ARMS
	1X664715D57300	PM-TRADE & NAVAL TNG EQUIP CTR SPT
	1S664726D51100	METEOROLOGICAL DATA SYSTEMS
	6A665102M98000	TRADOC STUDIES AND ANALYSES
	6A665102M98100	ARMY MODEL IMPROVEMENT PROGRAM-TRADOC
	6A665102M98200	ARMY MODEL IMPROVEMENT PROGRAM-DARCOM
	1A665201D06600	AVIATION ENGINEERING FLIGHT ACTIVITY
	1W665702DE9500	COLD REGIONS TEST CENTER
	1W665702DE9600	TROPIC TEST CENTER
	1W665702D02600	TEST DESIGN AND EVALUATION
	1S665702D12700	METEOROLOGICAL SPT TO RDTE ACTIVITIES
	1X665702D20400	FIELD SMOKE ASSESSMENT
	1W665702D57500	R&D FIELD SUPPORT ACTIVITY

NON-MATERIEL SYSTEMS

CLASS   SYSTEM PROJECT NUMBER NOMENCLATURE

DEFENSE RSCH ADV TECH DEV (CONT)
        MATERIEL/COMBAT DEV ACTIVITIES (CONT)
            1W665702D61800 AVIATION DEVELOPMENT
                            TEST ACTIVITY
            1W665702D62100 US ARMY TEST FACILITIES REGISTER
            1W665702D62300 INSTRUMENTATION DEV,
                            USA TEST & EVAL CMD(TECOM)
            1W665702D62500 TEST METHODOLOGY TECOM
            1W665706M54100 MATERIEL SYSTEMS ANALYSIS
            1F665709065000 EXPLOITATION OF FOREIGN ITEMS
            1A665712DN0100 OTEA SUPPORT EQUIPMENT
            6A665712DV0200 TEST BOARDS
            6A665712DV0300 TRADOC INT OPERATIONAL
                            TEST & EVAL (IOTE)
            1A665712D00100 OTEA INT OPERATIONAL TEST & EVAL
            6A665712D91800 COMMUNICATIONS-ELECTRONICS
                            USER TESTING
            6A665712D97600 DEVELOPMENT/ACQUISITION
                            OF THREAT SIMULATORS
            6A665712D98500 CONCEPTS EVALUATION OF MATERIEL
            6A665712D98600 TRADOC SUPPORT EQUIPMENT
            1Z665803M72000 TECHNICAL INFORMATION
                            FUNCTIONAL ACTIVITIES
            1L665803M72800 INFORMATION TECHNOLOGY
            1L665803M72900 SYMPOSIA-CONFERENCE/
                            YOUTH SCIENCE ACTIV
            1L665803M76100 TECH INFORMATION ANALYSIS
                            CENTERS
            1L665803M90300 SIGNAL INTELL/ELECT
                            WARFARE TECH INFORMATION
            1W665804DE9000 YUMA PROVING GROUND
            1W665804DE9100 ABERDEEN PROVING GROUND
            1W665804DE9200 DUGWAY PROVING GROUND
            1W665804DE9300 WHITE SANDS MISSILE RANGE
            1W665804DE9400 ARMY ELECTRONIC PROVING GROUND
            4A665805M85700 EXPLOSIVE SAFETY STANDARDS
            1P665807D61600 MAINSITE
            1P665808DE8600 MMT/MACI
            1P665808DHH700 FAST ATTACK VEHICLE (HTLD)
            1P665872ME8800 RESHAPE-DARCOM
            1P665872DE8900 PIF-DARCOM (DRIP & PECIP)

INTELLIGENCE ACTIVITIES
        ARMY-WIDE INTELLIGENCE
            1F531307D38100 SCIENTIFIC/TECHNICAL
                            INTELLIGENCE

*** CORRELATION TABLE TWO ***

WEAPON/SYSTEM SYSTEMS

LEVEL   SYSTEM   PROJECT NUMBER   NOMENCLATURE

INTELLIGENCE ACTIVITIES (CONT)
        DOD NATIONAL INTELLIGENCE
                1P631334DH8700   GENERAL DEFENSE INTELLIGENCE
                                 PROGRAM (GDIP)

ARMY HEADQUARTERS
        ARMY MANAGEMENT HEADQUARTERS
                1P665801MM1100   GENERAL ADMINISTRATION
                                 ACTIVITY-DARCOM
                2T665801MM1500   GENERAL ADMINISTRATION
                                 STAFF SUPPORT-ARI
                1P665801MM1600   STANDARDIZATION GROUPS
                1P665801MM4100   DARCOM (ALEXANDRIA, VA)
                1P665801MM4200   ARRADCOM-PROG. ACT.(ADM/LOG SPT)
                1P665801MM4300   AVRADCOM-PROG. ACT.(ADM/LOG SPT)
                1P665801MM4400   CECOM-PROG. ACT.
                1P665801MM4500   ERADCOM-PROG. ACT.
                1P665801MM4600   MICOM-PROG. ACT.
                1P665801MM4700   TACOM-PROG. ACT.
                1P665801MM5100   MERADCOM-PROG. ACT.(OPER & SPT)
                1P665801MM5200   NATICK R&D LAB(OPER
                                 & SPT/PROG ACT)
                1P665801MM5300   TECOM-PROG. ACT.(OPER & SPT)
                3P665898MM0300   COMMAND HQS-TSG
                4P665898MM0400   OCE R&D COMMAND HQS
                1P665898MM6100   DARCOM HQS-AMHA ONLY
                1P665898MM6200   ARRADCOM-AMHA ONLY
                1P665898MM6300   AVRADCOM-AMHA
                1P665898MM6400   CECOM-AMHA ONLY
                1P665898MM6500   ERADCOM-AMHA ONLY
                1P665898MM6600   MICOM-AMHA ONLY
                1P665898MM6700   TACOM-AMHA
        FIRE SUPPORT/AIR DEF COM & CONT
                1T463740D59300   SHORAD-C2 SYSTEMS

TRAINING
        UNIT TRAINING ACTIVITIES
                2O263744D79500   TRAINING SIMULATION
                1M464628O25000   INDIRECT FIRE TNG MUNITIONS
                6A665712M99200   NATIONAL TRAINING CENTER SUPPORT

GROUND COMBAT/COMBAT SUPPORT
        CLOSE COMBAT
                1L263602D11800   COMBAT VEHICLE TECHNOLOGY
                1L263621DG0700   COMBAT VEHICLE ENGINE
                1L263621D39500   COMBAT VEHICLE TRANSMISSION
                1L263631D01400   COMBAT VEHICLE HULL AND TURRET

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NON-MATERIEL SYSTEMS

CLASS   SYSTEM   PROJECT NUMBER   NOMENCLATURE

GROUND COMBAT/COMBAT SUPPORT (CONT)
            CLOSE COMBAT (CONT)
                1L263631D42400   COMBAT VEHICLE TRACK
                                  AND SUSPENSION
                1W263636D22100   COMBAT VEHICLE SURVIVAL-ARMOR
                1W263636D22300   COMBAT VEHICLE ANTI-ARMOR
                1L363710DK9700   NIGHT VISION COMBAT VEHICLES
                1L263763DK1600   COMBAT VEHICLE SELF-PROTECT
                                  DEMONSTRATION
                1X664715D23900   NSTD INFANTRY
            FIRE SUPPORT
                1L263306D23200   155MM FIRE AND FORGET
            AIR DEFENSE
                1A263209DB4500   AVIATION LIFE SUPPORT EQUIPMENT
                1L463718D26700   AIR DEF MIS VULNERABILITY/
                                  SUSCEPTIBILITY
                1D464313D11200   GRASS BLADE
                1X464711D66500   AIRCRAFT SURVIVABILITY EQUIPMENT
                1X664715D23700   NSTD ARTILLERY/AIR DEFENSE/
                                  ENGINEER
            NBC COMBAT SUPPORT
                1L263737D18100   ANTI-RADIATION MISSILE
                                  COUNTERMEASURES
                3M263763D80700   INDUST BASE BIOLOGICAL
                                  WARFARE VACCINES/DRUGS
                1N463604D13500   NUCLEAR WEAPON DEVELOPMENT
                                  SUPPORT
                1N463604D48300   RADIOLOGICAL DETECTION
                                  MEASURING EQUIPMENT
                1N463720D60100   CHML DET & WARNING CONCEPT
                1N463721DE8100   CHEMICAL DECONTAMINATION
                                  MATERIEL
                1N463721DJ3000   COLLECTIVE PROTECT MAT
                                  FOR ARMORED VEHICLES
                1N463721D60400   COLLECTIVE CHEMCIAL
                                  PROTECTION MATERIEL
                3M463751D99300   MEDICAL DEFENSE AGAINST
                                  CHEMICAL WARFARE
                3M463764D99500   MEDICAL CHEM DEFENSE
                                  LIFE SPT MATERIEL
                1X464603D58400   COMMAND CONTROL AND
                                  SECURITY SYSTEM
                1N464724DF4500   BIOLOGICAL DEFENSE MATERIEL
                                  (DET & WARNING)
                1N464725DF9700   CHEMICAL DEFENSE MATERIEL
                                  (DET & WARNING)
                1N464725D01700   CB COLLECTIVE PROTECTION

WEAPON/TECHNICAL SYSTEMS

CODE	SYSTEM	PROJECT NUMBER	NOMENCLATURE

COMBAT COMBAT SUPPORT (CONT)
NBC COMBAT SUPPORT (CONT)
        1H464728D13800   COLLECTIVE PROTECTION
                     MATERIEL DAMAGED USE

COMMUNICATIONS COMBAT SUPPORT
        1H331450H5800   EUCOM C3 SYSTEMS
        1C463707D24600   TACTICAL COMMUNICATIONS
                     DEVELOPMENT
        1C463707D43700   TACTICAL RADIO COMMUNICATIONS
                     SYSTEM
        1L463718D62600   C3 SYSTEMS VULNERABILITY
                     SUSCEPTIBILITY

ENGINEER SVCS/CIVIL WORKS
    ENGINEER COMBAT SUPPORT
        4A263734DT0800   MILITARY CONSTRUCTION
                     AND ENGINEERING
        4A263734DT0900   ENERGY SYSTEMS TEST
        1E463726DG0100   COMBAT ENGINEER EQUIPMENT
        1F464717DH0100   COMBAT ENGINEER EQUIPMENT
    BASE/FACILITY ENG SUPPORT
        1P665801MM3100   MINOR CONSTRUCTION-DARCOM
        3A665801MM3200   MINOR CONSTRUCTION-TSG
        4A665801MM3400   MINOR CONSTRUCTION-OCE
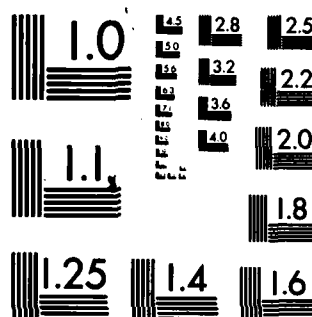
APPENDIX F

PROGRAM ELEMENT LISTING
(MAY FY 83 CURRENT APPROVED PROGRAM)

The following list contains only those Program Elements from the FYDP RDTE

Project Listing of May 1983, which were funded for FY 83.

PROGRAM ELEMENT LISTING

(MAY FY 83 CURRENT APPROVED PROGRAM)

CODE	NOMENCLATURE
12814	SPECIAL PROGRAM
12821	CLASSIFIED PROGRAM
23724	HV ANTI-TANK ASSAULT WPN SYS (TOW)
23726	ADVANCED FLD ARTY TAC DATA SYSTEM
23730	CHAPARRAL
23731	SAM HAWK/HAWK IMP PROG
23735	COMBAT VEHICLE IMPROVE PROG
23739	ANT/SQ-73 MODIFICATIONS
23740	MANEUVER CONTROL SYSTEM (MCS)
23743	155MM SELF-PROP HWTZER IMPROVEMENTS
28010	JT TACTICAL COMM PROG (TRI-TAC)
31307	FOREIGN SCIENCE AND TECH CENTER
31327	TECHNICAL RECONN. AND SURVEILLANCE
31334	OTHER COMMANDS GDIP ACTIVITIES
33111	STRATEGIC ARMY COMMUNICATIONS
33126	LONG-HAUL COMMUNICATIONS (DCS)
33142	SATCOM GROUND ENVIRONMENT
33145	EUCOM C3 SYSTEMS
33401	COMMUNICATIONS SECURITY
61101	IN-HOUSE LAB INDEPENDENT RESEARCH
61102	DEFENSE RESEARCH SCIENCES
62105	MATERIALS
62111	ATMOSPHERIC INVESTIGATIONS
62120	NUCLEAR WEAPONS EFFECTS/FLUIDICS
62201	AIRCRAFT WEAPONS TECHNOLOGY
62202	AIRCRAFT AVIONICS TECHNOLOGY
62209	AERONAUTICAL TECHNOLOGY
62210	AIRDROP TECHNOLOGY
62303	MISSILE TECHNOLOGY
62307	LASER WEAPONS TECHNOLOGY
62601	TANK AND AUTOMOTIVE TECHNOLOGY
62603	LARGE CAL AND NUCLEAR TECHNOLOGY
62617	SMALL CAL AND FIRE CONTR TECHNOLOGY
62618	BALLISTICS TECHNOLOGY
62622	CHEMICAL AND SMOKE MUNITIONS
62623	JOINT SERVICE SMALL ARMS PROGRAM
62701	COMMUNICATIONS TECH
62703	CMBT SURV TARGET ACQ/ID
62704	MIL ENVIRONMENTAL CRITERIA DEV
62705	ELECTRICAL AND ELECTRONIC DEVICES
62706	CHEM BIOLOGICAL DEF/GEN INVEST
62707	MAPPING - GEODESY

CODE	NOMENCLATURE
62709	NIGHT VISION INVESTIGATIONS
62715	TACTICAL ELECTRONIC WARFARE TECH
62716	HUMAN FACTORS ENGR IN SYS DEV
62717	HUMAN PERFORMANCE EFFECT/SIMULATION
62719	MOBILITY AND WEAPONS EFFECTS TECH
62720	ENVIRONMENTAL QUALITY TECH
62722	MANPOWER/PERSONNEL/TRAINING
62723	CLOTHING EQUIP AND SHELTER TECH
62724	JT SVC FOOD SYS TECH
62725	COMPUTER AND INFORMATION SCIENCE
62727	NON-SYSTEM TRAINING DEVICES
62730	COLD REGIONS ENGR TECHNOLOGY
62731	MIL FACS ENGR TECHNOLOGY
62733	MOBILITY EQUIPMENT TECHNOLOGY
62734	MED DEFENSE AGAINST CHEM AGENTS
62746	TACTICAL ADP TECH
62770	MILITARY DISEASE HAZARDS TECH
62772	COMBAT CASUALTY CAR TECH
62775	COMBAT MAXILLOFACIAL INJURY
62777	SYSTEMS HEALTH HAZARD PREVENT TECH
62781	ENERGY TECH APPL FOR MILITARY FACIL
63102	MATERIALS + STRUCTURE ADVANCED DEV
63104	FUELS AND LUBRICANTS
63201	AIRCRAFT POWER PLANTS AND PROPULSION
63207	AIRCRAFT AVIONICS EQUIPMENT
63209	AIR MOBILITY SUPPORT
63211	ROTARY WING CNTRLS/ROTORS/STRUCTURE
63215	JOINT SURVIVABILITY INVESTIGATIONS
63216	SYNTHETIC FLT SIMULATOR DEVELOPMENT
63217	GREATER SLOPE
63218	AIRDROP ADVANCEMENT
63221	NOE AVN AND NAVIGATION EQUIPMENT
63302	ANTITACTICAL MISSILE SYSTEM
63303	SURF-TO-SURF MSL ROCKET SYS
63304	BMD ADVANCED TECHNOLOGY
63306	TERMINALLY GUIDED PROJECTILES
63308	BALLISTIC MSL DEF SYS TECH
63313	MSL/ROCKET COMPONENTS
63324	ARMY DEV AND EMPLOYMENT ACTV (ADEA)
63602	ADVANCED LAND MOB SYSTEMS CONCEPTS
63604	NUCLEAR MUNITIONS AND RADIACS
63606	LANDMINE WARFARE/BARRIER DEV
63607	JOINT SERVICE SMALL ARMS PROGRAM
63615	LETHAL CHEMICAL MUNITIONS CONCEPTS
63619	LANDMINE/BARRIER SYS
63621	COMBAT VEHICLE PROPULSION SYSTEM
63627	COMBAT SUPPORT MUNITIONS

PROGRAM ELEMENT LISTING

CODE	NOMENCLATURE
63628	FIELD ARTILLERY AMMO DEVELOPMENT
63631	CMBT VEH TURRET AND CHASSIS SUBSYS
63632	ARMORED COMBAT LOG SPT VEH FAMILY
63633	TANK AND MORTAR AMMUNITION
63635	MOBILE PROJECTED GUN (MPG)
63636	COMBAT VEHICLE ARMOR/ANTI-ARMOR
63702	ELECTRIC POWER SOURCES
63705	PHYSICAL SECURITY
63706	IDENTIFICATION-FRIEND OR FOE DEV
63707	COMMUNICATIONS DEVELOPMENT
63710	NIGHT VISION ADVANCED DEVELOPMENT
63711	AIRCRAFT SURVIVABILITY EQUIPMENT
63712	MAPPING AND GEODESY
63713	ADDS-ARMY DATA DISTRIBUTION SYSTEM
63718	EW VULNERABILITY/SUSCEPTIBILITY
63720	CHEM/BIO DET, WARN & SAMPL MAT CONC
63721	CHEMICAL PROTECTIVE MATLS CONCEPTS
63723	COMMAND AND CONTROL
63725	REMOTELY PILOTED VEHICLES/DRONES
63726	COMBAT SUPPORT EQUIPMENT
63730	TACTICAL SURVEILLANCE SYSTEM
63731	MANPOWER AND PERSONNEL
63732	COMBAT MEDICAL MATERIAL
63734	MILITARY ENGINEERING TECHNOLOGY
63738	NON-SYSTEM TRAINING DEVICES
63739	HUMAN FACTORS IN TNG/OPER EFFECT
63740	DIV AIR DEFENSE COMD/CNTRL
63742	ADV ELECTRONIC DEVICES DEV
63743	EDUCATION AND TRAINING
63744	TRAINING SIMULATION
63745	TAC ELECTRONICS SPT MEASURE SYS
63746	SINGLE CHANNEL GRD/ABN RADIO SUB-SYS
63747	SOLDIER SUPPORT/SURVIVABILITY
63748	TEST MEAS & DIAGNOSTIC EQUIP DEV
63749	TECHNICAL VULNERABILITY REDUCTION
63750	DRUG AND VACCINE DEVELOPMENT
63751	MEDICAL DEFENSE AGAINST CHEM WARFARE
63752	DEMILITARIZATION CONCEPTS
63755	TAC ELEC C/M SYS
63761	ELEC WARFARE VULN/SUSCEP TECH SPT
63762	ELEC WARFARE FEASIBILITY DEVELOPMENT
63763	INDUSTRIAL BASE BW VACCINES + DRUGS
63764	MEDICAL CHEMICAL DEFENSE LIFE SPT
63766	TAC ELECTRONIC SURVEILLANCE SYSTEMS
64201	AIRCRAFT AVIONICS
64202	AIRCRAFT WEAPONS

CODE	NOMENCLATURE
64204	AIR MOBILITY SUPPORT EQUIPMENT
64206	UH-60A BLACK-HAWK
64207	ADVANCED ATTACK HELICOPTER
64212	COBRA TOW
64217	SYNTHETIC FLIGHT TRAINING SYSTEMS
64218	AIRDROP EQUIPMENT DEVELOPMENT
64220	ARMY HELICOPTER IMPROVEMENT PROGRAM
64222	JOINT SERVICE R/W AIRCRAFT DEV
64268	ACFT ENGINE COMPONENT IMPROVE PROG
64307	PATRIOT (SAM-D)
64310	HELIBORNE MISSILE-HELLFIRE
64311	PERSHING II
64313	GRASS BLADE
64314	MULTIPLE LAUNCH ROCKET SYSTEM (MLRS)
64318	DIVISION AIR DEFENSE GUN
64321	JOINT TACTICAL FUSION PROGRAM
64323	TOWED CHAPARRAL
64601	INFANTRY SUPPORT WEAPONS
64603	NUCLEAR MUNITIONS
64609	COMBAT SUPPORT SYSTEMS
64612	COUNTERMINE AND BARRIERS
64616	FIGHTING VEHICLE SYSTEM
64619	LANDMINE WARFARE
64620	TANK SYSTEMS
64623	VIPER
64624	HIGH MOB MULTI-PURPOSE WHEELED VEH
64626	FIRE INTEGRATION SPT TEAM VEH
64628	INDIRECT FIRE TNG MUNITIONS
64630	TANK GUN COOPERATIVE DEVELOPMENT
64631	FLD ARTY AMMUNITION
64632	105MM TANK AMMUNITION
64701	COMM ENGINEERING DEV
64702	JOINT TACTICAL INFO DISTR SYSTEM
64704	UNATTENDED GROUND SENSORS
64705	MODULAR INTEG COMM - NAVIGATION SYS
64706	RADIOLOGICAL DEFENSE EQUIPMENT
64709	IDENTIFICATION-FRIEND OR FOE BQ
64710	NIGHT VISION DEVICES
64711	AIRCRAFT SURVIVABILITY EQUIPMENT
64712	ARMY COMMAND + CONTROL SYS ENGR
64713	CMBT FEEDING/CLOTHING/EQ
64714	TACTICAL ELECTRICAL POWER SOURCES
64715	NON-SYSTEM TNG DEVICES ENGINEERING
64717	GENERAL COMBAT SUPPORT
64718	PHYSICAL SECURITY

CODE	NOMENCLATURE
64724	CHEM/BIO DET, IDEN, WARN, SAMPL MAT
64725	CHEM/BIO PROTECTIVE MATERIEL
64726	METEOROLOGICAL EQUIPMENT + SYSTEMS
64727	COMMAND AND CONTROL
64730	REMOTELY PILOTED VEHICLES
64740	TACTICAL SURVEILLANCE SYSTEM
64746	AUTOMATIC TEST SUPPORT SYSTEMS
64750	TAC ELEC C/M SYS
64766	TAC ELECTRONIC SURVEILLANCE SYSTEMS
64778	NAVSTAR GLOBAL POS SYS (USER EQ)
64779	JT INTEROPERABILITY TAC COMB/CNTRL
65102	TRADOC STUDIES AND ANALYSES
65201	AVN ENGR FLIGHT ACTY
65301	KWAJALEIN MISSILE RANGE
65702	SUPPORT OF DEVELOPMENT TESTING
65706	MATERIEL SYSTEMS ANALYSIS
65709	EXPLOITATION OF FOREIGN ITEMS
65710	JOINT CB CONTACT POINT AND TEST
65712	SPT OF OPERATIONAL TESTING
65801	PROGRAM-WIDE ACTIVITIES
65802	INTL COOPERATIVE RESEARCH AND DEV
65803	TECHNICAL INFO ACTIVITIES
65804	DARCOM MAJ RANGES/TEST FACILITIES
65805	MUNITIONS STDZN EFFECT AND SAFETY
65806	DOD HIGH ENERGY LASER SYS TEST FACS
65807	MAINSITE
65808	MFG METHODS + TECHNOLOGY (MACI)
65872	PRODUCTIVITY INVESTMENTS
65890	INSTL AUDIOVISUAL SPT (R/D)
65898	MGT HQ (RESEARCH/DEV)