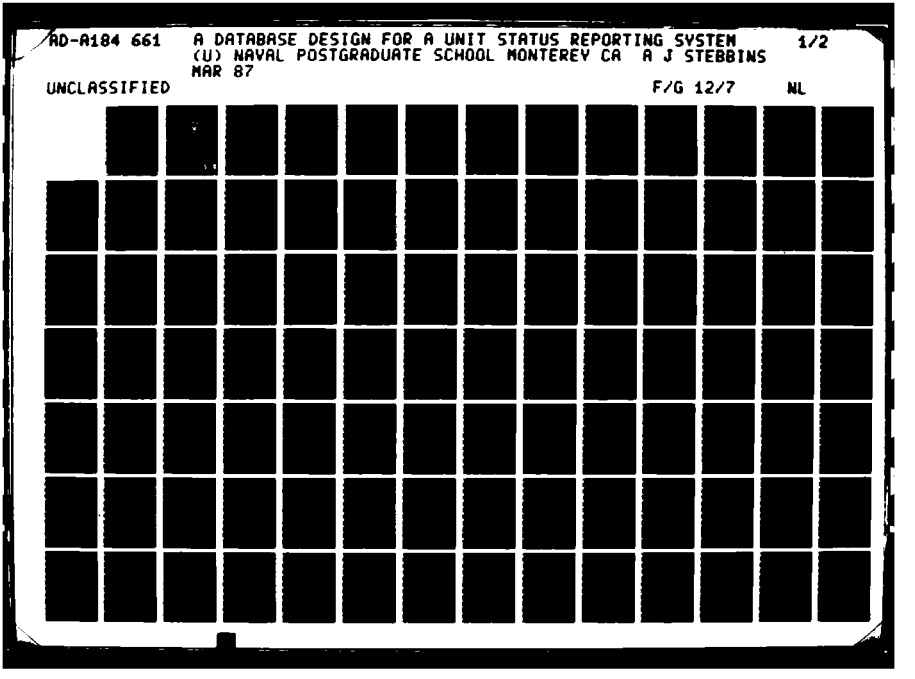
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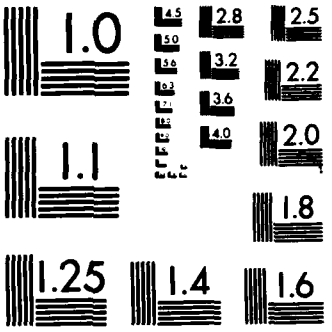

NAVAL POSTGRADUATE SCHOOL

Monterey, California

THESIS

A DATABASE DESIGN FOR A UNIT STATUS REPORTING SYSTEM

by

Ann Jacoby Stebbins

March 1987

Thesis Advisor: Y. K. Mortagy

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This thesis advances the hypothesis that utilization of a database management systems (DBMS) will lead to improved accuracy and decrease the amount of time spent on the preparation of the U.S. Army's Unit Status Report (USR). This study developed data flow diagrams of the proposed USR system, along with a supporting passive data dictionary. A Semantic Database Model (SDM) schema for the proposed USR system is also presented. This thesis concludes that the proposed database design for the USR system be implemented using a standard (Army-wide) DBMS.

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A Database Design for a Unit Status Reporting System

by

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Captain, Transportation Corps, U.S. Army
B.S. Ed., Indiana University of Pennsylvania, 1978

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN INFORMATION SYSTEMS

from the

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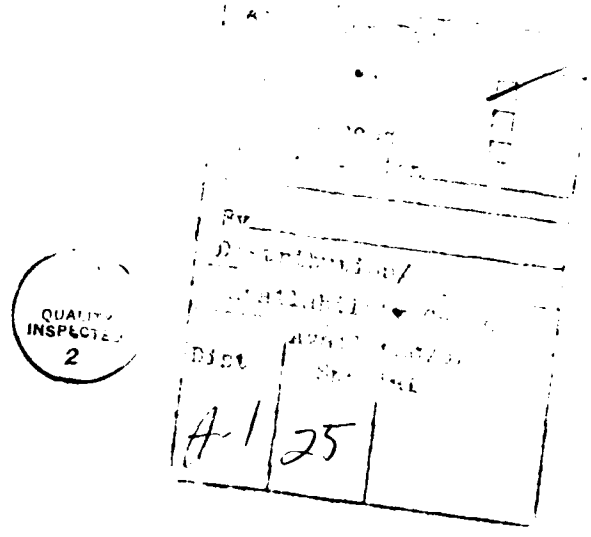
ABSTRACT

This thesis advances the hypothesis that utilization of a database management system (DBMS) will lead to improved accuracy, and decrease the amount of time spent on the preparation of the U.S. Army's Unit Status Report (USR). This study developed data flow diagrams of the proposed USR system, along with a supporting passive data dictionary. A Semantic Database Model (SDM) schema for the proposed USR system is also presented. This thesis concludes that the proposed database design for the USR system be implemented using a standard (Army-wide) DBMS.



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I. INTRODUCTION

A. GENERAL

The idea for this thesis originated during a meeting with the commander of the 274th Supply Support Detachment of the 7th Infantry Division (Light), Fort Ord. The purpose of the meeting was to discuss potential projects involving the use of computers. The outcome of the discussion was a perceived need to automate certain unit record-keeping and reporting requirements, specifically the Unit Status Reporting System.

Maintaining an accurate and up to date evaluation of every unit's readiness to deploy has a high priority in the United States Army. The Army's Unit Status Reporting System has been established, under Army Regulation 220-1, to satisfy this need. Objectives of the reporting system are to provide:

1. The current status of U.S. Army units to national command authorities (NCA's), the Organization of the Joint Chiefs of Staff (OJCS), Headquarters, Department of the Army (HQDA), and all levels of the Army chain of command.
2. Indicators to HQDA that--
   a. Portray Army-wide conditions and trends.
   b. Identify factors which degrade unit status.
   c. Identify the difference between personnel and equipment assets currently in units and full wartime requirements.
   d. Assist in the allocation of resources by HQDA and intermediate commands. [Ref. 1:p. 3]

The USR aids in the determination of a unit's status by comparing selected personnel, equipment and training factors to wartime requirements and by using the commander's overall evaluation of the unit. Because the report is not designed to measure all aspects of a unit's readiness status, it cannot be used as an isolated tool to assess readiness of a unit individually or the Army as a whole. The USR does, however, provide a timely, single-source document for evaluating key elements of a unit's status and identifying problem areas.

The Army's objective with regard to unit status is for commanders to develop and maintain their units at the highest unit status level possible considering resources available to the unit and the unit's contingency requirements. In order to conserve resources, only those units needed early on to support contingency plans are maintained at the highest resource levels. All other units are provided lower levels of resources and thus assigned a lower authorized level of organization (ALO). Unit commanders are responsible to:

1. Maintain the highest unit status level possible with given resources.
2. Accurately assess and report unit status.
3. Distribute unit equipment against mission essential requirements (equipment readiness code (ERC)-A) on a first priority basis.
4. Train to the highest level possible with the resources that are available. [Ref. 1:p.3]

Currently, commanders maintain data for the reports and prepare them manually. Preparation of the actual report is a very time consuming and tedious process. There can be a high potential for errors depending on the individual commander's experience in preparing the report. Report preparation procedures are difficult and often confusing due to the many calculations involved and wide dispersion of data used. Reports are usually reviewed at several levels of command before being submitted. The entire process of gathering the data, preparing, reviewing, and submitting the report can end up requiring two or three days of the commander's time (or the time of some other designated officer in the unit).

B. RESEARCH PLAN

1. Objectives

The primary objective of this research is to develop a database design for the Unit Status Reporting System. Additional objectives are to explore: the unit's other reporting and record-keeping requirements which the database might support; how the database will be implemented.

2. Research Hypothesis

Utilization of a database management system will lead to improved accuracy and decrease the amount of time spent on the preparation of the Unit Status Report.

3. Research Questions

In pursuing the objectives of the research, the following research questions were addressed:

a. Can a database be designed to support company commanders in maintaining all the necessary information for determining and reporting their unit's status?

b. Can this database support other unit reporting requirements?

c. What type of data model and data structure should be used for this database?

4. Research Methodology

The research methodology utilized for this thesis involved a comprehensive review of applicable literature to include current Army regulations. Additionally, personal and telephone interviews and a brief questionnaire were conducted with Army personnel actually involved in the preparation and review of the Unit Status Report.

The literature utilized in the study was obtained through the Naval Postgraduate School library and instructors; the U.S.Army Logistics Center, Fort Lee VA; and the 7th Infantry Division (Light) G-4 Office, Fort Ord CA.

Personal interviews were conducted with personnel from the 7th Infantry Division (Light) G-4 Office and the 274th Supply Support Detachment at Fort Ord CA. Telephone

interviews were conducted with personnel from the U.S. Army Logistics Center at Fort Lee VA. A brief questionnaire was presented to representative units from the 7th Infantry Division (Light) at Fort Ord CA.

C. THESIS ISSUES

1. Scope of the Study

The main thrust of the thesis will be the design of the database. Specific emphasis will be on what files will be included in the database, what data elements the files will contain, and input and output for the database. Although the research will concentrate on the requirements for the USR, the database design will include other data elements required in unit record-keeping. Additionally, the design will try to incorporate flexibility for future expansion, so that data elements not already included may be easily added.

2. Assumptions

This thesis is based on the assumption that using a database management system (DBMS) facilitates sharing of data, reduces redundancy of data in files, and contributes to the maintenance of data integrity. It also assumes that using a DBMS allows for rapid retrieval of data and increases the amount of information that can be retrieved from the data that is stored. Another assumption is that

units will have access to microcomputers, but they will not have communication capabilities.

3. Limitations

A possible limitation is the fact that the Army, and specifically units at Fort Ord have a wide variety of computer systems and supporting software, much of which is incompatible. Another limitation is the fact that the database must comply with the requirements set forth by AR 220-1 (the regulation which governs the Unit Status Reporting System). Additionally, certain portions of the Unit Status Report require subjective input, therefore the database cannot produce the final product.

D. ORGANIZATION

Chapter II provides background information concerning the Unit Status Reporting System.

Chapter III forms the first part of the data analysis and findings portion of the thesis. It provides an overview of the theory used in the design of the database model.

Chapter IV forms the second part of the data analysis and findings portion of the thesis. It describes the development of the database model.

Chapter V contains the conclusions and recommendations which are based on the findings contained in Chapters III and IV.

II. BACKGROUND

A. INTRODUCTION

The research material summarized in this chapter forms the background for the study of a database model designed to simplify the U.S. Army's Unit Status Reporting System. The terms, descriptions, and reference summaries presented in this chapter facilitate the understanding of concepts that will be explored in the data analysis, findings and recommendation segments of this research effort.

In describing the background of the problem, this chapter briefly explains the U.S.Army Unit Status Reporting System. The chapter is divided into five parts. After the introduction, a general description of the Unit Status Report (USR) is outlined. The third part describes preparation of the USR, while the fourth describes the unit status reporting requirements. Finally, a brief summary highlights the overall process.

B. GENERAL DESCRIPTION OF THE REPORT

The Unit Status Report is designed to assist the unit commander in determining their unit's current status by:

a. Comparing selected personnel, equipment, and training factors to wartime requirements.

b. Obtaining the commander's overall assessment of the unit.

The report provides an indication of the extent to which a unit can perform the mission for which it was designed. The Unit Status Report also provides a timely, single-source document for assessing key elements of a unit's status and helps the commander identify problem areas of the unit. It is important to remember that the report does not measure all areas of a unit, therefore it should not be used as the sole basis to evaluate unit readiness.

C. DESCRIPTION OF REPORT PREPARATION

1. General

Preparation of the USR involves evaluating four major resource areas within the unit. These areas are: personnel, equipment on-hand, equipment readiness, and training. Based on the ratings calculated for each area, the unit commander determines an overall unit rating. The remainder of this section describes how to evaluate and rate each area, and determine the overall unit rating. Figure 2.1 is a sample of DA Form 2715-R, the Unit Status Report. It will serve as a reference for this description of report preparation.

Army Regulation 220-1 (included as Appendix A) establishes the Unit Status Reporting System. Standard rules and procedures used in the preparation of the Unit

UNIT STATUS REPORT
For use of this form, see AR 220-1; proponent is ODCSOPS

AS OF DATE	REQUIREMENT CONTROL SYMBOL JCS 6-II-2-1-6

THRU	TO	FROM

SECTION A—CARD TYPE KA1 OR KA3

1 [1 2 3] Card Sequence Number *(Entered by HQ preparing data for transmission)*

2 [4] Classification *(C)*

3 [5] Transaction Code *(A, C, or D)*

4 [6 7 8] Card Type *(KA1 or KA3)*

5 [9 10 11 12 13 14] Unit Identification Code *(Unit Being Reported)*

6. PERSONNEL DATA

a [15 16 17] Assigned Strength Percentage

b [18 19 20] Available Strength Percentage

c [21 22] Available MOS Trained Percentage

d [23 24] Available Senior Grade Percentage

e [25 26] Personnel Turnover Percentage

7. EQUIPMENT ON-HAND DATA

a [27 28 29] Total Line Items *(Sum of b, c, d, and e below)*

b [30 31 32] Number of Lines Rated 1

c [33 34 35] Number of Lines Rated 2

d [36 37 38] Number of Lines Rated 3

e [39 40 41] Number of Lines Rated 4

f [42] Lowest Pacing Item Rating

8. EQUIPMENT MISSION CAPABLE/READINESS DATA

a [43 44] Percentage of On Hand Equipment Mission Capable *(EMC)*

b [45 46] Percentage of On Hand Pacing Items Mission Capable *(PI - EMC)* - For Pacing Item With Worst EMC Status

c [47 48] Percentage of Required Equipment Mission Capable *(ER)*

d [49 50] Percentage of Required Pacing Items Mission Capable *(PI—ER)* - For Pacing Item With Lowest ER Rating

9. TRAINING DATA

a [51 52] Days to Complete Training

Constraints

b [53] Assigned Strength Shortfall

c [54] Special Duty Requirements

d [55] Availability of Funds

e [56] Availability of Equipment/Materiel

f [57] Availability of Qualified Leaders or Status of Aviator Training

g [58] Accessibility of Training Areas/Facilities

h [59] Availability of Fuel

i [60] Availability of Ammunition

j [61] Availability of Time

10 [62] Authorized Level of Organization *(1, 2, 3, 4, 5, 6, 7, 8, 9, B, or C)*

11 [63 64 65 66 67 68] Date of Report *(Year, Mo, Day)*

12 [69] Parent Unit Identifier

13 [70 71 72 73 74 75] Unit Identification Code *(Preparing Data for Transmission)*

14 [76 77] F S Report Type *(Enter FS)*

15 [78 79 80] Report Number *(Enter by HQ preparing data for transmission)*

DA FORM 2715-R, JUL 86 DA FORMS 2715 R AND 2715-1 R DATED JUN 81 ARE OBSOLETE

Figure 2.1 Sample DA Form 2715-R

Status Report, as well as standard abbreviations and terms used throughout this chapter may be found in this appendix.

2. C-Rating Definitions

The status of each resource area which is evaluated is assigned a numerical C-Rating. A rating of C-1 is the highest; ratings of C-2, C-3, and C-4 are used to indicate a lower unit status (ability to perform designed mission).

The C-ratings are defined as follows:

a. The rating C-1 is combat ready with no deficiencies. The unit has its prescribed levels of wartime resources and is trained so that it can be deployed. If outside CONUS, it can perform its operational contingency mission.

b. The rating C-2 is combat ready with minor deficiencies. The unit has only minor deficiencies in its prescribed levels of wartime resources or training. Its ability to perform the wartime mission for which it is organized, designed, or tasked is limited. If in CONUS, a unit can be deployed, but minor additional training or resources are desirable. If outside CONUS, it can perform its operational contingency mission.

c. The rating C-3 is combat ready with major deficiencies. The unit has major deficiencies in the prescribed levels of wartime resources or training. Its ability to perform the wartime mission for which it is organized, designed, or tasked is limited. It can deploy or execute its operational contingency mission at reduced levels, but normally it will first be given additional training or resources to increase its readiness posture.

d. The rating C-4 is not combat ready. The unit has major deficiencies in its prescribed wartime resources or training and its ability to perform the wartime mission for which it is organized, designed, or tasked. It requires major upgrading prior to deployment or employment in combat. However, if conditions dictate, the unit might be deployed or employed for whatever residual capability it does have.

e. The rating C-5 is not combat ready programmed. Due to HQDA action or programs, the unit is not ready and does not have the prescribed wartime resources or cannot perform the wartime mission for which it is organized, designed, or tasked. C-4 deployment and employment considerations apply. However, if conditions dictate, the unit might be deployed or employed for whatever residual ability it does have. Units rated C-5 are restricted to the following:

a. Units undergoing reorganization or major equipment conversion or transition.

b. Units placed in cadre status by HQDA.

c. Units which are being activated or inactivated.

d. Units which are not manned or equipped but are required in the wartime force structure.

e. Units with primary tasking as training units that could be tasked to perform a wartime mission. [Ref. 1:p. 15-16]

3. Personnel Status

The Unit Status Report provides indicators of a unit's personnel status by developing a C-rating that is calculated by comparing available strength, available MOS (Military Occupational Skill) trained strength, and available senior grade strength to wartime requirements. In addition, assigned strength and personnel turnover information is provided. [Ref. 1:p. 9]

Required strength is determined from the unit's modified table of organization and equipment/table of distribution and allowances (MTOE/TDA)--the cadre column for cadre units; table of organization and equipment (TOE) Type B column for Type B units; and MTOE/TDA required column for all other units (see definitions of terms in Appendix A).

An assigned strength percentage is determined based on a comparison of assigned strength and required strength. Assigned strength for Active Component units will equal the assigned strength of the latest personnel control number (PCN), adjusted to the "as of" date of the Unit Status Report. This is done by adding gains and subtracting losses which have occurred since the date of the last report.

The available strength percentage is based on a comparison of available strength and required strength. Available strength is that portion of a unit's assigned strength that is available for deployment and or employment. The criteria for determining personnel availability are listed in Appendix E of AR 220-1.

The available MOS trained personnel percentage is based on a comparison of available MOS trained personnel and required MOS trained personnel. First, the number of MTOE/ TDA personnel spaces required by identity (officer, warrant officer, and enlisted) and by military occupational specialty code (MOSC) is determined. Then the number of personnel included in the available strength of the unit by identity and MOSC is determined. Trained available personnel are matched against the requirements.

The available senior grade percentage is determined based on a comparison of the number of available commissioned officers, warrant officers, noncommissioned

officers (grades E5 through E9), and required senior grade personnel.

The personnel turnover percentage is determined by comparing the number of personnel reassigned, discharged, or separated during the preceding three months of the "as of" date of the report to assigned strength on the "as of" date. This percentage provides an indicator of unit turmoil.

A personnel rating is calculated by comparing the percentages already determined to Tables 3-2 and 3-3 in AR 220-1. C-rating's are determined for available strength, available MOS trained, and available senior grade strength. The unit's overall personnel C-rating is the lowest of these three C-ratings.

4. Equipment On-Hand Status

The Unit Status Report provides indicators of a unit's equipment on-hand (EOH) status by developing a C-rating that is calculated by comparing the fill of selected equipment to wartime requirements. A rating for all of a unit's reportable equipment and a rating for each pacing item is determined. [Ref. 1:p. 11] A pacing item is a major weapons system, aircraft, or other items of equipment that are central to a unit's ability to perform its assigned mission. Pacing items are monitored continuously and managed at all levels of command. Not all units will have pacing items.

Reportable equipment and required quantities are determined from the unit's MTOE/TDA. Reportable equipment is that equipment which:

a. For MTOE units, is designated on a unit's MTOE as equipment readiness code "A" (ERC-A), primary weapons and equipment.

b. For TDA units, is listed on a unit's TDA and is designated in AR 700-138 or AR 18-25 as DA Form 2406 (Material Condition Status Report), DA Form 3266-1 (Army Missile Material Readiness Report), or DA Form 1352 (Army Aircraft Inventory, Status and Flying Time) reportable (until such time as TDA equipment is readiness coded).

c. Has a quantity of 1, or greater, shown in the required column of the MTOE/TDA.

d. Has not been designated as nonreportable/exempt from reporting (Appendix G, AR 220-1). [Ref. 1:p. 11]

The quantity of reportable equipment on-hand is determined from the unit property book. Substitute items will be counted as equipment on-hand for unit status reporting purposes if it is a HQDA authorized substitute as listed in Appendix H of SB 700-20.

The unit's pacing item(s) are determined by checking Appendix C of AR 220-1.

Equipment on-hand (EOH) ratings are computed using guidelines provided in AR 220-1 (Tables 3-4 and 3-5, and the equipment on-hand C-rating outline). A percent fill is calculated for each reportable line item number (LIN) by dividing the quantity of equipment on-hand by the quantity of equipment required and multiplying by 100 if the number of items required under a LIN is 21 or more. The C-rating

is then found in AR 220-1, Table 3-4. When the number of items required under a LIN is 20 or less, the C-rating is found using Table 3-5 of AR 220-1. A C-rating is then determined for all reportable LIN's. A C-rating is also determined for the unit's pacing item(s). The unit's overall EOH rating is equal to the lower of these ratings just determined.

5. Equipment Readiness

The Unit Status Report provides indicators of a unit's equipment readiness and focuses on how well this equipment is being maintained. This is done by developing a C-rating that is calculated by comparing the combined affect of fill and maintenance shortfalls on the status of selected equipment to wartime requirements. An equipment readiness (ER) rating for all of a unit's reportable equipment and a rating for each pacing item is determined. Equipment mission capable (EMC) percentages are developed that disregard that portion of the required equipment that is short. [Ref. 1:p. 13]

Reportable equipment is determined as that equipment which:

a. For MTOE units, is that portion of the unit status reportable equipment identified in paragraph 3-7 of AR 220-1 that is also designated as maintenance reportable in AR 700-138 and AR 18-25.

b. For TDA units, is listed on a unit's TDA and is designated by AR 700-138 and AR 18-25 as DA Form 2406, DA Form 3266-1, or DA Form 1352 reportable.

c. Has not been designated as nonreportable/exempt from reporting (Appendix G, AR 220-1).

d. Is not an aircraft assigned to a nonaviation unit (unless assigned aircraft is designated as a pacing item). [Ref. 1:p. 13]

The ER and EMC statuses are calculated using guidelines found in AR 220-1 (Table 3-6, the equipment readiness/equipment mission capable C-rating outline in Figure 3-7, and the examples found in Figure 3-8). The ER percent equals the total available days divided by the total required days multiplied by 100. The pacing item ER percent equals the pacing item available days/hours divided by the pacing item required days/hours multiplied by 100. The EMC percent equals the total available days divided by the total possible days multiplied by 100. The pacing item EMC percent equals the pacing item available days/hours divided by the pacing item possible days/hours multiplied by 100. The unit's overall ER rating is equal to the lower of the ER C-rating and the pacing item ER C-rating, determined from Table 3-6 of AR 220-1.

Available days/hours are determined from the fully mission capable data found on DA Form 2406, DA Form 3266-1, and/or DA Form 1352. The ER and EMC percentages will be based on the fully mission capable (FMC) status of a unit's reportable equipment averaged over a one-month period. The FMC data will be computed beginning the 16th day of the prior month and ending the 15th day of the current month.

For MTOE units, only ERC-A equipment will be considered when computing the ER rating.

Required days/hours are determined based on the quantity of MTOE/TDA required equipment that is both unit status and maintenance reportable, and the number of days/hours in the reporting period. Possible days/hours are determined based on the on-hand quantity of MTOE/TDA required equipment that is also both unit status and maintenance reportable, and the number of days/hours that the equipment was on-hand during the reporting period.

6. Training Status

The Unit Status Report provides indicators of a unit's training status by developing a training C-rating. The primary purpose of the unit training rating is to show the current ability of the unit to perform its assigned wartime missions. A secondary purpose of the unit training rating is to show resource shortfalls that prevent attainment of a training tempo necessary to achieve or maintain training objectives. The standard against which the unit's training status is to be measured is its mission essential task list (METL). The METL is derived from assigned wartime missions and is submitted to, and approved by the next higher headquarters in the reporting unit's chain of command. [Ref. 1:p. 14]

The training rating is subjectively determined by the unit's commander, based on first-hand knowledge of the unit's ability to successfully accomplish METL tasks. The training rating is partially determined by an estimate of the time the unit needs to overcome shortfalls and reach a state of being completely trained in METL tasks. The commander must base this estimate on personal observations, reports, records, inspection results, etc. Additionally, commanders should only consider the equipment and personnel currently assigned to their unit.

First, the commander must determine the present level of training in their unit by considering such factors as: personnel and equipment present for training, leader qualifications, the quality of training conducted and the availability and quality of training areas, the units demonstrated proficiency during recent external evaluations, results of individual skill qualification tests, common task tests, and physical readiness tests, as well as other factors covered in paragraph 3-9.a. of AR 220-1. Based on what the commander determines to be the unit's present level of training, an estimate is made of the number of days of training necessary for the unit to overcome training shortfalls. This number is compared to Table 3-7 in AR 220-1 to determine a training C-rating.

The commander will also evaluate resource constraints as to the degree to which they prevent the unit from maintaining a training tempo necessary to achieve and sustain its desired training objectives. The resource areas are: assigned strength shortfalls, special duty requirements, availability of funds, availability of equipment/materiel, availability of qualified leaders or status of aviator training, accessability of training areas/ facilities, availability of fuel, availability of ammunition, and availability of time. These areas are assessed based on the impact they have on training, either insignificant, minor, major, or prohibitive.

7. Overall Unit C-Rating

The overall unit C-rating and mission accomplishment estimate (MAE) are the commander's assessment of the overall status of their unit and its ability to accomplish assigned wartime missions. MAE is determined only for units with an overall rating of C-4 or C-5. [Ref. 1:p. 15]

The commander reviews all of the previously determined C-ratings for each area (personnel, equipment on-hand, equipment readiness, and training) to determine the unit's overall rating. The lowest of these unit status ratings is normally selected, but the commander can subjectively upgrade or downgrade the overall rating if it does not represent the unit's true status. If one or more

areas are rated as C-5, then the overall rating must be the same. Individual resource areas cannot be subjectively changed either.

D. REPORTING REQUIREMENTS

In addition to the report preparation instructions, AR 220-1 specifies other reporting requirements. These requirements include: the frequency of report submission, the types of reports which are to be submitted, the types of units which are required to submit a USR, and the reporting channels to be used for USR submission.

1. Frequency and Type of Reports

Army Regulation 220-1 specifies that Unit Status Reports are normally submitted the 15th day of each month (unless otherwise indicated due to special circumstances).

There are three types of reports required by AR 220-1. They are defined as follows:

a. Regular reports. Provide key status indicators for AA level units. These reports are submitted by battalions, separate companies, and separate detachments.

b. Composite reports. Provide a balanced report that considers the status of elements that make up a major combat unit. These reports are submitted by divisions, separate brigades, divisional brigades operating separately, Special Forces groups, and armored cavalry regiments.

c. NATO contingency reports. Show the status of units measured against the equipment that they would use in NATO. These reports are submitted by POMCUS units. [Ref. 1:p. 3-4]

This thesis will deal only with regular reports. as the other two types are outside the scope of the research.

Unit Status Reports are required to be maintained on file for two years, after which they will be destroyed in accordance with AR 380-5.

2. Types of Units

The following type units must prepare and submit reports:

a. Battalions, separate companies, and separate detachments or equivalent size units that are parent units (identified by an AA level unit identification code (UIC)),and are organic to a division, separate brigade, Special Forces group, divisional brigade operating separately, or armored cavalry regiment. In addition, each division, separate brigade, Special Forces group, divisional brigade operating separately, and armored cavalry regiment will prepare a composite report in accordance with paragraphs 3-12 through 3-14 of AR 220-1.

b. MTOE units not organic to a division, separate brigade, Special Forces group, divisional brigade operating separately, or armored cavalry regiment that are company size or larger that are parent units (identified by an AA level UIC). In addition, parent level combat electronic warfare, chemical, medical, and intelligence detachments will submit reports.

c. TDA units that HQDA has designated as reporting units in Appendix D of AR 220-1.

d. MTOE headquarters units whose subordinate units report individually will submit a report for the unit headquarters only if it is a separate company or equivalent size unit.

e. MTOE and TDA company size or larger units (identified by an AA level UIC) subordinate to a USAR training division or separate brigade will submit reports. Training divisions and separate brigades will forward these reports and use the data from them to submit a composite report in accordance with paragraphs 3-12 through 3-14 of AR 220-1.

f. General support force units will not report unless HQDA so directs. [Ref. 1:p. 4]

3. Reporting Channels

Reporting channels for the Unit Status Report are to installation or division level, Major U.S. Army Reserve Command (MUSARC), or the State adjutant general, or the numbered armies in the continental U.S. (CONUSA). There the reports are transposed to machine readable format and then forwarded to the major Army commander in the unit's chain of command. The reports are forwarded from there to the OJCS and HQDA. Figure 2.2 is a diagram of the unit status reporting channels used by Active and Reserve units.

E. SUMMARY

This chapter has briefly described the Unit Status Reporting System--including report preparation and reporting requirements. The current manual preparation of the Unit Status Report is the problem identified in this thesis. The next chapter is an overview of the theory used to develop the data model for the Unit Status Reporting System.

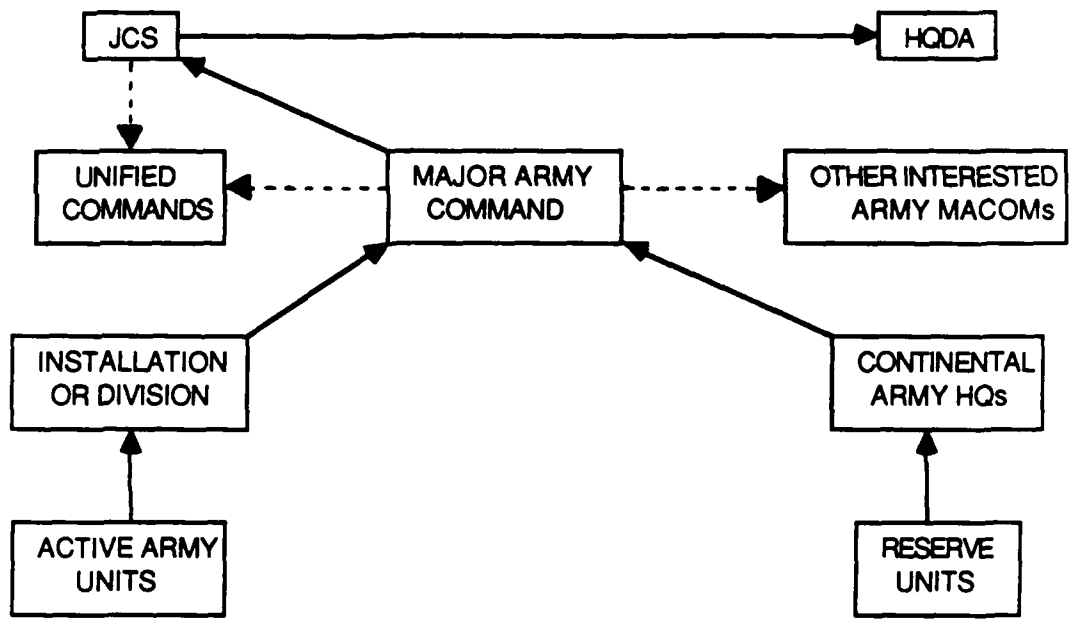


Figure 2.2 Unit Status Reporting Channels

III. OVERVIEW OF THE THEORY

A. INTRODUCTION

The Unit Status Reporting System is currently based on a traditional, manual record-keeping system. A database system is the proposed solution to the problems identified in Chapter I.

The research material summarized in this chapter represents an overview of the theory used to develop a database model for the Unit Status Reporting System. The terms, descriptions, and reference summaries outlined facilitate the understanding of concepts used in the data analysis, and later in the findings and recommendations of this research effort.

The chapter is divided into five parts. After the introduction to the chapter, the second part is an overview of database systems. The third presents an overview of data models, followed by a review of structured systems analysis. The fifth part is a summary.

B. DATABASE SYSTEMS

1. Definitions

A database is defined as a collection of stored operational data used by the application systems of some particular enterprise. Operational data consists of basic entities about which information is to be recorded, and the

relationships linking those basic entities together. Operational data is data about the enterprise's operation (i.e., personnel data, training data, equipment data, etc.). Therefore operational data does not include the input data, the output data, work queues, temporary results, or transient information. Input data is information entering the system for the first time. It may change or become part of the operational data. Output data are messages and results coming from the system. It is derived from the operational data. [Ref. 2:pp. 9-10] A database is a part of a database system.

A database system is a computerized record-keeping system. The user's files are integrated into a database which is processed indirectly by the user's application programs. The overall purpose of a database system is to maintain information and allow the user access to the information on demand.

2. Components of a Database System

A database system has four major components: data, hardware, software, and users. These components interact to satisfy the user's needs. Figure 3.1 illustrates these four components of a database system.

Data is both integrated and shared. Integrated means that the database may be thought of as a unification of several otherwise distinct data files, with any

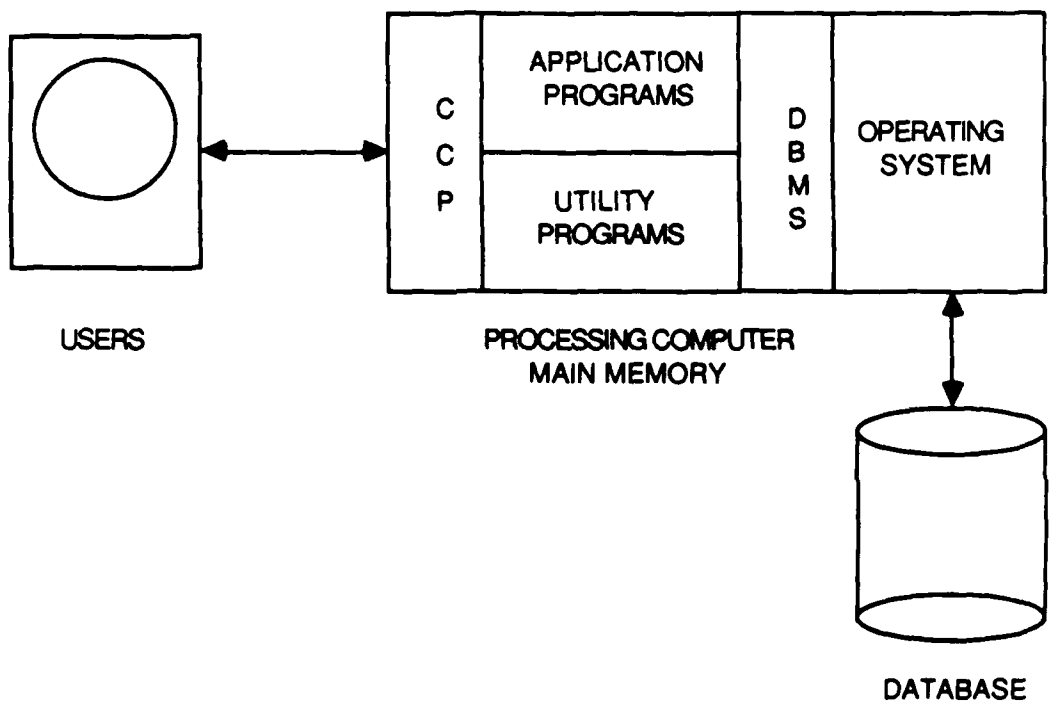


Figure 3.1 Database System Components

redundancy among those files either wholly or partly eliminated. Shared means that individual pieces of data in the database may be shared among several different users, in the sense that each of those users may have access to the same piece of data. [Ref. 2:p. 7]

Hardware consists of the secondary storage devices on which the database physically resides, along with the associated input and output (I/O) devices, device controllers, I/O channels, etc.

Software provides the interface between the users and the database. The software is a database management system (DBMS) which handles all requests from the users for access to the database.

Users fall into three broad classes. Application programmers are responsible for writing the application programs that use the database. End-users interact with the system to use the database. The database administrator (DBA) is responsible for centralized control of the database system.

3. **Advantages of a Database System**

Database systems provide users with several distinct advantages over traditional record-keeping methods. Among them are the following:

a. Compactness--the size of any necessary paper files is reduced.

b. Speed--the computer locates, retrieves, and updates data faster than a person can.

c. Less drudgery--mechanical tasks are eliminated.

d. Currency--information is continuously accurate and up-to-date.

e. Centralized control of operational data.

Of these advantages, centralized control appears to be the most significant. Centralized control means having a single individual or organization (the DBA) responsible for the operational data. Advantages to having this centralized control are as follows:

a. Reduced redundancy--through the integration of files.

b. Avoid inconsistency--due to reduced redundancy.

c. Data can be shared--by different users and applications.

d. Standards can be enforced.

e. Security restrictions can be applied--through access control and security checks.

f. Integrity can be maintained--through reduced redundancy and checks for accuracy.

g. Conflicting requirements can be balanced. [Ref. 2: pp. 12-15]

4. Architecture of Database Systems

A database system is based on a general three level architecture. These levels are an internal level, an external level, and a conceptual level. The internal level is concerned with the way data is actually stored, or how it 'looks' to the computer. It is also referred to as the physical view, because it describes how data is physically arranged and how it is allocated to files. The external level is concerned with the way data is viewed by the

individual users (i.e., the orderly room, training section, supply section, or maintenance section of a unit). It is also referred to as a logical view, because it describes how the data would be presented to the different users. The conceptual level is concerned with a community user view, or the total database content. It is also referred to as the complete logical view of the data. All three views must be defined before the database can be processed. Figure 3.2 illustrates the difference between logical and physical views.

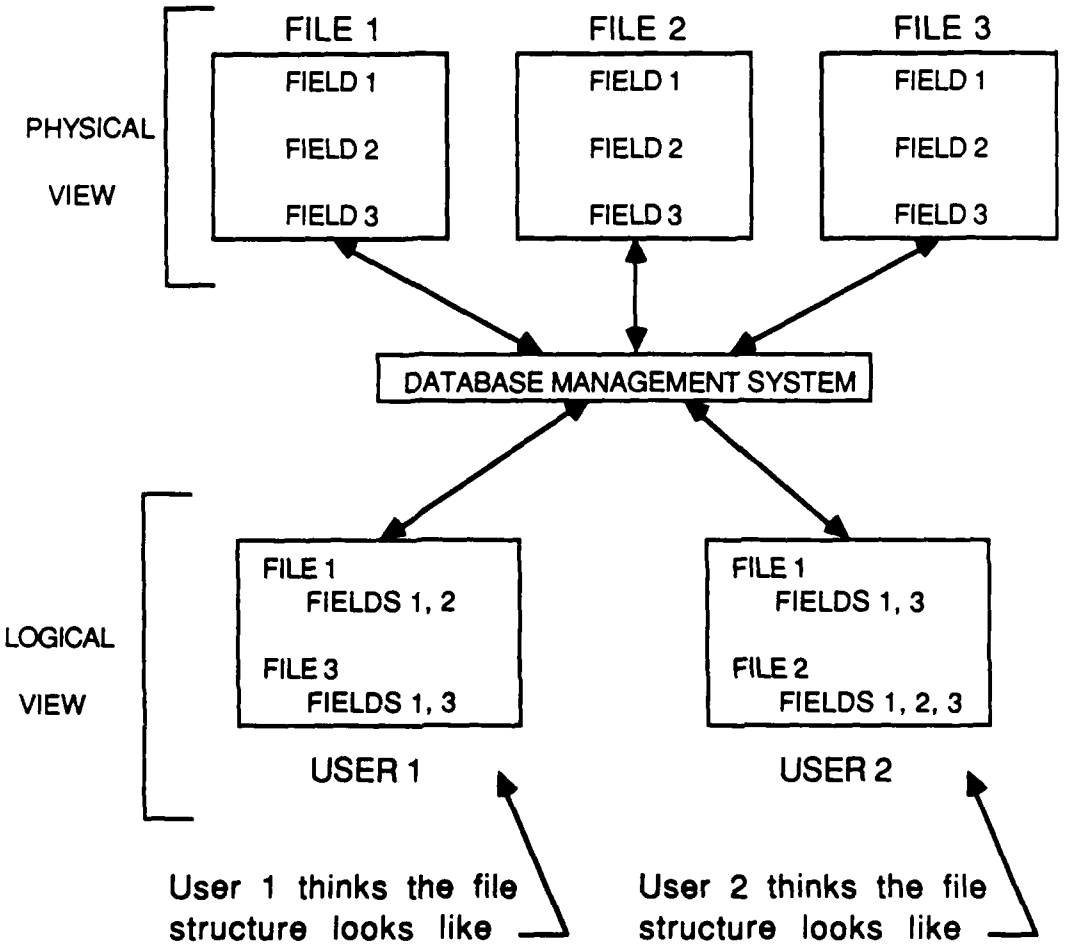
The external and conceptual levels deal with views. A view may be looked at as a "virtual" table. It does not exist in its own right, but it appears to the user as if it does. A view is not supported by its own physically separately stored data, but rather it is defined in terms of other stored tables. So, a view is a "window" into a real table. Also, it is dynamic in that changes to the real table it is based on will automatically be visible to the view (and vice versa). Views are advantageous for the following reasons:

a. They provide logical data independence.

b. They allow the same data to be seen by different users in different ways at the same time.

c. The user's perception is simplified.

d. Automatic security is provided for hidden data (data not visible thru some given view). [Ref. 2:p. 184]



The two logical views are different from each other, and from the actual physical file structure.

Figure 3.2 Physical and Logical Views

These levels of architecture are an important consideration, and should be defined during the development of a database system.

5. Database Development Stages

The database development process consists of four stages. They are: specifying the requirements, evaluating the alternatives, designing the database, and implementing the database. Specifying the requirements includes problem definition, feasibility assessment, and specifying detailed requirements. Evaluating the alternatives includes specifying the alternatives, and selecting one alternative. Designing the database includes specifying and ordering hardware, designing program logic, designing the data structures, designing the procedures for users and operators, and defining the user organizational structure. Implementing the database includes installing and testing new hardware, coding and unit testing programs, converting data, documenting procedures, training users, and testing in parallel. A methodology which may be used in database development is structured analysis (to be discussed in Section D of this chapter). One consideration when developing a database system, should be what data model the system is to be based on.

C. DATA MODELS

1. Definition

Data models are how information can be represented and manipulated within the formal framework of a database system. The types of data structures which are visible to the user and the operations allowed on these structures are determined by the data model. The data model determines a set of possible application models (the description of the structures and operations in a specific system). The purpose and objectives of data models help to clarify why they are used.

2. Purpose and Objectives of Data Models

The primary purpose of data models is to provide some formal means to represent information and some formal means to manipulate that representation. A data model can also be thought of as an abstract programming language. The data definition language (DDL) provides the rules (syntax) for declaring different variables within the database. The data manipulation language (DML) provides the manipulative operators for the data model. A database management system (DBMS) is merely an implementation of some specific DDL and DML of a data model.

In achieving this purpose, data models must meet specific objectives, some of which are:

a. To serve as a focus for database system architecture.

b. To serve as a tool for checking the correctness of specific database system implementations.

c. To provide a basis for the development of database design techniques.

d. To provide a basis for the design of specific data definition languages and data manipulation languages.

e. To allow functional requirements and performance requirements to be separately addressed (physical data independence).

f. To allow individual requirements and community requirements to be separately addressed (logical data independence).

g. To provide a yardstick for the evaluation and comparison of specific database systems.

h. To serve as an educational vehicle.

i. To serve as a vehicle for research into various aspects of database management. [Ref. 3:p. 186]

To satisfy these objectives, data models have been designed consisting of several components.

3. Main Components of a Data Model

A data model generally consists of three main components: a collection of object types (the basic building blocks of the data model), a collection of operators (the means for manipulating the database), and a collection of general integrity rules (to constrain the set of valid states). In addition, a variety of operations are available in most data models. They include:

a. Retrieval--defining a set of data as the result of a query.

b. Update--defining a set of data to be modified or deleted.

c. Defining the set of data to be accessible thru a view.

d. Defining access rights--defining a set of data to which authorization can be granted.

e. Defining stability requirements--defining the scope of a locking operation.

f. Defining some specific integrity constraint--beyond those built into the model itself. [Ref. 3:p. 182]

The three main components are found in all data models. The operations listed above may not be available in a specific data model, but may be available in the specific DBMS chosen. There are over thirty different data models in existence today. Different data models are appropriate for different applications. Six common data models are: the semantic data model, the entity-relationship model, the relational data model, the CODASYL DBTG model, the DBMS specific model, and the ANSI/X3/SPARC data model. This thesis will focus on the use of a semantic data model in the development of the database. The reason for this choice is that semantic data models are not dependent on any specific computer system or DBMS. Additionally, semantic data models capture more of the meaning of an application environment than is possible with the other data models. This is vital if someone else is to be able to use the model designed in this thesis with a specific DBMS of their choice.

Semantic data models are logical data models in which the structures and operations permitted are explicitly meant to represent certain types of real-world information [Ref. 4:p. 4]. They provide a vocabulary for expressing not only the structure of database data, but also the meaning. There are some useful semantic concepts which should be

mentioned here. They are: an entity is a distinguishable object of some particular type (e.g., Personnel, Equipment, etc.); a property is a piece of information that describes an entity (e.g., Name of SM, Number of Item's LIN, etc.); an association is a many-to-many (-to-many, etc.) relationship among entities (e.g., LIN {serial# / registration#}); a subtype is when entity type Y is a subtype of entity type X if and only if every Y is necessarily an X (e.g., a serial# is a subtype of a LIN). The real world consists of entities that possess properties, and are connected together in associations. [Ref. 2:pp. 610-611] There are several types of semantic data models, one of which is the Semantic Database Model (SDM).

4. The Semantic Database Model

The Semantic Database Model is a high-level, semantics-based database model which was developed by Michael Hammer and Dennis McLeod in 1981. It was designed to provide features for the natural modeling of database application environments.

The SDM was developed with the idea of filling the gaps left by other database models. Some of the criteria it meets are as follows:

a. The constructs of the database model should provide for the explicit specification of a large portion of the meaning of a database.

b. A database model must support a relativist view of the meaning of a database, and allow the structure of a database to support alternative ways of looking at the same information.

c. A database model must support the definition of schemata that are based on abstract entities. [Ref. 5:p. 354]

With these criteria in mind, SDM was developed with the following general principles of database organization underlying its design:

a. A database is to be viewed as a collection of entities that correspond to the actual objects in the application environment.

b. The entities in a database are organized into classes that are meaningful collections of entities.

c. The classes of a database are not in general independent, but rather are logically related by means of interclass connections.

d. Database entities and classes have attributes that describe their characteristics and relate them to other database entities. An attribute value may be derived from other values in the database.

e. There are several primitive ways of defining interclass connections and derived attributes, corresponding to the most common types of information redundancy appearing in database applications. [Ref. 5:p. 355]

As stated in item c. above, an SDM database is a collection of entities that are organized into classes. The structure and organization of an SDM database is specified by an SDM schema (logical view), which identifies the classes in the database. [Ref. 5:p. 355]

The following is an example of one class of an SDM schema for the Unit Status Reporting System:

LIN

description: all line item numbers for types of equipment the unit is authorized.

```
member attributes:
  Number_of_Item's_LIN
    value class:  LINE_ITEM_NUMBERS
    may not be null
    not changeable
  Nomenclature_of_Item
    value class:  ITEM_NAMES
  Number_of_Item's_NSN
    value class:  NATIONAL_STOCK_NUMBERS
    may not be null
  Quantity_of_Item_Required
    value class:  INTEGERS
    may not be null
  Quantity_of_Item_Authorized
    value class:  INTEGERS
  Code_of_Item's_Equipment_Category
    description:   the major category of equipment
                   to which the item belongs.
    value class:  EQUIPMENT_CATEGORY_CODES
  Code_of_Item's_Equipment_Readiness
    description:  identifies whether the item is
                  full, partial,  or not mission
                  capable.
    value class:  EQUIPMENT_READINESS_CODES
  Code_of_Pacing_Item
    description:  identifies whether or not the
                  item is a pacing item.
    value class:  PACING_ITEM_CODES
  Code_of_Item's_2406_Reportability
    value class:  2406_REPORTABILITY_CODES

identifiers:
  Number_of_Item's_LIN
```

To further clarify this example, each class in an SDM schema has the following features:

a. A class name identifies the class (i.e., LIN). Each class name must be unique with respect to all class names used in a schema.

b. The class has a collection of members: the entities that constitute it. Each class in an SDM schema is a homogenous collection of one type of entity, at an appropriate level of abstraction.

c. The entities in a class may correspond to various kinds of objects in the application environment, including: concrete objects such as personnel or equipment on-hand; events such as date of birth; higher-level entities such as categorizations and

aggregations of entities; names, which are syntactic identifiers (strings) such as the class of all possible item names and the class of all possible calendar dates.

d. An (optional) textual class description which describes the meaning and contents of the class.

e. The class has a collection of attributes that describe the members of that class or the class as a whole. There are two types of attributes: member attributes describe an aspect of each member of a class; class attributes describe a property of a class taken as a whole.

f. The class is either a base class (one that is defined independently of all other classes in the database) or a nonbase class (one that does not have independent existence because it is defined in terms of one or more other classes). LIN is a base class, Serial_#/ Registration_# is a nonbase class.

g. If the class is a base class, it has an associated list of groups of member attributes; each of these groups serves as a logical key to uniquely identify the members of a class (identifiers). Number_of_ Item's_LIN is the identifier for the LIN class.

h. If the class is a base class, it is specified as either containing duplicates (the default) or not containing duplicates (explicitly stated). LIN contains duplicates. [Ref.5:pp. 356-357]

D. STRUCTURED ANALYSIS

1. Definitions

Analysis in general is the study of a problem before any action is taken. More specifically, with regard to a system, it is the study of some area or application which leads to the specification of some new system. Structured analysis is a step-by-step approach to system development. The analyst begins with a logical design, and by using the structured approach, gradually develops a physical design.

The traditional analysis approach has several major problems which the structured analysis approach attempts to overcome. These problems include a lack of tools and other communication problems, work allocation problems, and politics to mention a few. In attempting to solve these problems, the structured analysis approach has several goals.

2. Goals of Structured Analysis

The structured analysis approach has a number of well defined goals. They include:

a. The products of structured analysis must be highly maintainable.

b. The problems of size must be dealt with using an effective method of partitioning.

c. Graphics have to be used wherever possible.

d. The analyst must differentiate between the logical and the physical; responsibility must be allocated between the user and the analyst.

e. The analyst must build a logical system model for the user. [Ref. 6:p. 9]

3. The System Life Cycle

The structured approach to analysis is based on the system life cycle. This life cycle consists of seven steps: problem definition, feasibility study, analysis, system design, detailed design, implementation, and maintenance. The analyst moves from step to step, and must complete specific criteria before moving on to the next step.

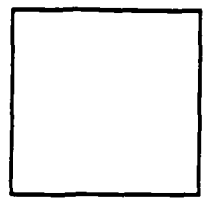
The analysis step of the system life cycle consists of eight components. They are: document the current physical system, derive the logical equivalent, define the new logical system, establish the man-machine boundary, perform a cost/benefit analysis, select an option, develop a physical constraints document for the system, and package the structured specification. The analyst has several structured tools which can be used in the systems analysis activity.

4. Structured Tools

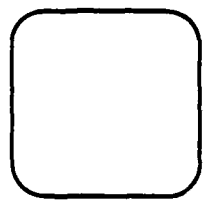
The tools available to the analyst for structured analysis are: the data flow diagram (DFD), the data dictionary, and some method of defining the logic of the processes (decision trees/tables, structured English, or tight English).

The first tool, the data flow diagram, is a graphic, partitioned, multidimensional, logical model of a system. The emphasis is on the flow of the data, with the flow of control being de-emphasized.

The data flow diagram uses four basic symbols: a square or double square to indicate sources or destinations of data, a rounded rectangle or a circle or "bubble" to indicate processes which transform data, an arrow to indicate the flow of data, and an open-ended rectangle to indicate a data store (see Figure 3.3). The sources or destinations are external entities which are outside the

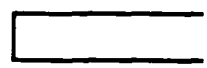


Sources or destinations of data

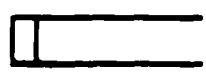


Processes which transform data

Flow of data



Data store



Duplicate Data Store

Figure 3.3 DFD Symbols

boundaries of the system. They are the originators or receivers of transactions. Processes transform incoming data flows into outgoing data flows. Each contains a description of the function it performs, and a unique identifying number. Data flows merely show the direction of flow of the data on interfaces between components of the DFD. A description of its contents is beside it. Data stores are files, temporary holders of data. Processes can have access to either store data, read data, or both.

Guidelines have been developed for drawing data flow diagrams. Some of them are as follows:

a. Identify the external entities involved. This involves deciding on a preliminary system boundary. Data flows are created when something happens in the outside world that affects the system.

b. Identify the scheduled inputs and outputs expected. Try to discover logical groupings.

c. Identify the inquiries and on-demand requests for information. Specify one data flow that defines the information given to the system. Specify another data flow that tells what is required from the system.

d. Take a large sheet of paper and start at the left with the external entity that seems to be the prime source of inputs. Draw data flows that arise, processes that are logically necessary, and data stores that are required. Don't number the processes until the final draft.

e. Draw the first draft freehand.

f. Check the first draft against the list of inputs and outputs.

g. Draw a clearer second draft with a minimum of crossing data flows.

h. Have the user check the second draft.

i. Produce a lower-level explosion of each process defined on the second draft. Include error and exception handling. Produce a third draft of the top-level diagram. [Ref. 7:pp. 34-35]

The second tool is the passive data dictionary which is data about data. It provides information about data flows, data stores, data structures, and data elements. Data flows are the paths along which the data structures move. Data stores are the places where data structures are temporarily stored. Data structures are made up of data elements, other data structures, or a mixture of both. Data elements are the smallest pieces of data, which cannot be decomposed any further. When describing a data element, the minimum amount of information to include is a name and a description. The name of the data element should be as meaningful as possible. The description briefly tells the meaning of the data element. Additionally, the data dictionary entry can include aliases for the data element, any related data elements, the range and meanings of values of the data element, the length of the data element, and other editing information if known.

Data dictionaries provide seven different types of output. The following is a list of these outputs:

a. An ordered listing of all entries or various classes with full or partial (summarized) detail.

b. Composite reports.

c. Cross-reference ability.

d. Finding a name from a description.

e. Consistency and completeness checking.

f. Generation of machine-readable data definitions.

g. Extraction of data dictionary entries from existing programs. [Ref. 7:pp. 63-66]

The third tool is used to define the logic of the processes, by describing the structure of the logic and expressing policies in a complete, unambiguous way. There are several methods available for defining the logic.

Decision trees are best used for logic verification or moderately complex decisions which result in up to ten to fifteen actions. They are useful for presenting the logic of decision tables to users. Decision tables are best used for problems involving complex combinations of up to five or six conditions. They can handle any number of actions. Large numbers of combinations of conditions can make decision tables unwieldy. Structured English is best used wherever the problem involves combining sequences of actions with decisions or loops. Tight English is best used for presenting moderately complex logic once the analyst is done so no ambiguities can arise. [Ref. 7:p. 107]

When used together, these three tools enable the analyst to develop specific documentation of the system being analyzed.

E. SUMMARY

This chapter provided an overview of the theory used to develop a data model for the Unit Status Reporting System. It included database systems, data models, and structured analysis.

The next chapter will discuss the actual development of the database model, from specifying the requirements to designing the database model.

IV. DEVELOPMENT OF THE DATABASE MODEL

A. INTRODUCTION

This chapter describes the actual development of the database model for the Unit Status Reporting System. The theory presented in Chapter III forms the guidelines for the development, while the background information in Chapter II provides the data for the system to be based on.

In presenting the development process, the chapter is divided into six parts which coincide with the stages of database development. A brief introduction precedes the description of the specification stage. The third part describes the evaluation stage, and the fourth, the design stage. A description of the user interface in the development process is followed by a short summary to conclude the chapter.

B. SPECIFYING THE REQUIREMENTS

In this first stage of the database development process, there are two phases. The first phase begins with problem definition and concludes with feasibility assessment. In phase two, the detailed requirements for the Unit Status Reporting System are specified.

1. Problem Definition and Feasibility Assessment

The purpose of the first phase is to answer two key questions: what is the problem, and is there a feasible solution. The problem is defined in general terms at this time. A written statement of the objectives and the scope of the problem is prepared by the analyst (or database developer). It is critical at this point in the development process that the user and the developer see the problem in the same light, and this written statement helps assure this. The statement of scope and objectives is revised during the feasibility assessment phase, and is then included as part of the feasibility assessment report. An example is found in Appendix B.

The feasibility assessment involves developing gross estimates of the costs, schedules, and technical difficulty of completing the project. It is a high-level, capsulized version of the entire process and should be relatively brief. Its task is only to get a sense of the scope of the problem, not to solve it. Users are interviewed to clarify the problem definition. A rough cost/benefit analysis of each of several possible alternative solutions should be done by the analyst (or database developer), and a course of action should be recommended. The feasibility assessment is found in Appendix B. Before moving on to the second phase of the specification stage, the user must review and approve what has been done so far.

2. Specify Detailed Requirements

The purpose of the second phase is to determine specifically what the users want the system to do. The key question to be answered is what must be done to solve the problem. Users are interviewed and their needs are defined and documented. This study utilized a questionnaire to aid in defining the user's needs. A copy of this questionnaire is found in Appendix C.

The strategy used to define and document user needs includes the use of data flow diagrams, a data dictionary, and process descriptions. Chapter III provides a detailed description of these three techniques. The data flow diagrams for the Unit Status Reporting System are found in Appendix D, and the data dictionary is found in Appendix E.

Users review the documentation produced during the first stage for accuracy and completeness, before moving on to the evaluation stage of the database development process.

C. EVALUATING THE ALTERNATIVES

In the second stage of the database development process, there are two phases. It begins with the developer specifying various alternatives, followed by the selection of one of those alternatives. The purpose of this stage is to determine the best approach to meet the user's needs.

1. Specifying Alternatives

Alternative solutions are generated by looking at the data flow diagrams and identifying alternatives that will satisfy the user's requirements. Things to consider are data, programs, hardware, procedures, and people. A more detailed evaluation should be done of all reasonable alternatives to help in selecting the best one. The three alternatives considered in this study were: to leave the current system as it is, to implement a file processing system, or to implement a database system.

2. Selecting One Alternative

Once the alternatives have been identified, the best one must be selected. This can be done subjectively (by evaluating the relative costs and benefits of each alternative and making an intuitive decision) or more objectively (by using a cost/benefit analysis) or by a combination of the two. A database system was selected in this study because the other two alternatives proved to be less than adequate solutions in meeting the user's requirements. A database system provides the integrated file processing necessary for the Unit Status Reporting System to be successfully implemented. Once the best alternative is selected, the next stage of the database development process (Designing the Database Model) can begin.

D. DESIGNING THE DATABASE MODEL

In the third stage of the database development process ther are two phases. It begins by defining the logical database structure, and is followed by defining physical database structure. The second phase (defining the physical database structure) is not completed in its entirety in this thesis. The remainder, as well as the fourth stage of the database development process (Implementation) are left for future development.

1. Define the Logical Database Structure

The purpose of this phase is to specify the logical format of the database (to specify the database as people view it). This includes specifying the records to be maintained, their contents, and the relationships among the records. The Semantic Database Model (SDM) schema is used to document the logical database structure. The SDM was described in Chapter III. The system requirements which were defined and documented during the first stage of the database development process are used as the input for this phase of design. The SDM schema for the database model is found in Appendix F. Once the logical design (SDM schema) is completed, the user reviews the documentation to identify any problems found which require correction. Then the next phase of the design stage (defining the physical database structure) can begin.

2. Define the Physical Database Structure

The purpose of this phase is to transform the logical database structure into a physical, DBMS-dependent design. The SDM schema produced during the previous phase is used as input to this phase of design. A physical schema (or specification) is produced, and the user views are defined. In the physical schema, the content of each record is defined in terms of the specific DBMS being used. This thesis does not address this part of database design, since an Army-wide standard DBMS has not yet been selected. In defining the user views, the designer specifies which user groups will view which parts of the database. Views were described in Chapter III, and the list of user views for the database model is found in Appendix G.

E. USER INTERFACE

Throughout the development of the database model, there was an interface with the user to insure communication of user needs. Captains Mark Hiatt and Rose Haas were the key points of contact in the 7th Infantry Division (Light), Division G-4 office. During the first stage of the development process (Specifying the Requirements), the user provided input to define the problem and specify requirements through personal interviews and the use of a questionnaire (Appendix C). The questionnaire was completed by representative units of the 7th Infantry Division

(Light). During the second stage of the development process (Evaluating the Alternatives), the user provided input to the selection of an alternative through personal interviews and review of the documentation. During the third stage of the development process (Designing the Database Model), the user provided input to the design process by reviewing the logical schema and the user views. This user interface was integral in designing a database model to meet user needs. In the future, this model can be used by units in the Army required to submit a Unit Status Report, once they have access to a computer with a DBMS.

F. SUMMARY

This chapter outlines the design of the database model through the first three stages of the database development process: specifying the requirements, evaluating the alternatives, and designing the database model. It also identifies the user interface. The next chapter will present recommendations and conclusions for this study.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The following conclusions have resulted from this study:

1. The present Unit Status Reporting System (specifically the data collection and report preparation process) appears to have room for improvement. This is in part due to the dispersion of data sources throughout the unit, and the time consuming nature of the actual report preparation.

2. Automation of the Unit Status Reporting System is feasible, and would require: integrated files of data, some direct data extraction from those files, and some manipulation of the already existing data in those files (counts and calculations). A relational or database system would satisfy these requirements. The Unit Status Report could then be generated using the data available in the files, except for those items which require the unit commander's judgement.

3. The ratings calculated for each individual area (personnel, equipment on-hand, equipment readiness, and training) would be suggested ratings based purely on the data in the database (and therefore these ratings would be objective). These ratings would still be subject to the unit commander's judgement whether to upgrade, downgrade, or accept them as given.

4. Additionally, a database system would provide flexibility for future expansion of the system to meet other present and potential unit record-keeping and reporting requirements.

5. Implementation of a database system would result in such benefits as reduced time spent in report preparation, reduced redundancy of data within unit files, reduced file size, increased data integrity, increased sharing of data within the unit, and centralized control of unit files.

6. There are two Operations Research problems within the Unit Status Reporting System. They are assignment problems involving personnel and equipment. The approach taken in this thesis requires a one-to-one relation, and does not necessarily ensure optimal utilization of resources. This approach is

necessitated by the regulation governing the Unit Status Reporting System (AR 220-1), and reflects the system as it is currently being utilized.

B. RECOMMENDATIONS

The following recommendations are made, based on the conclusions of this study:

1. That the proposed model for the Unit Status Reporting System be implemented using the Army-wide standard database management system (DBMS), once it has been chosen.

2. That the model be further expanded to include as many other unit record-keeping and reporting requirements as possible. This may help reduce time spent by unit personnel in record-keeping and report preparation.

3. That the two Operations Research problems be further researched, and their solutions be incorporated into the model.

APPENDIX A--ARMY REGULATION 220-1

This appendix contains an extract of AR 220-1. Relevant sections of the regulation are included to provide an easy reference for the reader. The last section of the regulation is a glossary of terms used throughout both the AR, and this thesis.

Chapter 1
General

1–1. Purpose

This regulation establishes the Unit Status Reporting System. It explains in detail what units are required to report, how reports are prepared, and how reports are submitted.

a. Reports submitted in accord with this regulation satisfy—

(1) The requirements of the Army portions of JCS Pub 6, volume II, part 2, chapter 1, section 6.

(2) Headquarters, Department of the Army (HQDA) needs for timely operational and management information.

b. Objectives of the Unit Status Reporting System are to provide—

(1) The current status of U.S. Army units to national command authorities (NCAs), the Organization of the Joint Chiefs of Staff (OJCS), HQDA, and all levels of the Army chain of command.

(2) Indicators to HQDA that—

(a) Portray Army-wide conditions and trends.

(b) Identify factors which degrade unit status.

(c) Identify the difference between current personnel and equipment assets in units and full wartime requirements.

(d) Assist HQDA and intermediate commands to allocate resources.

1–2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1–4. Responsibilities

a. *Deputy Chief of Staff for Operations and Plans (DCSOPS).* The DCSOPS will—

(1) Develop policies, standards, and procedures on unit status reporting.

(2) Collect unit status data, make edit checks for accuracy, and maintain an automated historical records file.

(3) Ensure that OJCS is receiving required reports in a timely manner.

(4) Process and distribute unit status data in a usable format to requesting Department of the Army (DA) agencies and commands.

(5) Establish an automated methodology for reviewing and analyzing unit status data.

(6) Develop and issue guidance in the use of unit status data during contingency operations, the deliberate planning process, and postmobilization.

(7) Act as focal point for the development of procedures for using unit status data as part of the Army Readiness Management System and to improve the status of Army units.

(8) Consider the impact on unit status when making planning, programing, and budget decisions.

(9) Keep the Army leadership apprised of the status of Army units.

(10) Task Army Staff agencies and major Army commands (MACOMs), as appropriate, to provide supplemental data, analyses of unit status data, and recommendations on how to improve unit status levels.

b. *Army Staff principals, to include the Chief, Army Reserve (CAR).* Army Staff principals and CAR will—

(1) Assign specific staff responsibilities for monitoring and utilizing unit status data within their area of responsibility.

(2) Use unit status data to identify problem areas and perform analyses to determine root causes and possible solutions.

(3) Establish and meet milestone dates for correcting problem areas.

(4) Consider problems identified in Unit Status Reports and the status of Army units when developing plans and programs.

(5) Assist Office of the Deputy Chief of Staff for Operations (ODCSOPS) in the development of procedures for using unit status data as part of the Army Readiness Management System and improving the status of Army units.

(6) Review unit status reporting guidance and submit recommended changes as appropriate.

c. *Commanders of MACOMs and the Chief, National Guard Bureau (CNGB).* Commanders of MACOMs and CNGB will—

(1) Assign specific staff responsibilities for supervision and coordination of the Unit Status Reporting System within their command.

(2) Ensure that subordinate units comply with unit status reporting requirements, to include the submission of reports in a timely and accurate manner.

(3) Monitor the status of assigned units, and analyze and correct noted problem areas.

(4) Report unit status conditions which they cannot resolve to the appropriate Army Staff agency.

(5) Manage resources to maximize the status of assigned units.

(6) Consider problems identified in Unit Status Reports and the status of assigned units when developing plans and programs.

(7) In coordination with ODCSOPS, manage unit inactivations, activations, conversions, and reorganizations to maximize the impact on unit status.

(8) Review unit status reporting guidance and submit recommended changes as appropriate.

(9) Commander, U.S. Army Training and Doctrine Command (TRADOC) will also—

(a) Use the guidelines outlined in appendix B to determine equipment readiness codes for equipment in type units and identify them in authorization documents.

(b) Use the guidelines outlined in appendix C to determine equipment pacing items for type units and identify them in authorization documents.

1–5. Concept

a. Designated modified table of organization and equipment (MTOE) and tables of distribution and allowances (TDA) units will submit recurring Unit Status Reports, requirement control symbol JCS 6–II–2–1–6, in accord with tables 2–1 and 2–2. These reports determine a unit's status by comparing selected personnel, equipment, and training factors to wartime requirements and by obtaining the commander's overall assessment of the unit.

(1) Unit Status Reports are not designed to measure all aspects of a unit's readiness; therefore, they cannot be used in isolation to assess unit readiness or the broader aspect of Army readiness. However, these reports do provide an indication of the extent to which a unit can perform as designed.

(2) Unit Status Reports provide a timely single source document for assessing key elements of a unit's status. However, these reports do not contain all of the information needed to manage resources. They identify problem areas, but in many cases these problems must be examined using more detailed personnel, logistic, and training administrative systems to determine causes and solutions. Reports are purposely kept streamlined to retain their operational utility.

(3) Peacetime reporting procedures will vary from procedures to be used when a unit is called-up, mobilized, deployed, or employed as outlined in paragraphs 3–22 and 3–23.

b. The Army's unit status objective is to develop and maintain units at the highest unit status level possible considering contingency requirements and resources available.

(1) To conserve resources, only those units needed early to support contingency plans are normally maintained at the highest resource levels. Other units are resourced at lower levels and assigned a lower authorization level of organization (ALO).

(2) No unit is expected to attain unit status ratings that exceed the level at which it has been provided personnel and equipment. Unit commanders will—

(a) Maintain the highest unit status level possible with given resources.

(b) Accurately assess and report unit status.

(c) Distribute unit equipment against mission essential requirements (equipment readiness code–A) on first priority basis.

(d) Train to the highest level possible with the resources that are available.

(3) Commanders at all levels will review subordinate unit reports and, within their ability, distribute/redistribute resources available to allow subordinates to maximize their status.

1–6. Unit status ratings

a. The status of measured resource areas (personnel, equipment on-hand, equipment

readiness, and training is assigned a numerical C-rating. In addition, each commander determines an overall unit status rating based on the unit's measured resource area ratings and his or her subjective judgement. A rating of C-1 is the highest; ratings of C-2, C-3, and C-4 are used to indicate a lesser unit status and ability to perform as designed. A rating of C-5 is used to show that a unit's status is being degraded due to an HQDA-directed action or program. Units reporting an overall C-rating of C-4 or C-5 will submit a mission accomplishment estimate. Remarks will be submitted to clarify C-ratings in accord with paragraphs 3-17 through 3-21.

b. The MTOE or TDA approved by HQDA, output from The Army Authorization Documents System (TAADS), that has been published in hard copy and distributed to the commander is a unit's basic authorization document and its basis for unit status reporting (AR 310-49).

(1) Unit status ratings are computed against the cadre column for cadre units; TOE Type B column for Type B units; and MTOE/TDA required columns for all other units. The document effective date (E-date) and the command and control number (CCNUM) displayed on the first page of the document will be used to ensure that a unit's most current hard copy authorization document is being used to complete Unit Status Reports.

(2) Several automated systems also contain military personnel and equipment authorization data derived from the TAADS system to enable centralized management. Among these are the Requisition Validation (REQVAL) System, Asset Control System (ACS), Standard Property Book System (SPBS), and Standard Installation/Division Personnel System (SIDPERS). Data in the automated systems are not always the same as in a unit's hard copy authorization documents; therefore, automated systems will not be used during unit status reporting to determine wartime requirements.

(3) All TDA units required to report will use their peacetime versus mobilization TDA for unit status reporting purposes.

c. The Unit Status Report is a commander's report. Command levels above the reporting unit will make changes only when necessary to correct errors detected during the editing process. However, commanders at installation or division level may add remarks to a lower unit commander's report (para 3-20).

d. Unit status ratings are mainly the end product of a total effort at all command levels Army-wide. Therefore, attributing a unit status rating solely to the leadership and managerial efforts of the reporting unit commander may disregard limitations, beyond unit influence, that exist within the system. The Unit Status Report is intended to serve only as an operations and management tool; it is not designed to evaluate commanders. Its full purpose can only be realized when the status of each unit is accurately determined and reported.

Chapter 2
General Reporting Instructions

2-1. General

General reporting instructions are contained in this chapter. Specific procedures for preparing Unit Status Reports are in chapter 3.

2-2. Units required to submit Unit Status Reports

The following type units must prepare and submit reports:

a. Battalions, separate companies, and separate detachments or equivalent size units that are parent units (identified by an AA level unit identification code (UIC)), and are organic to a division, separate brigade, Special Forces group, divisional brigade operating separately, or armored cavalry regiment. In addition, each division, separate brigade, Special Forces group, divisional brigade operating separately, and armored cavalry regiment will prepare a composite report in accord with paragraphs 3-12 through 3-14.

b. MTOE units not organic to a division, separate brigade, Special Forces group, divisional brigade operating separately, or armored cavalry regiment that are company size or larger that are parent units (identified by an AA level UIC). In addition, parent level combat electronic warfare, chemical, medical, and intelligence detachments will submit reports.

(1) MACOMs can designate additional detachments as reporting units; however, all such reports will be forwarded through OJCS to HQDA.

(2) PERSHING battalions and on-site air defense artillery battalions will report by individual battery (identified by a zero at the end of the UIC).

c. TDA units that HQDA has designated as reporting units in appendix D.

d. MTOE headquarters units whose subordinate units report individually will submit a report for the unit headquarters only, if it is a separate company or equivalent size unit.

e. MTOE and TDA company size or larger units (identified by an AA level UIC) subordinate to a USAR training division or separate brigade will submit reports. Training divisions and separate brigades will forward these reports and use the data from them to submit a composite report in accord with paragraphs 3-12 through 3-14.

f. General support force units will not report unless HQDA so directs.

2-3. Submission of reports

Tables 2-1 and 2-2 indicate when reports should be submitted.

Table 2-1
Report submission (units not called-up, mobilized, deployed, or employed)

Units: Newly activated units (note 1)	
As of date: 15th day of month after month of activation	
Arrival date at OJCS: Within 9 working days after the "as of" date	

Units: Active component units—Complete report	
As of date: 15th day of each month	
Arrival date at OJCS: Within 9 working days after the "as of" date	
Units: Active component units—Change report (note 2)	
As of date: As they occur	
Arrival date at OJCS: Within 24 hours	
Units: Reserve Component units—Complete report	
As of date: 15th day of April and October	
Arrival date at OJCS: Within 21 calendar days after the "as of" date	
Units: Reserve Component units—Change report (note 2)	
As of date: As they occur	
Arrival date at OJCS: Within 24 hours	
Units: POMCUS units—Active component (note 3)	
As of date: 15th day of January, April, July, and October	
Arrival date at OJCS: Within 12 working days after the "as of" date	
Units: POMCUS units—Reserve component (note 3)	
As of date: 15th day of April and October	
Arrival date at OJCS: Within 21 calendar days after the "as of" date	

Notes:
1. Reports are not submitted on augmentation cadre units or units activated under a cadre UIC.
2. Only required if a major overall rating change occurs as a result of unplanned or extraordinary circumstances (para 2-4d).
3. Units assigned POMCUS will submit a NATO contingency report in accord with paragraphs 3-15 and 3-16. Major combat units assigned POMCUS will submit a NATO contingency composite report.
4. The term "deployed" does not apply to units forward deployed in peacetime.

Table 2-2
Report submission (units called-up, mobilized, deployed, or employed)

Units: Units called-up or mobilized (note 1)	
As of date: Within 3 days of arrival at mobilization station. Thereafter, each time the unit has a change in its overall rating from the last report, up until the time the unit moves to its port of embarkation (POE).	
Arrival date at OJCS: Within 24 hours after the "as of" date	
Units: Units deployed or employed—Complete report (note 2)	
As of date: 15th day of each month	
Arrival date at OJCS: Within 9 working days after the "as of" date	
Units: Units deployed or employed—Change report (note 3)	
As of date: As they occur	
Arrival date at OJCS: Within 24 hours	

Notes:
1. The first report after arrival at mobilization station will be a complete report (para 2-4a), all others submitted while at the mobilization station will be change reports (para 2-4b).
2. Frequency and arrival date subject to revision by the theater commander.
3. Only required if a major overall rating change occurs as a result of unplanned or extraordinary circumstances (para 2-4d). Frequency and arrival date subject to revision by the theater commander.

4. The term "deployed" does not apply to units forward deployed in peacetime.

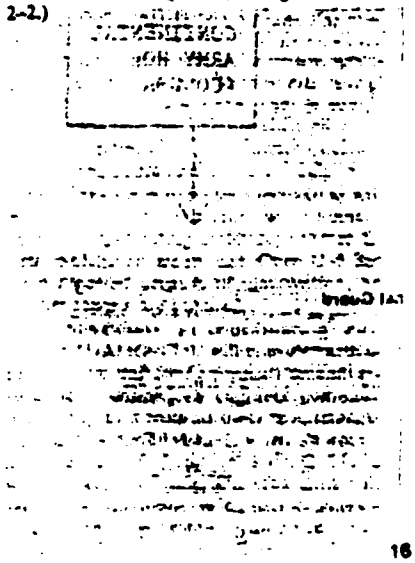
2–4. Categories of reports

a. Complete report.–All portions of sections A and B of DA Form 2715–R (Unit Status Report) must be completed, and appropriate portions of sections C through I (remarks). DA Form 2715–R will be locally reproduced on 8½-by 11-inch paper. A reproducible copy is located at the back of this regulation.

b. Change report. The report is required when a major overall rating change occurs as a result of unplanned or extraordinary circumstances; for example, a unit's overall rating drops overnight from C–2 to C–4 because a large portion of its equipment is lost due to a fire or military assistance requirement. It is prepared as a partial report to show the changed condition. Submit a fully completed section A and B of DA Form 2715–R. However, to the extent possible, the only portion of the data that needs to be recomputed/changed from the unit's last "complete" report is that data needed to reflect the cause/impact of the problem that resulted in submission of the "change" report. Submit a remarks card for the measured resource area in which the problem occurred, a READY card, and a REASN card (if subjective upgrade or downgrade is used). Other mandatory remarks specified in paragraph 3–19 are waived for a change report.

2–5. Reporting channels

a. The DA Forms 2715–R normally will be sent to installation or division level, Major United States Army Reserve Command (MUSARC) or the State adjutant general, or the numbered armies in the continental United States (CONUSA) where they will be transposed to machine readable format. They will then be forwarded to the major Army commander in the unit's chain of command, who will forward the reports to the OJCS and HQDA. (See figs 2–1 and 2–2.)



b. Major Army commanders reporting to OJCS will be designated by HQDA. They will inform their subordinate units and intervening installation commanders of specific reporting channels.

c. CONUS based Active Component company or detachment size units organic to a parent unit, but permanently assigned to a location or installation separate from the parent unit, will report through the installation to which assigned. The Unit Status Report of the parent unit will not include the separated subordinate unit. A copy of the report will be provided to the parent unit.

d. Roundout units will provide a hard copy of their Unit Status Report (DA Form 2715–R) to their parent Active Component unit unless these headquarters can get this data from a Worldwide Military Command and Control System (WWMCCS) terminal. Active Component units assigned a Reserve Component (RC) roundout unit will address the status of that unit and its impact on the parent unit in the remarks section of their report (new remarks submitted in June and December). (See para 3–19*b*(7).)

e. Units organic to divisions, separate brigades, Special Forces groups, and armored cavalry regiments, and other units that are located in States other than their parent unit, will provide copies of their Unit Status Reports to their parent unit.

2–6. Special reporting instructions

Reporting units will comply with the following special instructions as appropriate:

a. All units assigned prepositioning of materiel configured to unit sets (POMCUS) equipment must submit North Atlantic Treaty Organization (NATO) contingency reports (paras 3–15 and 3–16). Divisions, separate brigades, and armored cavalry regiments assigned POMCUS will submit NATO contingency composite reports.

b. Units not ready due to HQDA actions or programs will report C–5 as outlined below.

(1) Units will report C–5 (for the appropriate resource area(s) and overall rating) when authorized personnel and/or equipment levels are insufficient, when filled, to achieve a rating of C–3 or higher (includes Type B and cadre units).

(2) Units programed for inactivation will report C–5 when personnel or equipment drop to a C–4 rating or 90 days before E-date, whichever occurs last. Once C–5 has been reported because of inactivation, no further reports are required.

(3) MACOMs, in coordination with HQDA (DAMO–FD), will consider activation (a new unit being formed) or conversion (for example, an engineer company converting to a medical unit) requirements during programming and, when appropriate, direct qualified units to report C–5 for a specific period of time. Directed units will report C–5 for the specified period unless a C–3 rating in personnel, equipment, and training is attained sooner. Units, particularly Reserve Components units, may qualify to report C–5 for several years due the time required to requisition and receive MTOE equipment, recruit and qualify authorized personnel by Military Occupation Specialty (MOS), and develop the collective skills necessary for mission accomplishment.

(4) MACOMs are allowed to designate units undergoing an HQDA-directed action or program, other than activation or conversion (for example, reorganization from an H-series to a J-series MTOE and Cohesion, Operational Readiness Training (COHORT) transition), as C–5 if these changes will cause the unit to drop to a C–4 rating in personnel, equipment, or training. A C–5 rating may be reported until the unit is C–3 or better in personnel, equipment, and training, as long as rating limitations are caused by an HQDA-directed action/program.

(5) If a unit is not manned or equipped but is registered with the OJCS as an active element of Army operating forces, the parent unit installation will submit a one-time report with a C–5 rating. Further reports are required only if the situation changes.

(6) Units reporting C–5 must provide READY remarks indicating why the unit is C–5, to include a brief description of the action that caused the C–5 rating to occur (para 3–18). A unit that reports C–5 in a measured resource area must also report C–5 overall. In addition, reason code "N" must be used in block 21 of section B, DA Form 2715–R.

(7) MACOMs must review the status of units awarded a C–5 rating every 3 months for Active Component units and every 6 months for Reserve Component units to determine if a C–5 rating is still warranted and to evaluate actions being taken to improve the status of the unit.

(8) If one or more units subordinate to a major combat unit are allowed to report C–5 then a review will be made to determine if the parent unit should also report C–5. Units submitting composite reports will omit subordinate units reporting C–5 from measured resource area rating computations (para 3–13*a*). However, the number of subordinate units reporting C–5 will be subjectively considered in determining the parent unit's overall rating. If the number of C–5 subordinate units is degrading the status of the parent unit below a C–3 level of operations, the parent unit will designate the appropriate resource area and its overall rating as C–5 (must be approved by a MACOM). The number of subordinate units reporting C–5 will be recorded in the READY remarks section of the report (para 3–18*b*(1)(*e*)).

(9) COHORT battalions will report an overall C-rating of C–5 in the last report submitted before the unit moves to a new duty station. This rating will remain in effect until the unit's next report is submitted (para 2–7*d*).

c. When it is not possible to determine a personnel or equipment C-rating (for example, maintenance records accidently destroyed or the unit's maintenance system does not provide the required records) report code 6 and consider the area subjectively when determining the overall unit rating. Code 6 may not be used for the overall rating. Use regular procedures for other measured areas and provide narrative comments in the remarks section of the report on the unit's ability to accomplish assigned missions. Code 6 is not a C-rating, it simply means that a rating cannot be determined. Units submitting composite reports will omit subordinate units reporting code 6 from specific resource area computations when the unit commander determines that this will produce a more accurate rating. Otherwise, the unit submitting a composite report must report code 6 for that area.

d. Units will report against a new MTOE/TDA on the E-date of the change or prior to the E-date if in the subjective opinion of the commander the unit is more like the new MTOE/TDA than the old one and reporting early will not degrade the unit's overall status rating.

e. All units will designate in the READY remarks section of the report the MTOE/TDA they are organized under, the E-date of that document, and the unit's CCNUM. (See para 3–18*b*(1).)

2–7. Excused from reporting

In unusual cases, units or elements of units may be excused from recurring reporting requirements. For example, units may be excused from reporting during the conduct of special missions or training. Approval authority is HQDA for battalion size and larger units, and MACOMs for units smaller than battalion. Change reports, however, will still be submitted as required by tables 2–1 and 2–2.

a. Units returning from lengthy OCONUS missions that are given block leave will not receive an exemption from unit status reporting.

b. Units activated under a carrier UIC are not required to submit reports until the effective date of the MTOE/TDA.

c. Non-COHORT battalions assigned a COHORT company will exclude that unit from their Unit Status Report when it is in movement on the "as of" date of a report.

d. COHORT battalions will be excused from reporting when the main body is in movement on the "as of" date of a report, until one reporting period after the arrival of the last element of the main body at the new duty location.

e. Subordinate unit exclusion or exemption from reporting does not authorize units submitting composite reports to disregard those units in their reports. The following rules apply to all excused units except for activating units not yet required to report and COHORT units that are "in movement":

(1) To determine composite C-ratings, use the ratings submitted by the exempted unit in its last complete report (unless a change report has been submitted in accord with para 2–4b).

(2) Strength figures required by paragraph 3–19b(1)(*a*) will include data from exempted subordinate units.

f. Units will explain in the READY remarks section of the Unit Status Report when one or more subordinate elements are excused from reporting. The ability of the major combat unit to linkup with the subordinate unit will be addressed. For example, linkup is possible if a unit is excused from reporting due to Reforger training. However, if a unit is assigned to Multinational Force and Observers (MFO) duty linkup may not be possible due to the continued mission requirement.

2–8. Actions by higher commanders

a. Commanders above reporting unit level will not change ratings of subordinate units except when errors detected during the editing process need to be corrected.

b. Next higher commanders (at installation, division level, or below) will review reports of subordinate units for accuracy. They will provide remarks on RA2 cards (RA4 if a NATO contingency report) when on-hand assets in the process of being issued will change the rating(s) of the unit. RA2 cards (RA4 if a NATO contingency report) can also be used to provide other kinds of additional information regarding the status of subordinate units. (See para 3–20.)

c. Commanders of Reserve Component roundout brigades will provide intermediate assessment memorandums to division commanders. These letters will—

(1) Address the status of the brigade as a whole and provide an overall assessment of the brigade's ability to accomplish its assigned mission.

(2) Address key positive and negative factors that affect the brigade's ability to operate effectively.

(3) Be concise and not duplicative of the Unit Status Reports of subordinate units (maximum of two pages).

(4) Be considered by division commanders when selecting a training and overall C-rating for the division, for entry in the ROUNT remarks section of the Unit Status Report (para 3–19b(7)).

(5) Be provided to Active Component commanders by 15 May and 15 November, based on the roundout unit's 15 April and 15 October reports respectively.

d. Commanders above installation or division level who wish to submit comments on the status of reporting units will send them through the chain of command by separate communication.

e. For unit status reporting purposes, the State adjutant general will be considered as the installation commander for Army National Guard (ARNG) units. MUSARCs will be considered as installation commanders for U.S. Army Reserve (USAR) units.

2–9. Classification of reports

The originator will ensure that the appropriate security classification, authority for classification, and the duration of classification is assigned to each report. The following security classification guidance will apply to all reports and data prepared on and after the effective date of this regulation:

a. Unit Status Reports, the overall C-rating, and the C-rating for each measured resource area will be classified CONFIDENTIAL. In addition, specific resource fill level data will be CONFIDENTIAL when associated with an overall C-rating or the C-rating for a measured resource area. DA Form 2715–R and data entry cards are CONFIDENTIAL when completed.

b. If overall and/or resource area C-ratings are used to determine and define the status of a group of units the resulting figures will be classified CONFIDENTIAL, for example, the number or percentage of Active Component U.S. Army Forces Command (FORSCOM) units reporting C–1, C–2, C–3, C–4, and C–5.

c. No information with a classification higher than CONFIDENTIAL will be entered in Unit Status Reports.

d. Reports will be declassified as follows:

(1) Information classified by authority of a system security classification guide (SCG) or similar authority will be declassified in accord with the SCG instructions.

(2) Reports and ratings described in *a* and *b* above will be declassified 6 years after the date of the report. Documents containing this data will be marked with a specific declassification date based on the "as of" date of the report and the 6-year requirement.

e. This regulation may be cited as the classification authority for Unit Status Reports and ratings.

2–10. Retention of reports

Unit Status Reports will be retained on file for 2 years after which they will be destroyed in accord with AR 380–5.

Chapter 3
Instructions for Reporting Units

Section I
General

3–1. Reporting data

Reporting units use DA Form 2715–R to prepare Unit Status Reports. Data on these forms are converted to machine readable format for transmission to MACOMs, HQDA, and OJCS (chap 4). The relationship between report types, card types, and DA forms is shown at table 3–1. Figures cited in chapter 3 that do not appear in the text are located at the end of the chapter.

a. Section A, DA Form 2715–R, is used to report Army peculiar data. This form provides minimum essential supplemental data to help Army agencies analyze a unit's status. Army peculiar data are reported through, but normally not used by OJCS. (See fig 3–1.)

b. Section B, DA Form 2715–R, is used to report standard OJCS data. These data elements are used at all echelons from the reporting unit to the OJCS and, when needed, by the NCAs. (See fig 3–2.)

c. Sections C through I, DA Form 2715–R, are used for reporting remarks. (See fig 3–3.)

3–2. Types of reports

This paragraph defines the three types of reports which are required by this regulation.

a. Regular reports. Provide key status indicators for AA level units (paras 3–4 through 3–11). These reports are submitted by battalions, separate companies, and separate detachments.

Table 3–1
Relationships between report types, card types, and DA forms

DA forms	Units submitting regular reports	Units submitting NATO contingency reports
2715–R (sec A—Army only data)	KA1	KA3
2715–R (sec B—JCS req data)	K	KA4
2715–R	R(K)	RA5(KA4)
(Sec C through I—remarks)	RA1(KA1)	RA3(KA3)
	RA2(next higher)	RA4(next higher)

Notes—(Card descriptions):
1. K—Used to report basic data required by OJCS (sec B, DA Form 2715–R), by all units submitting regular Unit Status Reports, to include composite reports.
2. KA1—Used to report management data on measured resource areas as required by HQDA (sec A, DA Form 2715–R), by all units submitting regular Unit Status Reports, to include composite reports.
3. KA3—Used by all CONUS units with FORSCOM for submission of HQDA–required data for NATO contingency reports (sec A, DA Form 2715–R).
4. KA4—Used by all CONUS units with FORSCOM for submission of OJCS required data for NATO contingency reports (sec B, DA Form 2715–R).
5. R, RA5—Reporting unit commander's overall remarks (READY, REASN) keyed to K or KA4 cards.
6. RA1, RA3—Reporting unit commander's remarks (PSPER, MSPER, SGPER, ESRAT, ERRAT, TRRAT, and ROUNT) keyed to KA1 or KA3 cards.
7. RA2, RA4—Remarks by the reporting unit's next higher commander.

b. Composite reports. Provide a balanced report that considers the status of elements that make up a major combat unit (paras 3–12 through 3–14). These reports are submitted by divisions, separate brigades, divisional brigades operating separately, Special Forces groups, and armored cavalry regiments.

c. NATO contingency reports. Show the status of units measured against the equipment that they would use in NATO (paras 3–15 and 3–16). These reports are submitted by POMCUS units.

3–3. Standard rules and procedures

a. In all cases where percentages are to be entered and only two blocks are provided, report 100 percent or higher as 99.

b. When fractions need to be rounded to use a table or rating outline, "5" or more will result in rounding to the next higher number and anything less than "5" to the next lower number. For example: round 90.5 to 91, 90.4 to 90, 1.556 to 1.56, and 1.553 to 1.55.

c. The terms "higher or highest" and "lower or lowest" when used to describe C-ratings refer to the relative level of ability represented by the rating versus its numerical value, for example, a rating of C–1 is higher than a rating of C–4.

d. Compute all C-ratings against full wartime requirements (cadre column for cadre units; TOE Type B column for Type B units; and MTOE/TDA required column for all other units) as stated in applicable authorization documents.

e. Use the guidelines in figure 3–4 when completing DA Form 2715–R.

Section II
Regular Reports Prepared by Units Battalion and Squadron Size and Smaller (Sections A and B of DA Form 2715–R)

3–4. General

This section provides instructions for preparing DA Form 2715–R, sections A and B, for units battalion and squadron size and smaller.

3–5. Heading and unit identification data

Complete blocks 1 through 14 of sections A and B as follows:

a. Blocks 1–3 (card sequence number). Leave blank if DA Form 2715–R is to be sent to another headquarters for reducing to machine readable format. Headquarters reducing reports to machine readable format will enter a three-character number showing the sequence of the card within the report (chap 4).

b. Block 4 (classification). Enter C. All Unit Status Reports will be classified CONFIDENTIAL.

c. Block 5 (transaction code). Enter A, C, or D. Normally, the entry will be C, meaning a recurring or change report is being submitted. (See chap 4.)

d. Blocks 6 through 8 (card type). Enter card type code (table 3–1).

(1) *DA Form 2715–R, section A.* Units submitting NATO contingency reports enter "KA3." All other units enter "KA1."

(2) *DA form 2715–R, section B.* Units submitting NATO contingency reports "KA4." All other units enter "K."

e. Blocks 9 through 14 (unit identification code). Enter UIC of unit being described by the data in the report.

3–6. Personnel data

The Unit Status Report provides indicators of a unit's personnel status by developing a C-rating that is calculated by comparing available strength, available MOS trained strength, and available senior grade strength to wartime requirements. In addition, assigned strength and personnel turnover information is provided. Complete the personnel data portion of the report as follows:

a. Determine required strength. Use your unit's MTOE/TDA to determine required strength (cadre column for cadre units; TOE Type B column for Type B units; and MTOE/TDA required column for all other units). For MTOE organizations, additions provided by augmentation TDA for non-TOE missions are excluded from required strength computations.

b. Determine assigned strength percentage.

(1) Assigned strength percentage is based on a comparison of assigned strength and required strength.

(2) Assigned strength for Active Component units will equal the accountable strength of the latest personnel control number (PCN) (ACC–C27, Personnel Zero Balance Report), adjusted to the "as of" date of the status report. This is done by adding gains and subtracting losses which have occurred since the date of the unit strength RECAP Part II. Reports from SIDPERS USAR and ARNG will be used to obtain assigned strength data for Reserve Component units. Assigned strength for Reserve Component units includes Active Guard/Reserve (AGR) personnel assigned on a separate TDA, that would deploy with the unit if it was mobilized on the "as of" date of the report. Inactive National Guard personnel will not be included in strength computations or figures in this report.

(3) Active Component medical units (to include main and forward support battalions assigned medical personnel) that are scheduled to receive Office of The Surgeon General (OTSG) officer fillers/earmarked Army Medical Department (AMEDD) personnel will include them in assigned strength as follows:

(a) Compute assigned percentage on the basis of assigned personnel (who are not designated to report to another unit under alert, deployment, or combat conditions) and personnel who are designated for assignment to the reporting unit under alert, deployment, or combat conditions (refer to the Professional Officer Filler System (PROFIS)). Commanders who provide designated personnel will send feeder information, including preparation of replacements for oversea movement (POR) and MOS qualification of designees, to the gaining commander no later than 15 days before the end of the report period. This will permit gaining unit commanders to include necessary information in Unit Status Reports. Personnel will not be earmarked to more than one unit.

(b) The number of OTSG/AMEDD fillers a unit will receive will be recorded in the PSPER remarks section of the report (para 3–19b(1)*(c)*).

c. Determine available strength percentage.

(1) Available strength percentage is based on a comparison of available strength and required strength.

(2) Available strength is that portion of a unit's assigned strength that is available for deployment and/or employment.

(3) Appendix E provides criteria for determining personnel availability.

(4) Personnel on temporary duty in their wartime area of responsibility will be considered available.

(5) OTSG/AMEDD fillers will be considered as available (*b*(3) above).

d. Determine available MOS trained percentage.

(1) Available MOS trained personnel is based on a comparison of available MOS

To write	Write this	To distinguish from
letter Z	Z	number 2
letter V	V	letter U
number 1	1	letter I
number 7	7	letter L
letter S	S	number 5
number 0	Ø	letter O

Figure 3–4. Guidelines for completing DA Form 2715–R (handwritten entries)

trained personnel and required MOS trained personnel.

(2) Determine the number of MTOE/TDA personnel spaces required by identity (officer, warrant officer (WO), and enlisted) and by military occupational specialty code (MOSC).

(3) Determine the number of personnel included in the available strength of the unit by identity and MOSC. Match the trained available personnel against requirements. Personnel are to be considered as MOS trained for purposes of the Unit Status Report as follows:

(a) Match officers to officer spaces on a one-for-one basis. Officers may be considered MOS trained insofar as skill level is concerned when they have completed an officer basic course and the commander feels that they have the minimum skills needed to perform the wartime duties of their assigned position. They must also hold a grade within one grade higher or two grades lower than that required by MTOE/TDA.

(b) Using only the first three characters of the MOSC, consider WO and enlisted soldiers MOS trained when they can be used in their primary MOSC (PMOSC), secondary MOSC (SMOSC), additional MOSC (AMOSC), or an MOSC that can be substituted for the above (AR 611-201).

1. Where a special qualification indicator (SQI), language indicator code (LIC), or additional skill identifier (ASI) is specified in authorization documents it will not be considered in determining a unit's MOS rating. However, if a commander considers this skill to be essential to completion of assigned wartime missions and the soldier in this position does not have the required skill, this will be subjectively considered in determining a unit's training and overall rating.

2. If shortages of SQI, LIC, and ASI soldiers are degrading the status of a reporting unit this will be addressed in the remarks section of the report. See paragraph 3-19*b*(2)*(c)* and *(d)* for required ASI and LIC remarks.

(c) Reserve Component personnel awaiting initial active duty training (IADT) and prior service personnel in MOS producing training will not be considered MOS trained until they have successfully completed the required training.

(d) Personnel who have successfully completed an MOS awarding program (for example, on-the-job training (OJT) or school), but have not been officially awarded the MOS due to administrative delays, will be counted as MOS trained for unit status-reporting purposes.

(e) Personnel who are overstrength in a specific skill will not be counted as MOS trained. Any personnel holding a PMOS that is surplus to reporting unit requirements and who have been awarded an SMOSC, AMOSC, or a substitute MOSC that matches a unit required vacancy will be counted against that vacancy as MOS trained. For example, if a unit requires four cooks and has six MOS trained cooks in its available strength, count only four against the requirement for cooks. However, if any of the cooks have an SMOSC or AMOSC of truck driver, and if truck driver required vacancies exist, then count the two remaining cooks as available MOS trained drivers.

(f) OTSG/AMEDD fillers will be considered as MOS trained (*b*(3) above).

c. Determine available senior grade percentage.

(1) Available senior grade percentage is based on a comparison of the number of available commissioned officers, warrant officers, noncommissioned officers (grades E5 through E9), and required senior grade personnel.

(2) Commanders of COHORT battalions and non-COHORT battalions with one or more COHORT companies or batteries will count soldiers in grade E-4, who are designated to serve in E-5 positions in a COHORT unit and are included in the 10 percent skill level one substitution manning category, as E-5 when computing available senior grade strength. The number of E-4 counted as E-5 will be noted on a SGPER remarks card, for example, COHORT E4 15 (para 3-19*b*(3)*(a)*).

(3) OTSG/AMEDD fillers will be counted when determining available senior grade percentage (*b*(3) above).

f. Determine personnel turnover percentage.

(1) Personnel turnover percentage provides an indicator of unit turmoil by comparing the number of personnel reassigned, discharged, or separated during the 3 months preceding the "as of" date of the report to assigned strength on the "as of" date.

(2) Do not count transfers within the reporting unit.

g. Calculate a personnel rating and other personnel indicators using table 3-2, table 3-3, and the personnel C-rating outline (fig 3-5).

h. Complete personnel portions of sections A and B of DA Form 2715-R (figs 3-1 and 3-2).

(1) *Section A.*

(a) Blocks 15 through 17 (assigned strength percentage). Use percentage calculated in step 3 of outline.

(b) Blocks 18 through 20 (available strength percentage). Use percentage calculated in step 5 of outline.

(c) Blocks 21 through 22 (available MOS trained percentage). Use percentage calculated in step 7 of outline.

(d) Blocks 23 through 24 (available senior grade percentage). Use percentage calculated in step 9 of outline.

(e) Blocks 25 through 26 (personnel turnover percentage). Use percentage calculated in step 12 of outline.

(2) *Section B.*

(a) Block 22 (personnel rating). Use data from step 10 of outline.

(b) Blocks 23 through 25 (reason personnel rating not 1). If block 22 does not contain a 1, enter the personnel code from section II, appendix F which shows main reason the personnel rating is not 1; otherwise, leave blank.

Table 3-2
Rating using available strength percentage

Available strength: 90% or greater Rating: 1
Available strength: 80% to 89% Rating: 2
Available strength: 70% to 79% Rating: 3
Available strength: Below 70% Rating: 4

Table 3-3
Rating using available MOS or senior grade percentage

Available MOS or senior grade percentage: 85% or greater Rating: 1
Available MOS or senior grade percentage: 75% to 84% Rating: 2
Available MOS or senior grade percentage: 65% to 74% Rating: 3
Available MOS or senior grade percentage: Below 65% Rating: 4

Figure 3-6. Personnel C-rating outline

1. Identify your unit's required strength (para 3-6*a*).

2. Identify assigned strength (para 3-6*b*).

3. Compute assigned strength percentage.

Assigned strength percentage = Assigned strength ÷ Required strength X 100

4. Identify available strength (para 3-6*c*).

5. Compute available strength percentage and C-rating.

Available strength percentage = Available strength ÷ Required strength X 100

Use table 3-2 to determine an available strength C-rating.

6. Identify available MOS trained strength (para 3-6*d*).

7. Compute available MOS trained percentage and C-rating.

Available MOS trained percentage = Available MOS trained strength ÷ Required strength X 100

Use table 3-3 to determine an MOS trained C-rating.

8. Identify available senior grade strength (para 3-6*e*).

9. Compute available senior grade percentage and C-rating.

Available senior grade percentage = Available senior grade ÷ Required senior grade ÷ 100

use table 3–3 to determine a senior grade C-rating.

10. Determine your unit's overall personnel C-rating—it is the lowest C-rating determined in steps 5, 7, and 9 above—C–4 being lower than C–1. (This is your overall personnel C-rating unless HQDA and/or a MACOM directs or approves use of a C-rating of C–5 as outlined in para 2–6*b*).

11. Identify the number of personnel reassigned or discharged from the reporting unit during the preceding 3 months (para 3–6*f*).

12. Compute personnel turnover percentage.

Personnel turnover percentage = Number of personnel departed ÷ Assigned strength × 100

3–7. Equipment on-hand (EOH) data

The Unit Status Report provides indicators of a unit's equipment on-hand (EOH) status by developing a C-rating that is calculated by comparing the fill of selected equipment to wartime requirements. A rating for all of a unit's reportable equipment as defined in *a* below (to include pacing items) and a rating for each pacing item is determined. The unit's overall EOH rating is equal to the lower of these ratings. Complete the EOH data portion of the report as follows:

a. Determine reportable equipment and required quantities. Refer to your unit's MTOE/TDA to determine reportable equipment and required quantities (para 1–6*b*(1)). Reportable equipment is that equipment which—

(1) For MTOE units, is designated on a unit's MTOE as equipment readiness code "A" (ERC–A), primary weapons and equipment (app B).

(2) For TDA units, is listed on a unit's TDA and is designated in AR 700–138 or AR 18–25 as DA form 2406 (Materiel Condition Status Report), DA Form 3266–1 (Army Missile Materiel Readiness Report), or DA Form 1352 (Army Aircraft Inventory, Status, and Flying Time) reportable (until such time as TDA equipment is readiness coded).

(3) Has a requirement of 1, or greater, shown in the MTOE/TDA.

(4) Has not been designated as nonreportable/exempt from reporting (app G).

b. Determine quantity of reportable equipment on-hand.

(1) Quantity on-hand is determined from the unit property book.

(2) If a unit has a HQDA authorized substitute item of equipment on-hand instead of a required item of equipment specified in authorization documents, the substitute item will be counted as equipment on-hand for unit status reporting purposes. HQDA authorized equipment substitutes are listed in SB 700–20, appendix H.

(a) HQDA authorized substitutes, as reflected in SB 700–20, appendix H, are selected based on their ability to fulfill the operational requirements of the MTOE/TDA required item of equipment and logistical supportability. Recommended changes to this list may be submitted to HQDA, ODCSLOG (DALO–SMD).

(b) When authorized substitutes are approved for issue on a greater than one-for-one basis, calculate an adjusted quantity of fill for the required MTOE/TDA LIN. Then, compute the percentage of fill and determine the rating for the required MTOE/TDA LIN using table 3–4. For example, a unit's MTOE/TDA required column quantity for 10-kw generators is 10. The unit has no 10-kw generators but it does have thirty 5-kw generators on-hand. The percentage of fill for 10-kw generators is calculated as follows: Two each 5-kw generators are a substitute for 1 each 10-kw generator. Dividing 2 into 30, we find the adjusted quantity of fill for 10-kw generators is 15. Divide 25 into 15 and multiply by 100 = 60.0 or 60 percent. Percent fill for the 10-kw generator LIN is 60 percent. The unit has only 60 percent of the generators required. This LIN is rated C–4 (from table 3–4).

(c) If any authorized substitute items are significantly degrading a unit's status, comments to this effect should be made in the remarks section of the report.

(3) If authorization documents are changed before new equipment is available for fielding, commanders may designate selected on-hand equipment as in-lieu-of the newly required equipment for unit status reporting purposes. If in-lieu-of items are being considered on other than a one-for-one basis use the procedures in (2)*(b)* above. MACOMs will ensure that subordinate units properly apply the in-lieu-of policy. (See app G.)

(4) Reportable LINs having several components (for example, kits, sets, or outfits) will be reported as on-hand if property records show the LIN has been issued and is sufficiently complete to be used for its intended purpose. If the LIN is missing or depleted to the extent that supply action under AR 735–11 (for example, report of survey) is necessary to replace most of the set, do not count the set as on-hand. If supply actions are not required to replace the entire set and the criteria described above can be met, count the item as on-hand.

(5) Reserve Component units will include all reportable equipment at equipment concentration sites (ECS), displaced equipment training centers (DETC), regional maintenance training sites (RMTS), regional medical training centers (RMTC), unit training equipment sites (UTES), mobilization and training equipment sites (MATES), and week-end training sites (WETS).

(6) Do not count items borrowed from other units.

(7) Assigned equipment that is on loan, in maintenance, or otherwise outside the operational control of the reporting unit, but returnable within 72 hours or in time to meet the unit's requirement to attain loaded deployability (whichever is less), will be counted as on-hand for EOH computations if a system has been established to keep the commander informed as to the fill and maintenance status of this equipment. For example, watercraft and medical equipment assigned to a unit but outside the operational control of the unit due to CONUS storage will be counted as on-hand for EOH computations if it meets the conditions specified above. POMCUS equipment, POMCUS Uncovered Residual Equipment (PURE), and equipment prepositioned in a geographic area that differs from that of the reporting unit does not qualify as equipment on-hand under the provisions of this paragraph.

(8) Items on temporary loan from theater reserve stocks may be counted as on-hand if written policy states that these items are to be retained by the using unit in the event the unit is deployed or employed.

c. Determine pacing items. A unit's pacing item(s) can be determined by examining appendix C (until such time as pacing items are identified on MTOE/TDA). Not all units have pacing items.

d. Calculate EOH ratings using table 3–4, table 3–5, and the equipment on-hand C-rating outline (fig 3–6).

e. Complete equipment on-hand portions of sections A and B of DA Form 2715–R (figs 3–1 and 3–2).

(1) *Section A.*

(a) Blocks 27 through 29 (total line items rated). Use data from step 4 of outline. If none, leave blank.

(b) Blocks 30 through 32 (number of LINs rated 1). Use data from step 4 of outline. If none, leave blank.

(c) Blocks 33 through 35 (number of LINs rated 2). Use data from step 4 of outline. If none, leave blank.

(d) Blocks 36 through 38 (number of LINs rated 3). Use data from step 4 of outline. If none, leave blank.

(e) Blocks 39 through 41 (number of LINs rated 4). Use data from step 4 of outline. If none, leave blank.

(f) Block 42 (lowest pacing item C-rating). Use data from step 6*b* of outline. If a unit has no pacing items leave block 42 blank.

(2) *Section B.*

(a) Block 26 (EOH rating). Enter the EOH C-rating determined in step 7 of outline. If no reportable equipment, enter 1 or if HQDA/MACOM has directed/authorized use of a C–5 rating, enter 5. For units with pacing items, the EOH rating cannot be higher than the lowest pacing item C-rating.

(b) Blocks 27 through 29 (reason EOH rating not 1). If block 26 does not contain a 1, enter the equipment on-hand code from section II, appendix F which shows the main reason the EOH rating is not 1; otherwise, leave blank.

Table 3–4
Equipment on-hand criteria for high density lines (21 or more required)

LIN fill: At least 90 %
Category: C–1

LIN fill: At least 80 % but less than 90 % Category: C–2
LIN fill: At least 65 % (60 % for aircraft) but less than 80 % Category: C–3
LIN fill: Less than 65 % (60 % for aircraft) Category: C–4

Table 3–6
Equipment on-hand criteria for low density lines (20 or less required)

MTOE/TDA required quantity per line	Rating: C–1 All equipment	C–2 All equipment	C–3 Equipment other than aircraft	C–4 Aircraft
20	18	16	13	12
19	17	15	12	11
18	16	14	11	10
17	15	13	11	10
16	14	12	10	9
15	13	12	9	9
14	12	11	9	8
13	11	10	8	7
12	11	9	7	7
11	10	9	7	6
10	9	8	6	6
9	8	7	5	5
8	7	6	5	4
7	6	5	4	4
6	5	—	4	3
5	4	—	3	3
4	3	—	2	2
3	3	2	—	—
2	2	—	1	1
1	1	—	—	—

Note:
Enter at the MTOE/TDA required quantity column, read right to the first rating column quantity which is equal to or less than the on-hand quantity. Use the highest rating for which the actual fill of a given line qualifies. A dash signifies that the next column should be tried. All lines filled below the lowest quantity in the table are rated C–4.

Figure 3–6. Equipment on-hand C-rating outline

1. Identify your unit's reportable LIN and required quantities (para 3–7*a*)—ensure nonreportable/exempt LINs are subtracted (app G).

2. Identify reportable equipment that is on-hand—ensure authorized substitutes and in-lieu-of items are counted (para 3–7*b*).

3. Determine a C-rating for each reportable LIN (to include pacing items).

a. If the number of items required under a LIN is 21 or more, calculate a percent fill for that LIN; then use table 3–4 to obtain a C-rating for that LIN.

Percent Fill = Equipment on-hand ÷ Equipment required X 100

b. If the number of items required under a LIN is 20 or less use table 3–6 to obtain a C-rating for that LIN (except when counting substitute/in-lieu-of items on a greater than one-for-one basis).

4. Based on the results of steps 1–3 record the following:
Total number of reportable LINs (to include pacing items) =
No. LINs C–1 = No. LINs C–2 =
No. LINs C–3 = No. LINs C–4 =

5. Calculate an equipment fill rating based on all reportable LINs using data from step 4.

a. Determine an average LIN C-rating value for all LINs.

No. C–1 LINs X 1 = A No. C–2 LINs X 2 = B

No. C–3 LINs X 3 = C No. C–4 LINs X 4 = D

Average LIN C-rating Value = A + B + C + D ÷ No. total LINs = E

b. Determine the percent of LINs C–3 and C–4.

% LINs C–3 = No. LINs C–3 ÷ No. total LINs X 100 = F

% LINs C–4 = No. LINs C–4 ÷ No. total LINs X 100 = G

c. Determine a C-rating for all reportable LINs = H.

(1) H = C–1 if E is less than or equal to 1.30.

(2) H = C–2 if E is 1.31 to 2.20 unless the unit meets one of the following conditions which warrant downgrading (apply rules in sequence):

(a) If G (% LINs C–4) is greater than 20%, H = C–4.

(b) If G (% LINs C–4) X 2 plus F (% LINs C–3) is greater than 30%, H = C–3.

(3) H = C–3 if E is 2.21 to 3.1 AND G (% LINs C–4) is less than or equal to 20%.

(4) H = C–4 if E is greater than 3.1 OR G (% LINs C–4) is greater than 20%.

6. Calculate an equipment fill C-rating based on unit pacing items (para 3–7*c*).

a. Identify those reportable LINs that are also pacing items by using appendix C (until such time as pacing items are identified on MTOE/TDA).

b. Based on steps 3 and 6*a* identify which of your pacing items has the lowest calculated C-rating—C–4 being lower than C–1 (disregard if no pacing items).

Lowest pacing item C-rating = L

7. Compare H and I from above, "J" becomes the lowest of the two C-ratings—C–4 being lower than C–1. If a unit has no reportable equipment J = C–1. "J" equals your overall EOH C-rating unless HQDA and/or a MACOM directs or approves use of a C-rating of C–5 as outlined in paragraph 3–6*b*.

3–8. Equipment readiness (ER) and equipment mission capable (EMC) data

The Unit Status Report provides indicators of a unit's equipment readiness by developing a C-rating that is calculated by comparing the combined effect of fill and maintenance shortfalls on the status of selected equipment to wartime requirements. An ER rating for all of a unit's reportable equipment as defined in *a* below (to include pacing items, except aircraft and selected missile systems—HAWK, LANCE, PATRIOT, and Pershing) and a rating for each pacing item is determined. The unit's overall ER rating is equal to the lower of these ratings. To focus on how well this equipment is being maintained equipment mission capable (EMC) percentages are developed that disregard that portion of the required equipment that is short. Complete the ER and EMC data portion of the report as follows:

a. Determine reportable equipment. Reportable equipment is that equipment which—

(1) For MTOE units, is that portion of the unit status reportable equipment identified in paragraph 3–7 that is also designated as maintenance reportable in AR 700–138 and AR 18–25.

(2) For TDA units, is listed on a unit's TDA and is designated by AR 700–138 and AR 18–25 as DA Form 2406, DA Form 3266–1, or DA Form 1352 reportable (until such time as TDA equipment is readiness coded).

(3) Has not been designated as nonreportable/exempt from reporting (app G).

(4) Is not an aircraft assigned to a nonaviation unit (unless assigned aircraft is designated as a pacing item).

b. Determine available days/hours.

(1) Fully mission capable data from DA Form 2406, DA Form 3266–1, and/or DA Form 1352 will be used to determine available days/hours.

(2) During peacetime, ER and EMC will be based on the fully mission capable (FMC) status of a unit's reportable equipment averaged over a 1–month period for Active Component units and a 3–month period for Reserve Component units. Active Component units will compute FMC data beginning the 16th day of the prior month and ending the 15th day of the current month. Reserve Component units will compute FMC data based on the most recent quarterly (90–day) report. During call-up, mobilization, deployment, or employment, a point in time procedure will be used (para 3–23).

(3) For MTOE units, only ERC–A equipment can be considered when determining an ER rating; for example, if a unit has ERC–A and ERC–B jeeps, only the ERC–A jeeps will be considered.

(4) Substitute and in-lieu-of equipment will be reported. If a substitute or in-lieu-of item that is not DA Form 2406 reportable is being counted against a required MTOE ERC–A or TDA LIN that is DA Form 2406 reportable, take nonavailable days for this equipment from DD Form 314. However, do not add this equipment to DA Form 2406 reports submitted to the Materiel Readiness Support Activity (MRSA).

c. Determine required days/hours. Required days/hours will be based on the quantity of MTOE/TDA required equipment that is both unit status and maintenance reportable, and the number of days/hours in the reporting period.

d. Determine possible days/hours. Possible days/hours will be based on the on-hand quantity of MTOE/TDA required equipment that is both unit status and maintenance reportable, and the number of days/hours that equipment was on-hand during the reporting period.

e. Calculate an ER and EMC status using table 3–6, the equipment readiness/equipment mission capable C-rating outline (fig 3–7), and examples in figure 3–8.

f. Complete ER and EMC portions of sections A and B of DA Form 2715–R (figs 3–1 and 3–2).

(1) *Section A.*

(a) Blocks 43 and 44 (percentage of on-hand equipment mission capable). Use data from step 7 of outline. If no reportable items, leave blank.

(b) Blocks 45 and 46 (percentage of on-hand pacing equipment mission capable). Use data from step 8 of outline (reflects the unit's pacing item with the worst EMC status). If no pacing items, leave blank.

(c) Blocks 47 and 48 (percentage of required equipment mission capable). Use data from step 2 of outline. If no reportable items, leave blank.

(d) Blocks 49 and 50 (percentage of required pacing items mission capable). Use data from step 4 and 5 of outline (reflects the unit's pacing item with the worst ER status). If no pacing items, leave blank.

(2) *Section B.*

(a) Block 30 (equipment readiness rating). Use data from step 6 of outline. If no reportable equipment, enter 1, or if HQDA/MACOM has directed/authorized use of a C–5 rating, enter 5. For units with pacing items, the ER rating cannot be higher than the lowest rating determined for a pacing item.

(b) Blocks 31 through 33 (reason ER rating not 1). If block 30 does not contain a 1, enter the equipment readiness code from section II, appendix F which shows the main reason the ER rating is not 1; otherwise, leave blank.

Table 3–6
Rating for percentage of equipment fully mission capable

Equipment other than aircraft FMC: 90% or greater Aircraft FMC: 75% or greater Rating: 1
Equipment other than aircraft FMC: 70% to 89% Aircraft FMC: 60% to 74% Rating: 2
Equipment other than aircraft FMC: 60% to 69% Aircraft FMC: 50% to 59% Rating: 3
Equipment other than aircraft FMC: Below 60% Aircraft FMC: Below 50% Rating: 4

Note:
A 75 percent FMC rate for aircraft, equal to C–1, is higher than the established DA materiel condition standard (expressed as a mission capable rate and published in AR 700–138) for most aircraft types. Many aviation units will not have sufficient resources to achieve a C–1 rating; however, most should be able to report C–2.

Figure 3–7. Equipment readiness (ER)/equipment mission capable (EMC) C-rating outline

1. Identify your unit's required maintenance reportable MTOE (ERC–A) or TDA equipment, maintenance reportable pacing items, and actual FMC data for the reporting period. Do not include equipment designated unit status nonreportable. Do include in-lieu-of and authorized substitute equipment. See figure 3–8 for examples.

2. Determine an ER percentage for all reportable equipment (to include pacing items, except aircraft and the HAWK, LANCE, PATRIOT, and Pershing missile systems).

ER Percent = Total available days ÷ Total required days × 100

3. Use results from step 2 and table 3–6 to determine an ER C-rating = A.

4. Determine a PI–ER percentage for each pacing item (to include aircraft and missile systems designated as pacing items).

PI–ER Percent = PI avail days/hours ÷ PI req days/hours × 100

5. Use results from step 4 and table 3–6 to determine a PI–ER C-rating for each pacing item (note separate criteria for aircraft).
Lowest pacing item rating = B.
Corresponding PI–ER percent =

6. Compare A and B above. C becomes the lowest of the two C-Ratings—C–4 being lower than C–1; if a unit has no reportable equipment C = 1. "C" equals your equipment readiness C-rating unless HQDA and/or a MACOM directs or approves use of a C-rating of C–5 as outlined in paragraph 2–6b.
C =

7. Determine an EMC percentage for all reportable equipment (to include pacing items, except aircraft and the HAWK, LANCE, PATRIOT, and Pershing missile systems).

EMC Percent = Total available days ÷ Total possible days × 100

8. Determine a PI–EMC percentage for each pacing item (to include aircraft and missile systems designated as pacing items). Record the pacing item percentage that would result.

n the lowest rating (table 3–6 was used (note separate criteria for aircraft).

PI–EMC Percent = PI aval days/hours ÷ PI possible days/hours X 100

3–8. Training data

The Unit Status Report provides indicators of a unit's training status by developing a training C-rating. The primary purpose of the unit training rating is to show the current ability of the unit to perform its assigned wartime missions. The standard against which the unit's training status is to be measured is its mission essential task list (METL). The METL is derived from assigned wartime missions and is submitted to and approved by the next higher headquarters in the reporting unit's chain of command. METL for Reserve Component units will be approved by the unit's next higher command (peacetime), in coordination with the appropriate CAPSTONE (wartime) commander. A secondary purpose of the unit training rating is to show resource shortfalls that prevent attainment of a training tempo necessary to achieve or maintain training objectives.

a. The commander determines the training rating based on his or her knowledge of the proficiency of the unit in accomplishing METL tasks. Evaluation of training is continuous and dynamic. Commanders must consider personal observations, records, reports, and the assessments of others (within and outside of the unit). The training rating reflects the time needed to overcome training shortfalls to reach a condition of being fully trained in METL tasks. This estimate must be made considering only the personnel and equipment assigned to the unit. Do not assume that existing personnel and equipment shortages will be filled before training starts. To estimate the days needed to attain a fully trained (METL) status, commanders must first determine the current level of training in the unit. The following factors should be considered in making this determination:

(1) Proficiency shown by the unit and organic subelements during recent external evaluations to ARTEP standards, nuclear weapons technical inspections, emergency deployment readiness exercises, field training exercises, command post exercises, combined arms live fire exercises, and other training events. Proficiency is measured in terms of the unit's demonstrated ability to perform the tasks as stated in the approved unit METL, including enabling tasks not specified in the METL, but necessary for performance of METL tasks. An example of such an enabling task is crew gunnery. Proficiency is to be judged based on performance of tasks to standard.

(2) Personnel present for training.

(3) Equipment present for training. For example, the commander of a maintenance unit should degrade the unit's training rating if unit personnel are working on M48 and M60 tanks in peacetime, but will be required to maintain MT tasks in wartime. In addition, units must have sufficient types and quantities of equipment to meet training requirements.

(4) Availability of personnel to meet MOS and special skill requirements (ASI, SQI, and LIC).

(5) Leader qualifications.

(6) Results of skill qualification tests, common task tests, and Army physical readiness tests.

(7) Individual and crew served weapons proficiency as indicated by attainment of weapons training standards.

(8) Assigned aviator currency (Aviator Readiness Level and night vision goggle training).

(9) Unit commanders authorized personnel with an MOS of 97BL, 97E, 98CL, or 98G will consider their current recalibrated Defense Language Proficiency Test (DLPT) scores. Soldiers in these MOSs should have a minimum DLPT score in listening and reading of "1." Soldiers in MOSs 97BL and 97E should also have a minimum DLPT score in speaking of "1."

(10) The ability to operate in an nuclear, biological, chemical (NBC) environment.

(11) Availability of flying hours, training ammunition, simulation devices, and fuel.

(12) The time elapsed and the turnover of key personnel since major training events occurred. For example, Reserve Component unit commanders will consider their unit's retained proficiency since its last annual training period.

(13) The quality of training conducted, and the availability and quality of training areas.

b. Considering the factors in *a* above, determine the METL tasks which the unit is currently able to perform in full as well as those tasks which the unit can perform in part. These unit abilities represent the current level of training for the unit. Those METL tasks which the unit cannot perform to standard and require additional training represent the unit's training shortfall. Estimate the number of days of training required to overcome the training shortfall, assuming that all available personnel can participate in training. In estimating training time, do not include the time needed to conduct a field training exercise or command post exercise at levels of command higher than the reporting unit. Enter the number of days required to train in blocks 51 and 52 of section A, DA Form 2715–R. Then, use this number and table 3–7 to determine a training C-rating. Enter this rating in block 34 of section B of DA Form 2715–R.

Table 3–7
Estimated days to be trained to standards on tasks in a unit's METL

Days: 0–14	
Rating: 1	
Days: 15–28	
Rating: 2	
Days: 29–42	
Rating: 3	
Days: More than 42 or XX	
Rating: 4	

(1) Special instructions.

(a) If a unit does not have enough people and/or equipment (counting pooled and/or borrowed items) to ever become trained to perform its assigned wartime missions satisfactorily, it should report XX in blocks 51 and 52, section A, and 4 in block 34 of section B. State in the training remarks section of the report the minimum additional resources (people and equipment) needed for training and an estimate of the number of days needed to be fully trained to standard on METL tasks after receiving those resources. Commanders should consider this procedure before determining days needed to complete training for—

1. Units that have a strength level below 70 percent or critical MOS shortages regardless of the strength level.

2. Units unable to pool and/or borrow necessary equipment for training.

(b) Active Component nuclear capable units whose main mission is nuclear delivery, emplacement, or support, and whose nuclear qualification status (as authorized by the MACOM commander in accord with AR 50–5, chap 8) is limited or removed due to training shortfalls, report a training rating of 4 in block 34 of section B. Units having nuclear and conventional delivery capabilities (such as 155mm or 8-inch howitzers), but which have training shortfalls and have not been qualified by the MACOM commander, will not report a training rating higher than 3 and will include appropriate comments in the training remarks section of the report to amplify the rating.

(c) Units that are required to report designated OTSG/AMEDD officer assets as available (para 3–6b(3)) will also assume that these personnel are fully trained.

(d) Units with Korean Augmentation to the U.S. Army (KATUSA) personnel will evaluate their unit training rating considering KATUSA and U.S. personnel.

(e) Reserve Component (nuclear capable) units will train to the highest level of nuclear capability possible with given resources. Units having nuclear and conventional delivery capabilities (such as 155mm or 8-inch howitzers) whose nuclear mission capability status is limited, removed due to training shortfalls, or have not been qualified (AR 50–5, chap 8) by the MACOM commander will not report a training rating higher than 3. Include appropriate comments in the remarks section of the report to address nuclear capability or the lack thereof, within organic units.

(f) If HQDA and/or a MACOM directs or approves use of a training rating of C–5 as outlined in paragraph 3–6b enter XX in blocks 51 and 52 of section A and a 5 in block 34 of section B.

(2) Complete blocks 35 through 37 of section B (reason training rating not 1). If block 34 of section B does not contain a 1,

training, its ability to perform the wartime mission for which it is organized, designed, or tasked is limited. It can deploy or execute its operational contingency mission at reduced levels, but normally it will first be given additional training or resources to increase its readiness posture.

C-rating: C-4 (Not combat ready)
Definition: The unit has major deficiencies in its prescribed wartime resources or training and its ability to perform the wartime mission for which it is organized, designed, or tasked. It requires major upgrading prior to deployment or employment in combat. However, if conditions dictate, the unit might be deployed or employed for whatever residual capability it does have. (For example, A three brigade division rated C-4 may be able to provide two fully supported mission capable brigades).

C-rating: C-5 (Not combat ready, programed)
Definition: Due to HQDA action or programs, the unit is not ready and does not have the prescribed wartime resources or cannot perform the wartime mission for which it is organized, designed, or tasked. C-4 deployment and employment considerations apply. However, if conditions dictate, the unit might be deployed or employed for whatever residual ability it does have. Units rated C-5 are restricted to the following:

a. Units undergoing reorganization or major equipment conversion or transition.
b. Units placed in cadre status by HQDA.
c. Units which are being activated or inactivated.
d. Units which are not manned or equipped but are required in the wartime force structure.
e. Units with primary tasking as training units that could be tasked to perform a wartime mission.

b. The MAE is the commander estimate of the extent to which his or her unit can accomplish its wartime mission if it were to be deployed/employed on the "as of" date of the report. The estimate will be expressed in terms of the percent of wartime mission that can be accomplished. An MAE will be determined by all units that attain an overall rating of C-4 or C-5. A unit's MAE will be recorded in the remarks section of the Unit Status Report (para 3-18*b*(1)(*d*)).

(1) Primary purpose of the MAE is to provide a more definitive estimate of the ability of a unit to perform its wartime mission than is provided by a rating of C-4 or C-5. To reduce administrative requirements and the complexity of C-rating procedures, the same rating criteria guidelines are used for all type units. However, resource and training degradations will have a different impact on a unit's percent of mission accomplishment depending on the type of unit involved. C-ratings also represent a range of resource levels; for example, a C-4 unit can have between zero and 64 percent of its equipment. In addition, the Unit Status Report does not provide (nor is it practical to design it to provide) measurement of all quantitative and qualitative factors that impact on the ability of a unit to accomplish its wartime mission. For example, a transportation company may have an overall rating of C-4 due to EOH problems but the commander may decide his or her unit can actually perform 75 percent of its wartime mission when specific equipment shortages, the repair parts situation, and work load factors are considered. Even if the commander selected an MAE of 60 percent this would give the chain of command a better indication of the unit's overall ability than a rating of C-4 does.

(2) In determining an MAE, the commander should estimate the overall ability of the unit based on all of the factors previously addressed in determining the unit's C-ratings, the unit's wartime mission, and other factors (quantitative and qualitative) not previously considered.

(3) Commanders with a C-4 unit will compare the selected MAE to the unit's overall C-rating using table 3-9. If the MAE selected is not adjacent to the overall C-rating selected, then the commander should consider subjectively upgrading the unit's overall rating.

Table 3-9
Comparison of MAE and overall C-rating

Overall C-rating: C-1	MAE range: 90% - 100%
Overall C-rating: C-2	MAE range: 80% - 89%
Overall C-rating: C-3	MAE range: 65% - 79%
Overall C-rating: C-4	MAE range: 0% - 64%

3-11. Finalizing sections A and B of DA Form 2715-R

a. Section A.

(1) *Block 62 (authorized level of organization).* Enter the reporting unit's actual ALO, numeric or alphabetic designation.

(2) *Block 63 through 68 (date of report).* Enter the "as of" date of the report or date of change, if applicable. In blocks 63 and 64, enter the last two digits of the calendar year. In blocks 65 and 66 enter the number of the month. In blocks 67-68 enter the day. For example, enter 15 October 1985 as 851015 (YYMMDD).

(3) *Block 69 (parent unit identifier).* Battalions, separate companies, and separate detachments organic to major combat units (divisions, separate brigades, Special Forces groups, and armored cavalry regiments), enter 5. All other units, enter 4.

(4) *Blocks 70 through 75 (unit identification code).* Enter UIC of unit reducing the reports to machine readable media.

(5) *Block 76 through 77 (report type).* Enter "FS."

(6) *Blocks 78 through 80 (report number).* Enter the number which shows the order in which the report appears among all reports being submitted by the unit reducing the reports to machine readable media.

b. Section B.

(1) *Block 51 (authorized level of organization).* Enter the unit ALO with the following exceptions:

(*a*) All units with ALO numerically greater than 4 will enter 4.

(*b*) Type B units, or units organized ALO B, when unit documents do not show a numeric ALO, enter 1.

(*c*) Type C units, or units organized at ALO C, enter 4.

(2) *Block 52 (reason for organization less than 1).* Enter P or S if a unit's ALO is different from 1. To determine if P or S should be used examine your unit's MTOE/TDA. If the primary area decremented as a result of the assigned ALO is personnel enter a "P," if the primary area decremented is equipment enter a "S." If 1 is entered in block 51, leave block 52 blank.

(3) *Blocks 53 through 58 (date of report).* Enter in blocks 53 through 58 the "as of" date of report or date of change, if applicable. In blocks 53 through 54, enter the last two digits of the calendar year. In blocks 55 and 56, enter the number of the month. In blocks 57 and 58, enter the day.

(4) *Blocks 59 through 69 (blank).* Leave blank.

(5) *Blocks 70 through 75 (unit identification code).* Enter UIC of unit reducing the reports to machine readable media.

(6) *Blocks 76 through 77 (report type).* Enter "FS."

(7) *Blocks 78 through 80 (report number).* Enter the number which shows the order in which the report appears among all reports being submitted by the unit reducing the reports to machine readable media (UIC in blocks 70 through 75).

Section III

Composite Reports Prepared by Divisions, Separate Brigades, Divisional Brigades Operating Separately, Special Forces Groups, and Armored Cavalry Regiments (Sections A and B of DA Form 2715-R)

3-12. General

Composite reports will be submitted by divisions, separate brigades, divisional brigades operating separately, Special Forces groups, and armored cavalry regiments. They provide an assessment of the status of these major units and their ability to accomplish assigned wartime missions, based on the condition of subordinate units and their ability to operate together. An averaging procedure, using the ratings of all organic AA level units (except band, adjutant general (AG), and finance units), will be used to determine a composite personnel, EOH, and ER C-rating. A composite training C-rating, overall C-rating, and MAE (C-4 and C-5 units only) will be determined using the procedures outlined in paragraphs 3-9 and 3-10, and by considering any additional factors that have not been addressed in these paragraphs that are essential to the ability of the reporting unit to operate as an effective combat force.

enter the training code from section II, appendix F which shows the main reason the training rating is not 1; otherwise, leave blank.

c. Units will enter in blocks 53 through 61 of section A the degree to which resource constraints are preventing the unit from maintaining a training tempo necessary to achieve and sustain its desired training objectives. In each of these blocks, if the resource area is having an insignificant impact on training, enter A; if the resource area is having a minor impact, enter B; if the resource area is having a major impact, enter C; and if the factor prohibits training tempo necessary to maintain a satisfactory training status, enter D.

(1) *Block 53 (assigned strength shortfall).* Enter assigned strength shortfall indicator. When an overall assigned strength shortfall or lack of key MOS qualified personnel hinders training, commanders should comment in training remarks.

(2) *Block 54 (special duty requirements).* Enter special duty requirements indicator. Assess the impact of the diversion of unit personnel to meet special duty requirements. (See glossary.)

(3) *Block 55 (availability of funds).* Enter availability of funds indicator. Higher commanders should comment when assistance is needed from the next higher echelon.

(4) *Block 56 (availability of equipment/ materiel).* Enter availability of equipment and materiel indicator. This category is not limited equipment authorized in a unit's MTOE or TDA; for example, the availability of training items such as simulators, subcaliber devices, training extension course (TEC) tapes, and mockups should be considered.

(5) *Block 57 (availability of qualified leaders or status of aviator training).* Enter availability of qualified leaders indicator. Emphasize those leaders most needed for training in the unit's METL (for example, company commanders, platoon leaders, first sergeants, platoon sergeants, and squad leaders in infantry battalions). For units with aircraft pacing items; enter the unit aviator training C-rating (numeric value 1, 2, 3, or 4) derived as prescribed in FC 1-210, chapter 5. Availability of nonaviator leaders in these aviation units will be addressed in training remarks. When a unit has aviators but no aircraft pacing items, include the aviator training C-rating in training remarks.

(6) *Block 58 (accessibility of training areas/facilities).* Enter availability of training areas and facilities indicator. Consider quality, size, and accessibility of training areas available to the unit.

(7) *Block 59 (availability of fuel).* Enter availability of fuel indicator. Consider need for both field and garrison training.

(8) *Block 60 (availability of ammunition).* Enter availability of ammunition indicator. Consider both normal and training peculiar ammunition, including subcaliber rounds for training devices.

(9) *Block 61 (availability of time).* Enter availability of time indicator. Consider the impact of competing activities which detract from training time to the extent that they reduce training readiness (such as school support activities and umpire details for other units).

(10) *Narrative remarks.* In those cases where blocks 53–61 do not contain the letter A or B (Nos. 1 or 2 for aviation units in block 57), the impact of the resource constraint will be addressed in the remarks section of the Unit Status Report (para 3–19*b*(6)).

d. All reporting units will include the following in their training remarks (para 3–19*b*(6)):

(1) FTX and CPX participation during the 12 months preceding the report.

(2) The date of the unit's last external evaluation to ARTEP standards.

(3) If a unit's training rating changes from that submitted in its last report the reason for the change will be addressed.

3–10. Overall unit C-rating and mission accomplishment estimate (MAE)

The overall unit C-rating and mission accomplishment estimate are the commander's assessment of the overall status of his or her unit and its ability to accomplish assigned wartime missions. MAE is determined only for units with an overall rating of C–4 or C–5.

a. In selecting an overall rating, the commander should review ratings attained in the measured resource areas and C-rating definitions in table 3–8, and consider shortcomings, resources, and quality factors not previously addressed.

(1) The start point for determining the overall status of a unit is the lowest unit status rating attained in a measured resource area (personnel, EOH, ER, or training). However, the overall C-rating may vary from the lowest measured resource area rating unless one or more of the areas is rated as C–5. If no resource area is rated as C–5, the commander can subjectively upgrade or downgrade the unit's overall rating if the calculated rating is not truly representative of the status of the unit. For example, if the education level, quality of leadership, morale, or cohesion in a unit are unusually high a commander may want to subjectively upgrade the unit's overall rating. On the other hand, if the shortage of certain equipment items is having a greater impact on the unit than the calculated EOH rating indicates, the commander may want to subjectively downgrade the unit's overall rating. Calculated resource area ratings cannot be subjectively changed.

(2) Status of prescribed load list (PLL) items, authorized stockage list (ASL) items, basic loads, common table of allowances (CTA) items, equipment regardless of readiness code (ERC–A, ERC–B, or ERC–C), and special skill requirements (SQI, LIC, or ASI) are examples of other factors that should be considered in selecting an overall C-rating.

(3) Once an overall C-rating is selected, complete the overall rating portions in section B of DA Form 2715–R.

(a) Block 20 (overall unit rating). Record selected overall rating.

(b) Block 21 (primary reason overall rating not 1). If block 20 does not contain a 1, enter the overall rating code from section I, appendix F which shows the primary factor that prevents a C–1 overall rating. However, if the rating in block 20 is different from the lowest calculated resource area rating (subjective upgrade or downgrade) place an "X" in block 21. If neither of these instructions apply leave block 21 blank.

(c) Blocks 38 through 40 (secondary reason overall rating not 1). Enter a code from section II, appendix F which represents the secondary factor that prevents a higher overall rating. This code may be from the same resource area as the primary factor but must be a different code. If the unit's computed overall rating has been subjectively changed (X report in block 21, section B), report that resource area the commander believes is degrading his or her unit the most by using in blocks 38 through 40 the code: PUP for personnel, SUP for equipment on-hand, RUP for equipment readiness, or TUP for training.

(d) Blocks 41 through 43 (tertiary reasons overall rating not 1). Enter a code from section II, appendix F which represents the tertiary factor that prevents a higher overall rating. If may be from the same resource area as either the primary or secondary factor but cannot be the same code.

(e) Block 44 (projected overall rating). If a change in the overall unit rating can be forecasted, enter rating in block 44. If a prior forecasted entry is no longer valid, enter a numeric or pound sign (#).

(f) Blocks 45 through 50 (projected date of change in overall rating). If block 44 contains an entry, enter the date of projected change. If block 44 is blank or contains a numeric or pound sign (#), leave blank.

Table 3–8
C-rating definitions

C-rating: C–1 (Combat ready, no deficiencies)
Definition: The unit has its prescribed levels of wartime resources and is trained so that it can be deployed. If outside CONUS, it can perform its operational contingency mission.

C-rating: C–2 (Combat ready, minor deficiencies)
Definition: The unit has only minor deficiencies in its prescribed levels of wartime resources or training. Its ability to perform the wartime mission for which it is organized, designed, or tasked is limited. If in CONUS, a unit can be deployed, but minor additional training or resources are desirable. If outside CONUS, it can perform its operational contingency mission.

C-rating: C–3 (Combat ready, major deficiencies)
Definition: The unit has major deficiencies in its prescribed levels of wartime resources or...

3–13. Determining composite C-ratings

a. Units submitting composite reports will omit subordinate units reporting C–5 from measured resource area rating computations (para 2–6*b*(8)). However, the number of subordinate units reporting C–5 will be subjectively considered in determining the parent unit's overall rating. If the number of C–5 subordinate units is degrading the status of the parent unit below a C–3 level of operations, the parent unit will designate the appropriate resource area and its overall rating as C–5 (must be approved by a MACOM). The number of subordinate units reporting C–5 will be recorded in the READY remarks section of the Unit Status Report (para 3–18*b*(1)(*e*)).

b. Roundout units will not be considered when determining composite ratings until they have actually joined the parent unit after call-up or mobilization. During peacetime, Active Component units will address the status of assigned roundout units in the remarks section of the Unit Status Report (para 3–19*b*(7)). Commanders of divisions will consider intermediate assessment memorandums provided by assigned roundout brigades (para 2–8*c*) when completing roundout unit remarks.

c. Once an inactivating unit qualifies and is allowed to report C–5 it may be completely disregarded in composite reports (para 2–6*b*(2)).

d. Subjective upgrade or downgrade of the computed overall rating should be considered if the commander does not believe it is truly representative of the status of his unit (para 3–10*a*(1)). However, calculated resource area ratings and a C–5 rating cannot be subjectively changed.

e. Determine composite C-ratings using table 3–10, the composite C-rating outline (fig 3–9), and examples in figure 3–10.

Table 3–10
Composite rating criteria

Rating	At least 50% of units rated	Average of units rated
1	1	1.64 or less
2	2 or better	1.55 to 2.44
3	3 or better	2.45 to 3.34
4	Cannot meet criteria to be rated 3	

Figure 3–9. Composite C-rating outline

1. Identify the C-ratings of assigned subordinate units (excluding band, AG, and finance units). Do not separate elements organic to a parent unit; for example, the artillery battery organic to the armored cavalry squadron will be included in the squadron. (See examples fig 3–10.)

2. Determine the C-rating value for organic units identified in step 1, for the rated areas of personnel, EOH, and ER by using the following procedure for each resource area (do not include C–5 resource area ratings in composite computations):

No. C–1 units × 1 = A
No. C–2 units × 2 = B
No. C–3 units × 3 = C
No. C–4 units × 4 = D
No. C–5 units = E

Average C-rating value (each resource area) = A+B+C+D ÷ Total No. of Units – E (units C–5 in a resource area).

Personnel Avg = EOH Avg = ER Avg =

3. Use table 3–10 to obtain a C-rating for the resource areas listed in step 2. Consider both the 50 percent rule and average value. The unit's composite rating for these resource areas will be equal to the lowest rating obtained using these two criteria (C–4 being lower than C–1). Calculated composite rating summary:

Personnel C-rating = EOH C-rating = ER C-rating =

4. Based on the number of C–5 ratings within each resource area, determine if any of the calculated composite ratings should be changed to C–5 (para 3–13*a*), requires MACOM approval. Revised composite rating summary (if applicable):

Personnel C-rating = EOH C-rating = ER C-rating =

5. Subjectively determine a training rating based on the training ratings of organic units and factors outlined in paragraphs 3–9, 3–12, and 3–13. Training C-rating =

6. Determine a computed overall rating based on the lowest resource area rating determined in steps 3, 4, and 5. Then, consider subjectively upgrading or downgrading the computed overall rating as addressed in paragraphs 3–10, 3–12, and 3–13. If a resource area was designated as C–5 in step 5, the overall rating must be C–5 (requires MACOM approval). Select an overall C-rating. Overall C-rating =

Figure 3–10. Sample composite rating calculations

1. Example #1: Separate infantry brigade

	PER	EOH	ER
218 In HHC	2	3	1
218 SC Det	5(0)	2	2
En Co	1	2	1
713 Ar Trp	1	4	1
178 FA Bn 01 158 SP	1	3	2
163 CS Bn	2	2	3
283 AR Bn 02 Tank	1	2	2
118 In Bn 04 Mech	1	3	2
118 In Bn 01 Mech	2	4	2
	11	28	16

PER rating:

a. Avg rating = 11 ÷ 9–1 = 1.38 (delete 1 C–5 unit)

b. Using table 3–10, based on avg. rating = C–1.

c. Check 50% rule—yes, if exclude C–5 unit, 50% C–1 or better. However, 1 unit C–5, consider make resource area C–5.

EOH rating:

a. Avg rating = 28 ÷ 9–0 = 2.89

b. Using table 3–10, based on avg. rating = C–3.

c. Check 50% rule—yes, 50% C–3 or better.

ER rating:

a. Avg rating = 16 ÷ 9–0 = 1.78

b. Using table 3–10, based on avg. rating = C–2.

c. Check 50% rule—yes, 50% C–2 or better.

Notes:

1. Consider all organic AA level units (except for band, AG, and finance units).

2. Do not include C–5 ratings in composite calculations (5(0) = C–5 unit counts as zero). However, if the commander believes the number of C–5 units is degrading the status of the parent unit below a C–3 level of operations, the appropriate resource area and the unit's overall rating will be designated as C–5 (requires MACOM approval). Record the number of C–5 units in remarks (para 3–18).

3. Calculated composite rating summary:

PER EOH ER

C–1 C–3 C–2

4. Revised composite rating summary: Commander has decided the 1 C–5 unit does not degrade the unit enough to warrant designating PER as C–5.

PER EOH ER

C–1 C–3 C–2

5. The unit's training rating and overall rating are determined by the commander in accord with paragraphs 3–9, 3–10, and 3–12.

6. A similar procedure will be used to calculate composite ratings from divisions, Special Forces groups, and ACRs.

2. Example #2: Separate infantry brigade

	PER	EOH	ER
218 In HHC	2	3	2
218 SC Det	3	4	1
En Co	5(0)	2	2
713 Ar Trp	1	3	1
178 FA Bn 01 158 SP	1	5(0)	1
163 CS Bn	2	5(0)	2
283 AR Bn 02 Tank	2	3	2
118 In Bn 04 Mech	3	3	2
118 In Bn 01 Mech	2	4	2
	14	18	16

PER rating:

a. Avg rating = 14 ÷ 9–0 = 1.56

b. Using table 3–10, based on avg. rating = C–2.

c. Check 50% rule—yes, 50% C–2 or better.

EOH rating:

a. Avg rating = 18 ÷ 9–3 = 3.17 (delete 3 C–5 units)

b. Using table 3–10, based on avg. rating = C–3.

c. Check 50% rule—yes, if exclude C–5 units, 50% C–3 or better. However, 3 units C–5, consider make resource area C–5.

ER rating:

a. Avg rating = 18 ÷ 9–0 = 1.78

b. Using table 3–10, based on avg. rating = C–2.

c. Check 50% rule—yes, 50% C–2 or better.

Notes:

1. Consider all organic AA level units (except for band, AG, and finance units).

2. Do not include C–5 ratings in composite calculations (5/0) = C–5 unit counts as zero). However, if the commander believes the number of C–5 units is degrading the status of the parent unit below a C–3 level of operations, the appropriate resource area and the unit's overall rating will be designated as C–5 (requires MACOM approval). Record the number of C–5 units in remarks (para 3–18).

3. Calculated composite rating summary:

PER	EOH	ER
C–2	C–3	C–2

4. Revised composite rating summary: Commander has decided that the 3 C–5 units are degrading the parent unit below a C–3 level of operations in EOH (requires MACOM approval).

PER	EOH	ER
C–2	C–5	C–2

5. The unit's training rating and overall rating are determined by the commander in accord with paragraphs 3–8, 3–10, and 3–12. Since the commander made EOH C–5 the unit's overall rating must be C–5.

6. Similar procedure will be used to calculate composite ratings for divisions, Special Forces groups, and ACRs.

3–14. Completing composite reports.

a. Heading and unit identification data. Complete blocks 1 through 14 on sections A and B of DA Form 2715–R as follows:

(1) *Blocks 1 through 3 (card sequence number).* Leave blank if DA Form 2715–R is to be sent to another HQ for reducing to machine readable format. HQ reducing reports to machine readable format, enter a three-character number showing the sequence of the card within the report. (chap 4).

(2) *Block 4 (classification).* Enter C. All Unit Status Reports will be classified CONFIDENTIAL.

(3) *Block 5 (transaction code).* Enter A, C, or D. Normally, the entry will be C for recurring or change report. See table 4–6 for detailed guidance.

(4) *Blocks 6 through 8 (card type).* Enter card type codes.

(a) When completing DA Form 2715–R, section A, units submitting NATO contingency reports will enter "KAJ." All other units enter "KA1."

(b) When completing DA Form 2715–R, units submitting NATO contingency reports will enter "KA4." All other units enter "K."

(5) *Blocks 9 through 14 (unit identification code).* Enter UIC of unit, being described by the data in the report.

b. Section A of DA Form 2715–R (blocks 15 through 80).

(1) *Blocks 15 through 26.* Complete the same as for battalion and smaller size units (para 3–6*h*(1)). Strength calculations should include all personnel within the major unit, including those not assigned to reporting subunits (for example, four man chemical detachments).

(2) *Blocks 27 through 42.* Leave blank.

(3) *Blocks 43 through 50.* Leave blank.

(4) *Blocks 51 through 61.* Subjective training assessment based on data submitted by organic units, procedure similar to that used by battalion and smaller size units (para 3–9).

(5) *Block 62 (authorized level of organization).* Enter reporting unit's ALO, numeric. If a unit submitting a composite report is not assigned an ALO, for unit status reporting purposes determine an ALO based on the average ALO assigned to all organic units (round to the nearest whole number).

(6) *Blocks 63 through 68 (date of report).* Enter the "as of" date of the report or date of change, if applicable. In blocks 63 and 64, enter the least two digits of the calendar year. In blocks 65 and 66 enter the number of the month. In blocks 67 and 68 enter the day. For example, enter 15 October 1985 as 851015 (YYMMDD).

(7) *Block 69 (parent unit identifier).* Enter 4.

(8) *Blocks 70 through 75 (unit identification code).* Enter UIC of unit reducing the reports to machine readable media.

(9) *Block 76 and 77 (report type).* Enter "FS."

(10) *Blocks 78 through 80 (report number).* Enter the number which shows the order in which the report appears among all reports being submitted by the unit reducing the reports to machine readable media.

c. Section B of DA Form 2715–R (blocks 15 through 80).

(1) *Blocks 15 through 19 (blank).* Leave blank.

(2) *Block 20 (overall unit rating).* Use the overall C-rating from step 6 of outline. However, if a resource area rating is C–5 then the overall rating must be 5.

(3) *Block 21 (primary reason overall rating not 1).* If block 20 does not contain a 1, enter the overall rating code from section I, appendix F, which shows the primary factor that prevents a C–1 overall rating. However, if the rating in block 20 is the result of a subjective upgrade or downgrade, place an "X" in block 21. If neither of these instructions apply, leave block 21 blank.

(4) *Blocks 38 through 40 (secondary reason overall rating not 1).* Enter a code from section II, appendix F which represents the secondary factor that prevents a higher overall rating. This code may be from the same resource area as the primary factor but must be a different code. If overall rating has been subjectively changed (X reported in block 21, section B), report that resource area the commander considers most critical by using in blocks 38 through 40 the code: PUP for personnel, SUP for equipment on-hand, RUP for equipment readiness, or TUP for training.

(5) *Blocks 41 through 43 (ternary reasons overall rating not 1).* Enter a code from section II, appendix F, which represents the ternary factor that prevents a higher ove rating. It may be from the same reso area as either the primary or secondary tor but cannot be the same code.

(6) *Block 44 (projected overall rating).* a change in the overall unit rating can forecasted enter rating in block 44. If a or forecasted entry is no longer valid, en a numeric or pound sign (#).

(7) *Blocks 45 through 50 (projected d of change in overall rating).* If block 44 c tains an entry, enter the date of project change. If block 44 is blank or contains numeric or pound sign (#), leave blank.

(8) *Block 22 (personnel rating).* Use da from steps 3 and 4 of outline. However, HQDA/MACOM has directed/authoriz use of a C–5 rating, enter 5.

(9) *Blocks 23 through 25 (reason personnel rating not 1).* If block 22 does not co tain a 1, enter the personnel code fro section II, appendix F, which shows t main reason the personnel rating is not otherwise, leave blank.

(10) *Block 26 (equipment on-hand rating).* Use data from step 3 and 4 of outlin However, if HQDA/MACOM has direct ed/authorized use of a C–5 rating, enter 5.

(11) *Blocks 27 through 29 (reason equipment on-hand rating not 1).* If block 26 do not contain a 1, enter the equipment on hand code from section II, appendix F which shows the main reason the equipme on-hand rating is not 1; otherwise, leav blank.

(12) *Block 30 (equipment readiness rating–ER).* Use data from step 3 and 4 of out line. However, if HQDA/MACOM ha directed/authorized use of a C–5 rating enter 5.

(13) *Blocks 31 through 33 (reason equipment readiness rating (ER) rating not 1).* I block 30 does not contain a 1, enter the equipment readiness code from section II appendix F which shows the main reason the equipment readiness rating is not 1; otherwise, leave blank.

(14) *Block 34 (training rating).* Use data from step 5 of outline. However, if HQDA/MACOM has directed/authorized use of a C–5 rating, enter 5.

(15) *Blocks 35 through 37 (reason training rating not 1).* If block 34 does not contain a 1, enter the training code from section II, appendix F which shows the main reason the training rating is not 1, otherwise, leave blank.

(16) *Block 51 (authorized level of organization).* Enter reporting unit's ALO, numeric. (See *b*(5) above.)

(17) *Block 52 (reason for organization less than 1).* Enter P or S if a unit's ALO is different from 1. If the primary area decremented as a result of assigned ALO is personnel enter a "P," if the primary area decremented is equipment enter a "S." If 1 is entered in block 51, leave block 52 blank.

(18) *Blocks 53 through 58 (date of report).* Enter in blocks 53 through 58 the "as of" date of report or date of change, if applicable. In blocks 53 and 54, enter the last two digits of the calendar year. In blocks 55

[illegible] blocks 57 and 58, enter the day.

(19) *Blocks 59 through 69 (blank).* Leave blank.

(20) *Blocks 70 through 75 (unit identification code).* Enter UIC of unit reducing the reports to machine readable media.

(21) *Blocks 76 and 77 (report type).* Enter "FS."

(22) *Blocks 78 through 80 (report number).* Enter the number that shows the order in which the report appears among all reports being submitted by the unit reducing the report to machine readable format (UIC in blocks 70 through 75).

Section IV
NATO Contingency Reports (Sections A and B of DA Form 2715–R)

3–15. General

a. All units with assigned POMCUS equipment will submit additional reports under this section showing their NATO contingency status. Divisions, separate brigades, and armored cavalry regiments assigned POMCUS will submit a NATO contingency composite report. NATO contingency ratings show the status of units based on the prepositioned set of equipment that they will use during reinforcement and defense of NATO. These ratings show unit status only. They are not a comprehensive assessment of a unit's ability to carry out contingency plans.

b. The basic concept is to prepare a special report that uses the personnel and training ratings from a unit's regular Unit Status Report, and new equipment ratings (EOH and ER) that are based on the status of assigned NATO contingency equipment. A unit's overall rating will be reevaluated due to the new equipment ratings. Remarks will be revised to address NATO contingency equipment and requirements.

3–16. Completing NATO contingency reports

a. Requirements. All units required to submit a NATO contingency report will complete sections A and B of DA Form 2715–R. Section A will be reported on a KA3 card (enter KA3 in blocks 6–8 of sec A). Section B will be reported on a KA4 card (enter KA4 in blocks 6–8 of sec B). Reported personnel and training data will be the same as entered on a unit's regular status report.

b. Equipment on-hand data. Use procedure in paragraph 3–7 with the following changes:

(1) Since unit commanders do not have prompt access to or control over all NATO contingency equipment, they must depend on the timeliness and accuracy of data provided by other agencies. POMCUS units will use data from the Prepositioned Equipment Requirement List (PERL), prepared by FORSCOM (based on data provided by U.S. Army Combat Equipment Group Europe (USACEGE) and U.S. Army Materiel Management Center Europe (USAMMCE), as internal data on equipment to accompany troops (TAT) and equipment not authorized for prepositioning (NAP). In addition, they will count that portion of their ERC–A reportable equipment that is on-hand in CONUS but short in POMCUS, which could accompany troops without appreciably increasing strategic lift requirements (short and can accompany troops (SAT) equipment). The size and weight of equipment items are major factors to be considered when designating SAT items. Examples of the types of equipment that may be designated as SAT items are: radios; installation kits; sets, kits, and outfits; tools; basic issue items (BII); crew served weapons (M60 and DRAGON); and NBC defense items.

(2) LINs that have been designated nonreportable will also be nonreportable for the NATO contingency report unless sufficient quantities are on-hand in POMCUS or the unit (TAT, SAT, or NAP) to make the LIN at least C–3.

(3) POMCUS units will use the latest PERL data and unit property records to compute the quantity of equipment to be counted as on-hand for EOH rating purposes. Table 3–11 provides an example of this procedure.

c. Equipment readiness and equipment mission capable data. Use procedures in paragraph 3–8 with the following changes:

(1) Assume that if prepositioned equipment is on-hand, it is fully mission capable for the entire period unless USACEGE/USAMMCE provides other information. Without additional information from USACEGE/USAMMCE, EMC for prepositioned ERC–A maintenance reportable LINs will automatically be 100 percent and ER will be less than 100 percent only if equipment is short.

(2) POMCUS units will use the pacing item in TAT, NAP, SAT, or the POMCUS set with the worst status to determine its PI–EMC and PI–ER.

d. Special entries. POMCUS units will make a special entry in the remarks section of the Unit Status Report that indicates what their EOH rating would be if all CONUS and POMCUS equipment were considered; for example, "ESRAT for CONUS plus POMCUS is C1." The "as of" date of the PERL used to prepare the report will also be entered in ESRAT remarks. (See paras 3–19b(4)(a)7 and 3–19b(4)(b)3.)

Section V
Commander's Remarks, All Units (Sections C through I of DA Form 2715–R)

3–17. General

a. To support and amplify data submitted in sections A and B of the Unit Status Report provisions have been made for the submission of remarks using sections C through I of DA Form 2715–R. The report provides for both mandatory and optional remarks.

b. Remarks should be as concise as possible. Authorized abbreviations as documented in AR 310–50 should be used when appropriate. Remarks should not contain information that is in other portions of the report. For example, "unit is C–2 due to a shortage of personnel" is a redundant remark since this information is already contained in section B of the report. Remarks should provide details which will be helpful in resolving problems which are degrading a unit's status.

c. Remarks concerning the degradation of a unit's status because of MTOE/TDA changes will be specific. They will include the most critical personnel and equipment changes from the old MTOE/TDA which are causing the degradation.

d. Remarks will be linked in a consecutive sequence of remarks line entries, for example, the last position on one line entry will be followed immediately by the first position on the following line entry. Words will be divided between lines without hyphens. If a word or punctuation mark ends in the last position of one line entry (card column 69), a blank column will begin the remark field in the following line entry.

e. Reporting units must ensure that prescribed formats are accurately followed. (See fig 3–3 and paras 3–18 and 3–19).

3–18. READY and REASN remarks

READY and REASN remarks relate to the overall rating of a unit. READY remarks are required by all reporting units. REASN remarks are required only if the overall unit rating differs from the lowest resource area rating (subjective upgrade or downgrade). When a unit's overall rating is subjectively upgraded or downgraded both a READY and REASN card are required.

a. READY (sec C) and REASN (sec I) remark cards.

(1) *Blocks 1 through 3.* Enter a three-digit number to show the sequence of the card within the report. Leave blank if worksheets are to be sent to another headquarters for

Table 3–11
Determining total equipment on-hand

Item	PERL	TAT	NAP	SAT	Total on-hand
Tank, M60A1	54	—	—	—	54
Rifle, M16	—	658	—	—	658
TOW missile	—	—	4	—	4
Radiac meter	1	—	—	3	4

UNIT STATUS REPORT
For use of this form, see AR 220-1; proponent is ODCSOPS

AS OF DATE: 15 JUL 86

REQUIREMENT CONTROL SYMBOL: JCS 6-4-2-1-6

THRU: CDR, 76 IN DIV (MECH), FT. OUTPOST, GA.

TO: CDR, FT OUTPOST, GA. ATTN: AJSB-KR

FROM: CDR, 2d BN 47TH INF (MECH), FT OUTPOST, GA.

SECTION A—CARD TYPE KA1 OR KA3

1. (1-3) Card Sequence Number *(Entered by HQ preparing data for transmission)*
2. (4) [C] Classification *(C)*
3. (5) [C] Transaction Code *(A, C, or D)*
4. (6-8) [K A 1] Card Type *(KA1 or KA3)*
5. (9-14) [W A Y P A A] Unit Identification Code *(Unit Being Reported)*

6. PERSONNEL DATA

a. (15-17) [Ø 9 5] Assigned Strength Percentage
b. (18-20) [Ø 9 Ø] Available Strength Percentage
c. (21-22) [9 Ø] Available MOS Trained Percentage
d. (23-24) [6 7] Available Senior Grade Percentage
e. (25-26) [1 Ø] Personnel Turnover Percentage

7. EQUIPMENT ON-HAND DATA

a. (27-29) [Ø 6 7] Total Line Items *(Sum of b, c, d, and e below)*
b. (30-32) [Ø 6 2] Number of Lines Rated 1
c. (33-35) [Ø Ø 2] Number of Lines Rated 2
d. (36-38) [ ] Number of Lines Rated 3
e. (39-41) [Ø Ø 3] Number of Lines Rated 4
f. (42) [1] Lowest Pacing Item Rating

8. EQUIPMENT MISSION CAPABLE/READINESS DATA

a. (43-44) [9 4] Percentage of On-Hand Equipment Mission Capable *(EMC)*
b. (45-46) [9 2] Percentage of On-Hand Pacing Items Mission Capable *(PI—EMC)*—For Pacing Item With Worst EMC Status
c. (47-48) [8 7] Percentage of Required Equipment Mission Capable *(ER)*
d. (49-50) [8 9] Percentage of Required Pacing Items Mission Capable *(PI—ER)*—For Pacing Item With Lowest ER Rating

9. TRAINING DATA

a. (51-52) [2 4] Days to Complete Training

Constraints

b. (53) [C] Assigned Strength Shortfall
c. (54) [A] Special Duty Requirements
d. (55) [A] Availability of Funds
e. (56) [B] Availability of Equipment/Materiel
f. (57) [C] Availability of Qualified Leaders or Status of Aviator Training
g. (58) [A] Accessibility of Training Areas/Facilities
h. (59) [A] Availability of Fuel
i. (60) [B] Availability of Ammunition
j. (61) [A] Availability of Time

10. (62) [1] Authorized Level of Organization *(1, 2, 3, 4, 5, 6, 7, 8, 9, B, or C)*
11. (63-68) [8 6 Ø 7 1 5] Date of Report *(Year, Mo, Day)*
12. (69) [5] Parent Unit Identifier
13. (70-75) [ ] Unit Identification Code *(Preparing Data for Transmission)*
14. (76-77) [F S] Report Type *(Enter FS)*
15. (78-80) [ ] Report Number *(Enter by HQ preparing data for transmission)*

DA FORM 2715-R, JUL 86 EDITION OF JUN 81 IS OBSOLETE

Figure 3-1. Sample section A, DA Form 2715-R

SECTION B – CARD TYPE K OR KA4

16 [ ] Tape Sequence Number (Entered by HQ Preparing Data for Transmission)

17 [C] Classification (C)

18 [C] Transaction Code (A, C, or D)

19 [ ] Card Type (K or KA4)

20 [WAYPAA] UIC of Unit Being Reported

21 [ ] Leave Blank

22. [3] Overall Unit Rating (Enter 1, 2, 3, 4, or 5)

23. [P] Primary Reason Overall Rating Not 1 (P, S, R, T, M, N, or X) (If rating in block 20 is based on subjective upgrade or downgrade enter "X" – submit REASN card)

24 [3] Personnel Rating (Enter 1, 2, 3, 4, 5, or 6)

25 [P29] Reason Personnel Rating Not 1 (See Codes App F)

26 [1] Equipment On-Hand Rating (Enter 1, 2, 3, 4, 5, or 6)

27 [ ] Reason Equipment On-Hand Rating Not 1 (See Codes App F)

28. [2] Equipment Readiness Rating (Enter 1, 2, 3, 4, 5, or 6)

29 [R61] Reason Equipment Readiness Rating Not 1 (See Codes App F)

30 [2] Training Rating (Enter 1, 2, 3, 4, 5, or 6)

31. [T34] Reason Training Rating Not 1 (See Codes App F)

32. [R61] Secondary Reason Overall Rating Not 1 (Refers to Rating Block 20, See Codes App F)

33 [T34] Tertiary Reason Overall Rating Not 1 (Refers to Rating Block 20, See Codes App F)

34 [2] Projected Overall Rating (1, 2, 3, 4, or 5)

35 [360915] Projected Date of Change in Overall Rating (If Applicable)

36 [1] Authorized Level of Organization (ALO) (Enter 1, 2, 3, or 4) (In this block, if ALO is numerically greater than 4, enter "4"; ALO B, enter "1"; ALO C, enter "4")

37 [ ] Reason for Organization Less Than ALO 1 (P or S)

38 [860715] Date of Report (Year, Month, Day)

39 [ ] Leave Blank

40 [ ] UIC of HQ Preparing Data for Transmission

41 [FS] Report Type (FS)

42 [ ] Report Number (Entered by HQ Preparing Data for Transmission)

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Figure 3–2. Sample section B, DA Form 2715–R

1. Aviation unit: 1/ through 4/

Line item	Req	On-hand	Available hours/days	Possible hours/days	Required hours/days	
AH-1S(PI)	21	19	10608	13680	15120	
CH-58(PI)	12	11	6624	7920	8640	Hours
UH-1H(PI)	3	3	1488	5/ 1800	2160	
Truck Tank, M559	4	1	17	30	120	
Truck Cargo, M520	5	2	56	60	150	Days
	9	3	73	90	270	

EMC% = Available Days / Possible Days = 73 / 90 = .811 x 100 = 81% (Exclude aircraft from this calculation, para 3-8.)

PI-EMC% = Full Mission Capable Hours / Possible Hours = 10608 / 13680 = .78 x 100 = 78% (AH-1S has lowest PI-EMC%/possible rating of all pacing items.)

ER% = Available Days / Required Days = 73 / 270 = .27 x 100 = 27% = C-4 (Exclude aircraft from this calculation, para 3-8.)

PI-ER% = Full Mission Capable Hours / Required Hours = 1488 / 2160 = .688 x 100 = 69% = C-2 (UH-1H has lowest PI-ER rating of all pacing items.)

2. Non-aviation unit: 1/ through 4/

Line item	Req	On-hand	Available days	Possible days	Required days
Carrier, M113	13	7	166	210	390
Carrier, M577A1	7	7	195	6/ 200	210
Tank, M60A2(PI)	54	51	1384	1530	1620
Truck Tank, M559	4	1	27	30	120
Truck Cargo, M520	5	2	56	60	150
	83	68	1828	2030	2490

EMC% = Available Days / Possible Days = 1828 / 2030 = .90 x 100 = 90%

PI-EMC% = Available Days / Possible Days = 1384 / 1530 = .904 x 100 = 90% (M60A2 is only pacing item.)

ER% = Available Days / Required Days = 1828 / 2490 = .734 x 100 = 73% = C-2

PI-ER% = Available Days / Required Days = 1384 / 1620 = .854 x 100 = 85% = C-2 (M60A2 is only pacing item.)

Figure 3-6. Sample format for ER and EMC rating calculations

Appendix B
Equipment Readiness Codes

B–1. Equipment readiness codes

Every equipment line item number (LIN) in a TOE/MTOE is annotated with an equipment readiness code (ERC). The annotation is a single alpha code in the ERC column of the TOE/MTOE which is identified in table B–1.

Table B–1
Equipment readiness code and readiness identification

ERC: A or P Readiness identification: Primary weapons and equipment (PWE)
ERC: B Readiness identification: Auxiliary equipment (AE)
ERC: C Readiness identification: Administrative support equipment (ASE)

B–2. ERC definitions

a. ERC–A or ERC–P (PWE). ERC–A equipment is essential to and is employed directly in the accomplishment of assigned operational missions and/or directly provides the principal means to generate unit capabilities stated in a unit's TOE/MTOE. ERC–A equipment is unit status reportable. ERC–P items are ERC–A equipments that are also pacing items (app C).

b. ERC–B (AE). Equipment which supplements primary equipment or takes the place of primary equipment should it become inoperative. This term includes equipment other than primary but of greater importance than administrative support equipment.

c. ERC–C (ASE). Equipment supportive to the performance of assigned operational missions and tasks.

B–3. Coding guidelines

a. If a LIN identified as ERC–A or ERC–P (PWE), all subcomponents listed by separate LIN will be considered ERC–A; for example, radio installation kits for radios. However, items will not be counted as pacing items unless they are specifically designated with a "P" or listed in appendix C as a pacing item (para C–2).

b. Depending on the mission and nature of a unit, wheeled and tracked vehicles and their subsystems may be coded ERC–B (AE). For example, a ¼–ton truck with radios may be coded as ERC–B in the Headquarters and Headquarters Company (HHC) of a mechanized battalion while in a nonmechanized battalion it would probably be coded ERC–A. In a mechanized unit, tracked vehicles are normally the principal items used for command and control of tactical operations.

c. The assignment of a readiness code to an item of equipment in any given TOE/MTOE is based on the essentiality of that item to the primary mission of the unit. Like items in a unit can have a different degree of essentiality. For example, within a TOE/MTOE it may be appropriate to designate the commander's radio as ERC–A and the adjutant's as ERC–B.

B–4. Designating ERCs

a. HQ TRADOC will use the guidelines in paragraphs B–1 through B–3 and examples in table B–2 to assign readiness codes to TOE equipment items.

b. Major Army commands will code MTOE using codes in TOE. Use of an ERC on an MTOE that is different from that on the TOE is not authorized without approval from HQDA (DAMO–ODR).

c. Readiness coding is to be expanded to TDA units in the future (paras 3–7*a*(2) and 3–8*a*(2)).

d. Table B–2 provides equipment readiness code examples. They are not all encompassing but reflect the need to discriminate by mission essentiality and between like equipment. ERC–A items that are also pacing items will be identified by a "P" on TOEs/MTOEs (para C–2). Pacing items are currently not coded on TOEs/MTOEs; however, actions are being taken to accomplish this action (para C–2).

Appendix C
Pacing Items of Equipment

C–1. Explanation

a. Those ERC–A major equipment items that are key to a unit's capabilities as delineated in its authorization documents and central to a unit's ability to perform its doctrinal mission will be designated as pacing items; for example, a tank in a tank battalion. Because of the major importance of these pacing items to a unit they receive special emphasis in determining equipment C-ratings and are subject to continuous monitoring and management at all levels of command. This criteria will normally limit designation of pacing items in a unit to a range of 0–4, with the majority of units having two pacing items. The objective is to keep the number of designated pacing items to the lowest possible number consistent with the above guidance.

b. Not all organizations will have equipment designated as pacing items. Many units, such as a Light Infantry Rifle Company and a Personnel Services Company, are principally organized around personnel resources and not key items of equipment. Other organizations have such a wide variety of high cost, low density, ERC–A equipment that it is not appropriate to designate pacing items.

c. Regardless of whether or not a unit has designated pacing items, all units can identify equipment problems by calculating equipment C-ratings, using the remarks section of the report, and using subjective upgrade or downgrade as appropriate.

C–2. Unit pacing items

a. TOE units will report pacing items as designated in paragraph C–4, until such time as pacing items are identified on TOE/MTOE.

(1) TRADOC will use the guidance in paragraph C–1 and examples in table C–1 to determine unit pacing items. TRADOC will code pacing items in TOE with the code "P" in place of code "A" under the ERC column. This code will indicate that the item is both an ERC–A and a pacing item. Since TOE are not currently so coded, TRADOC will accomplish revised coding in conjunction with recommendation of the force to the "L" edition TOE (LTOE) format.

(2) Once TRADOC has initiated (1) above, MACOMs will code MTOEs using codes in TOEs. Units will disregard paragraph C–4 after pacing items have been designated in their MTOE. Use of a pacing item on a MTOE that is different from that on a TOE is not authorized without approval of HQDA(DAMO–ODR).

b. For an item listed in paragraph C–4 to be a pacing item for a specific unit, it must be required by the unit's MTOE. Exceptions to this are as follows:

(1) If a unit is short an equipment item designated as a pacing item of that type unit, but it has an authorized substitute (SB 700–20) or in-lieu-of item (para C–4), that item will be counted as a pacing item in place of the item the unit is short.

(2) A unit that receives a modernization item as a replacement for a current pacing item will consider the new item to be the pacing item even if it has not been added to table C–1 or coded with a "P" in the ERC column (for example, UH–60 helicopters replacing UH–1's or M1 tanks replacing M60 tanks). During transition, both old and new items may be counted if enough new items have not been received to meet the total authorization. However, old items must be on-hand in the unit and be in use. (They cannot be turned in to a direct support maintenance unit or otherwise out of the unit commander's control.)

c. TDA units will not report pacing items until such time as they are designated on their TDA.

C–3. Use of pacing items for preparing reports

a. Pacing items are limiting factors in determining EOH and ER C-ratings. EOH and ER ratings for battalion size and smaller units will be no higher than the lowest pacing item (PI) rating in EOH or ER respectively (C–4 being lower than C–1).

b. Equipment percentages and/or ratings for pacings items will be computed the same as for other reportable LINs (paras 3–7 and 3–8).

C–4. Pacing items of equipment

Table C–1 contains examples of pacing items of equipment for type units.

Appendix E
Personnel Availability Criteria

E–1. General

Unit Status Report personnel ratings will be based on that portion of a unit's assigned strength that is available for deployment or employment. The guidance in this appendix will be used to determine availability for unit status reporting purposes. Specific guidance for use during contingency operations and mobilization is in AR 614–30.

E–2. Available personnel

In all reporting units, assigned personnel will not be considered available for deployment or employment if they are in one of the categories below.

a. Deceased—not dropped from strength.

b. Missing or prisoner of war.

c. Legal processing precludes moving with or performing assigned duties in the unit (arrest and confinement, pending military or civil court action, under investigation for subversion or disaffection, or under investigation by a military or civil criminal investigating activity). See rule 11, table 2–1, AR 614–30.

d. Absent without leave (AWOL).

e. Assigned, but has not joined the reporting unit or has departed for their next duty assignment.

f. Hospitalized, convalescent (to include postnatal period), requires emergency dental treatment, or temporary profile that precludes satisfactory duty performance in the unit under wartime conditions. An appropriate medical authority makes this determination and the unit commander approves it. The provisions of the Physical Performance Evaluation System (AR 600–60) apply.

g. On temporary duty or leave and not able to return within the prescribed response time for unit contingency missions (based on commanders's judgement). However, personnel on temporary duty in their wartime area of responsibility will be considered available.

h. Commander's restriction. For example, commander's determination of nonavailability or unsuitability to perform unit duties (human reliability program, pending separation or compassionate reassignment, etc).

E–3. CONUS, Alaska, and Hawaii based units

In addition to the above exemptions, all CONUS, Alaska, and Hawaii based reporting units will consider soldiers in the following categories as not available for deployment or employment.

a. Has not completed a minimum of 12 weeks basic or advanced military training or its equivalent (as prescribed by law).

b. Sole surviving family member, deferred from hostile fire zone, or conscientious objector (as prescribed by law and AR 600–43).

c. Soldiers with less than 7 days to expiration of term of service on the actual or programmed deployment date and who has not requested extension of reenlistment.

d. Pregnant soldiers.

e. Commander's restrictions. Examples are as follows:

(1) Soldiers with extreme family problems which, in the opinion of the unit commander, are serious enough to warrant deleting the individual from the deployment strength.

(2) Reservists whose civilian occupation is essential to the national or community health, safety, or interest to the degree that it clearly outweighs the need of the nation for the individual in an active duty status.

E–4. Continued nonavailability

If impediments to deployment or employment are likely to persist, the commander should counsel the soldier about his or her service obligations and the possibility of separation in accord with AR 135–175, AR 135–178, AR 635–100, or AR 635–200.

RDO
radio

RECAP
recapitulation

REQVAL
Requisition Validation System

RKT
rocket

RMTC
regional medical training centers

RMTS
regional maintenance training sites

ROTC
Reserve Officers' Training Corps

SAM
surface-to-air missile

SAT
short and can accompany troops

SCG
security classification guide

SIDPERS
Standard Installation/Division Personnel System

SMOSC
secondary military occupational specialty code

SP
self-propelled

SPBS
Standard Property Book System

SQI
special qualification identifiers

S&S
supply and service

S&T
supply and transport

STARC
State Area Command

TAAC
theater Army automation center

TAADS
The Army Authorization Documents System

TAT
to accompany troops

TC
Transportation Corps

TDA
table of distribution and allowances

TDY
temporary duty

TEC
training extension course

TML
terminal

TMT
troop motor transport

TOE
table of organization and equipment

TOPO
topographic

TOW
tube-launched, optically tracked, wire guided

TRADOC
U.S. Army Training and Doctrine Command

TRK
truck

TROPO
tropospheric

TT
teletype

UIC
unit identification code

USACEGE
U.S. Army Combat Equipment Group Europe

USAMMCE
U.S. Army Material Management Center Europe

USAR
U.S. Army Reserve

UTES
unit training equipment site

WETS
week-end training site

WO
warrant officer

WWMCCS
Worldwide Military Command and Control System

Section II
Terms

Active Guard Reserve
Guardsmen and reservists on full-time active duty solely to provide full-time support to the Reserve Components. They assist in the training, administration, maintenance, and operations of selected Reserve units and perform a variety of functions relative to managing the Reserve Components as staff officers at headquarters, major commands, and HQDA.

Annual training
The minimum period of annual active duty training or annual field training which a member performs each year to satisfy the annual training requirements associated with his or her Reserve Component assignment. It may be performed during one consecutive period or in increments of 1 or more days depending on mission requirements.

Army training and Evaluation Program
A program for collective training in units. It describes the collective tasks which the unit must perform to accomplish its mission and survive on the battlefield.

Assigned strength
The assigned personnel strength of a unit includes all permanently assigned personnel plus those personnel carried on a separate TDA providing full-time Reserve Component support who will mobilize with the unit and personnel designated to join an Active Component unit under the Professional Officer Filler System. Personnel temporarily absent (for example, leave and TDY) are included in assigned strength.

Authorization documents
HQDA or proponent-approved records that reflect personnel and equipment requirements and authorizations for one or more units. Authorization documents also provide unit organizational information. Such documents are MTOE and TDA.

Authorized level of organization
Establishes the authorized strength and equipment level for MTOE units. May be expressed in numerical or letter designated levels representing percentages of full TOE/MTOE manpower spaces, or reflecting Type B or Cadre organization levels of the base TOE. For example, ALO 1 is 100 percent, ALO 2 approximately 90 percent, ALO 3 approximately 80 percent, and ALO 4 approximately 70 percent (AR 310–49). A unit's ALO is listed in section I of its MTOE.

Authorized strength
That portion of the required manpower which can be supported by the manpower available and which is reflected in the authorized column of authorization documents.

Available days
Applies to rating your equipment's ability to do its combat or support job. Available days are the days equipment is on-hand in the organization and fully able to do its mission. The time that equipment is fully mission capable.

Available strength
That portion of a unit's assigned strength that is available for deployment and/or employment, as qualified in appendix E.

Borrowed military manpower
The use of military manpower from an MTOE unit to perform duties within a TDA activity where a MACOM approved manpower requirement exists, but for which no manpower space has been authorized. Additionally, borrowed military manpower may be employed in those cases where manpower spaces have been authorized, but the positions are vacant.

Cadre unit
Organized at the cadre (nucleus) level to provide a base for expansion to ALO 1 in case of mobilization; for example, a unit that will have a training mission. Cadre type units will not be organized or used solely for non wartime missions. Units organized at the Cadre level of the TOE will be authorized only that equipment needed for cadre training.

Command and control number
A six-position alphanumeric code that is used to identify authorization documents; for example, FC0188. The first two characters represent the MACOM, in this example FORSCOM. The third and fourth digits are the change number within the fiscal year, and fifth and sixth are the fiscal year in which the document becomes effective.

CAPSTONE Program
A management program designed to improve the readiness of the total force through the alignment of Active Component and Reserve Component units into force packages which enable units to train and plan in peacetime for their wartime missions.

Carrier unit identification code
Provides a means to assign personnel and account for equipment that arrives at the unit location before unit activation. Upon activation of the MTOE unit, HQDA (DAMO–FDA) will discontinue the carrier UIC from the Force Accounting System.

COHORT
A personnel system of recruiting, forming, training, and deploying cohesive units. This system can be applied to company or battalion-size units. One of the two subsystems of the New Manning System.

COHORT unit
A unit (company or battalion) composed of first term soldiers and careerists who will be stabilized for a fixed life cycle. The first term soldiers have been enlisted for the purpose of filling all of the skill level one and some percentage of the skill level two authorizations for a particular unit. The unit trains together and usually will deploy overseas at a fixed time in the unit cycle.

Collective training
Training in institutions or in units to prepare cohesive teams and units to accomplish their combined arms missions.

Combined training
Training involving elements of two or more forces of two or more nations.

Continental United States Army
Commands, supports, and supervises U.S. Army Reserve units in specified geographical areas. The CONUSA reports directly to FORSCOM.

Deployment
The relocation of forces to areas outside the continental United States to meet operational requirements.

E-date (effective date)
A six-position numeric code that signifies the actual date that an authorization document is effective; for example, 871001. The first two digits are the calendar year, third and fourth are the month, and fifth and sixth are the day.

E-date adjustment
The revision of the effective date of authorization documents. During the course of activation, conversion, or reorganization, the proponent or HQDA may recognize that document of the change on the approved E-date would cause an apparent decrease in unit status. If so, issuance of permanent orders, if required, will be held in abeyance and a new E-date will be recommended to HQDA (DAMO–FPD). HQDA may, on a case-by-case basis, issue authority to modify the E-date of those approved TAADS documents.

Emergency deployment readiness exercises
Minimum notice exercise to test unit deployment capabilities under contingency conditions.

Equipment mission capable
A logistic indicator that portrays how well a unit is maintaining that portion of its on-hand equipment which is both unit status and maintenance reportable.

Equipment on-hand
A logistic indicator depicting the organization's fill of unit status reportable equipment. EOH is computed by comparing reportable equipment on-hand to wartime requirements.

Equipment readiness
A logistic indicator that portrays the combined impact of equipment shortages and maintenance shortfalls on a unit's ability to meet wartime requirements.

Equipment readiness code
A one-digit code explaining an item's importance to a unit's combat, combat support, or service support mission. The codes are assigned to items on modification tables of organization and equipment. Since equipment can serve different purposes, the same item may have a different code in like or different type units. Equipment readiness codes are further defined in appendix B.

Field, alphabetic
A left-justified data field in which alphabetic characters (A through Z), special characters, and embedded blanks can be reported, followed by trailing blanks.

Field, alphanumeric
A left-justified data field in which alphabetic characters (A through Z), special characters, numeric characters, and embedded blanks can be reported, followed by trailing blanks.

Field, numeric
A right-justified data field in which arabic numerals 0 (zero) through 9 can can be reported, preceded by leading zones.

Full TOE/MTOE
The full strength and equipment of D and E series TOE; level 1 strength and equipment of G and later series TOE; and required column strength and equipment for units organized under MTOE. For TOE organizations, additions provided by TDA for non-TOE missions are excluded from the computation of full TOE. For units organized under Type B columns of TOE, the Type B column is full TOE/MTOE. For units organized under cadre columns of TOE, the cadre column is full TOE/MTOE. For TDA organizations designated to report organization status, the required column is treated as full TOE.

General support forces
Training, logistic, security, and other support activities of the CONUS base, field activities, administrative headquarters, and forces provided for peacetime-peculiar activities. They are identified in Department of the Army Force Accounting System by a three-position force planning code beginning with a "C."

Left-justify
To position data within the space allocation so that the left data character occupies the left position of the field.

Line item number
A six-position alphanumeric number that identifies the generic nomenclature of specific types of equipment. Standard LIN consists of one alpha position followed by five numeric positions. Standard LIN are assigned by AMC and are listed in SB 700–20.

Loaded deployability posture
All equipment and accompanying supplies of a unit's first increment is loaded aboard aircraft and/or ships and prepared for departure to a designated objective area. Personnel are prepared for loading on minimum notice.

Main body
Principal part of a tactical command or formation. It does not include detached elements of the command, such as advanced party or close-out party.

Maintenance significant item/materiel
An end item, assemblage, component, or system for which the maintenance support concept envisions the performance of corrective maintenance services on a recurring basis.

Major combat unit
A division, separate brigade, or armored cavalry regiment.

Major United States Army Reserve Command
A general officer command that is directly subordinate to a numbered continental United States Army.

Military occupational specialty
The grouping of duty positions requiring similar qualifications and the performance of closely related duties.

Military occupational specialty code
The five-character code used to identify MOS, skill level, and special qualifications.

Military qualification standards
A three-phased series of manuals for officers (MQA I, Precommissioning; MQS II, Lieutenant; and MQS III, Captain) that state military tasks, skills, knowledge, and professional military education expected of an officer at these levels. MQS I, the precommission manual, is the same for all precommission programs. MQS II and III are branch and specialty specific.

Mission capable
The time that a piece of equipment or system is fully mission capable or partially mission capable.

a. Full mission capable. Equipment is fully mission capable when it can perform all of its combat missions without endangering the lives of crew or operators. The terms ready, available, and full mission capable are often used to refer to the same status; equipment is on-hand and able to perform its combat missions.

b. Partially mission capable. Systems and equipment that are safely usable and can perform one or more, but not all primary missions because one or more of its required mission essential subsystems are inoperative for lack of maintenance or supply.

c. For unit status reporting purposes the Army uses only FMC time.

Mission essential task list
A list (in order of precedence) of combat, combat support, and/or combat service support tasks derived from the unit's assigned wartime mission(s). The METL is the basis for a unit's annual training plan.

Mobilization
The act of preparing for war or other emergencies through assembling and organizing national resources. It is the process by which the Armed Forces, or part of them, are brought to a state of readiness for war or other national emergency. This includes assembling and organizing personnel, supplies, and materiel for Active military service, federalization of Reserve Components extension of terms of service, and other actions necessary to convert to a wartime posture.

Mobilization station
The designated military installation (active, semi-active, or inactive) or mobilization center to which a Reserve Component unit is moved for further processing, organizing, equipping, training, and employing after mobilization and from which the unit may move to its port of embarkation.

Modification table of organization and equipment
A modified version of a TOE that prescribes the unit organization, personnel, and equipment needed to perform an assigned mission in a specific geographical or operational environment. In most cases, modification of the TOE is not necessary; however, an MTOE is required to designate the authorized level of organization and provide other data such as unit designation and effective date.

Nonavailable days
Used in rating the ability of equipment to do its combat or combat support job. Nonavailable days are the days the equipment was not able to do its missions, the time your equipment is not mission capable.

Not mission capable
Equipment that cannot perform one or more of its combat missions.

Not mission capable maintenance
Equipment that cannot perform its combat mission because of maintenance work underway or needed.

Not mission capable supply
Equipment that cannot perform its combat missions because of supply shortage.

Pacing items
Major weapon systems, aircraft, and other items of equipment that are central to an organization's ability to perform its designed mission. These items are subject to continuous monitoring and management at all levels of command. Pacing items are identified in appendix C.

Parent unit
a. MTOE units. A U.S. Army—

(1) Numbered unit of battalion or equivalent level.

(2) Numbered company, battery, troop, platoon, detachment, or team that is not an organic element of a battalion.

Note: As an exception to the above, certain split units are treated as parent units for documentation in TAADS.

b. TDA units. A unit organized under a TDA with a unique TDA number assigned by DA, includes TDA augmentation to an MTOE unit.

Personnel losses
Actual losses to a reporting unit. Intracommand losses are not included, for example, losses to subordinate units that do not result in a loss to the reporting command are not counted as personnel losses.

Possible days
The number of calendar days an item was on-hand—on the property book—during the DA Form 2406 report period. For an item you received during the reporting period, count the first day it was on-hand as a whole possible day. Do not count the last day an item is on-hand—the day you lost it from your property book—as a possible day.

Port of embarkation
A marine or air terminal at which troops, units, military sponsored personnel, unit equipment, and materiel board and/or are loaded aboard ships or aircraft as part of a deployment operation.

Required column
That portion of a unit's TOE/MTOE/TDA which designates what personnel and equipment are necessary to meet full wartime requirements.

Reserve Component
As used in this regulation, applies to ARNG and USAR units.

Reserve Component on extended active duty
A Reserve Component organization ordered to extended active duty rather than for a short training tour or for a limited purpose; for example, to assist in quelling a civil disorder or to assist in disaster relief.

Roundout unit
A Department of the Army program which brings understructured Active Army divisions up to a standard configuration by affiliation of Reserve Component units. In the event of a mobilization, these Reserve Component units will deploy as part of the Active Army division.

Senior grade
A personnel indicator that compares the available enlisted personnel in grades E5 through E9, officers to full wartime requirements.

Skill qualification test
A performance-oriented test normally consisting of a hands-on component, job site component, and a skill component. The test

measures individual proficiency in performing critical tasks related to the soldier's primary MOS. Results provide the basis for remedial individual training.

Special duty
The performance of duty with an organization other than the unit to which assigned, while continuing to be administered and accounted for by the unit of assignment. SD includes borrowed military manpower and troop diversions.

State adjutant general
An individual appointed by the governor of a State to administer the military affairs of the State. A State adjutant general may be federally recognized as a general officer of the line provided he meets the prescribed requirements and qualifications. However, he may be federally recognized as a general officer, Adjutant General Corps, for tenure of office.

State Area Command
A mobilization entity within each State and territory that may be ordered to active duty when Army National Guard units in that State or territory are alerted or mobilized. The STARC provides for command and control of mobilized Army National Guard of the U.S. units from home station until arrival at mobilization station. It is also responsible for planning and executing military support for civil defense and land defense plans under the respective area commander. It also provides assistance to military family members.

Substitution item
An item authorized for issue and considered acceptable for unit status reporting instead of a required standard item of like nature and quality. SB 700–20 identifies items and procedures for making substitutions.

Table of distribution and allowance
TDA units are basically nondeployable units organized to fulfill missions, functions, and workload obligations of a fixed support establishment in CONUS or overseas. TDA units are uniquely developed to perform a specific support mission. They usually include civilian manpower whereas an MTOE unit generally will not.

TDA augmentation document
An augmentation TDA prescribes the additional organizational structure, personnel, and equipment needed to support an added non-TOE mission assigned to an MTOE unit. An augmentation TDA may include civilian positions.

Table of organization and equipment
A table which prescribes the normal mission, organizational structure, and personnel and equipment requirements for a tactical military unit, and is the basis for authorization documents.

The Army Authorization Documents . . . System
An automated system that supports and centralizes the control of the development and documentation of organizational structures. It also supports requirements and authorizations for personnel and equipment needed to accomplish the assigned missions of Army units. At MACOM level, Vertical TAADS produces MTOE and TDA authorization documents.

Troop diversion
Use of soldiers, that does not meet the definition of borrowed military manpower to perform recurring duties with an organization or unit other than that to which they are assigned while continuing to be administered and accounted for by the unit of assignment.

Type B units
Type B MTOE units are configured to conserve U.S. Army manpower by substituting non-U.S. personnel in specified positions of selected (generally combat service support; for example, terminal transfer units) MTOE. Units organized at level B of the TOE will be authorized level B equipment, as adjusted by force structuring constraints.

Unit identification code
A 6-character code assigned to a specific unit that can be used to identify that unit.

Unit readiness
The ability of a unit to perform as designed.

Unit status
The condition of a unit at a specific point in time.

Wartime requirements
Doctrinally established requirements needed by type units to fully perform as designed and as part of the total force. The organization design (Level 1) establishes wartime required fill levels for personnel and equipment.

APPENDIX B--FEASIBILITY ASSESSMENT

CONTENTS

PROBLEM DEFINITION

PROJECT: Unit Status Reporting System.

PROBLEM: U.S. Army unit commanders are required to report their current unit status to higher commands on a monthly basis via the Unit Status Report (DA Form 2715-R). Currently, commanders maintain data for the reports and prepare them manually. Preparation of the actual report is a very time consuming and tedious process, as necessary data is maintained in several different locations throughout the unit. Report preparation procedures are difficult and often confusing due to the many calculations and wide dispersion of data involved. There can be a large margin for error, depending on the commander's experience in preparing the report. Something must be done to consolidate the data, simplify and shorten the preparation process, and cut down on the frequency of errors.

OBJECTIVES:

(1) Reduce the amount of time unit personnel spend on the preparation of the monthly Unit Status Report by 50%.

(2) Improve the accuracy of the completed report to 95% error free.

(3) Reduce unit record keeping requirements by 50%.

SCOPE: This project should take no longer than 12 man-months.

PRELIMINARY SOLUTIONS: One solution might be to consolidate data into a single data base and use a DBMS for preparation of the report.

FEASIBILITY STUDY: The feasibility study should be completed within a three week period.

EXECUTIVE SUMMARY

The purpose of this section is to provide a summary of the results and recommendations of this feasibility study.

1. **Necessary Authorization:** None.
2. **Key Sources of Information:** Army Regulation 220-1; Captains Mark Hiatt and Rose Haas of the Division G-4 Office of the 7th Infantry Division (Light), Fort Ord, CA.
3. **Alternatives Considered:** Keep the present system; a file processing system; a database system.
4. **Recommended Alternative:** The database system. The development costs are estimated at $28,692, and the operating costs are estimated at $1920 per year. The annual cost savings are estimated to be $6080 per year with an estimated payback period of 6.71 years. The benefits of this alternative (relative to the other alternatives considered) are a greater annual cost savings and shorter payback period, as well as being the most likely alternative to meet all of the objectives of the project. The time schedule for a database system is: three weeks for the feasibility study, six weeks for the analysis step, seven weeks for system design, one month for detailed design, and one month for implementation.

METHOD OF STUDY

The objective of this feasibility study is to determine if there is a solution to the problem identified in the Problem Definition. The statement of scope and objectives was the starting point for this feasibility study. The methodology used to conduct the study was a step-by-step technique which is part of the structured analysis process. The steps followed are listed in order below:

1. Define the project's scope and objectives--the statement of scope and objectives developed during the problem definition step was clarified by interviewing the user at Fort Ord to further determine what they really wanted the system to do. A questionnaire was used to get unit level input. Army Regulation 220-1, which establishes the Unit Status Reporting System, was studied to gain familiarity with the requirements for reporting procedures.

2. Study the existing system--to understand it. Key people from Fort Ord units were interviewed (commanders and other officers who prepare and review the report). A system flowchart was developed to document the present system.

3. Develop a high-level model of the proposed system--a new system was created that does the same things the existing system does functionally, and also includes the user's newly defined functions. Data flow diagrams were developed to document the proposed system as a logical model.

4. Redefine the scope and objectives--the user at Fort Ord was re-interviewed using the data flow diagrams to confirm the accuracy of the logical model, and the statement of scope and objectives.

5. Develop and evaluate alternative solutions--to determine if there is a feasible solution. Three alternative solutions (keep the present system, a file processing system, and a database system) were evaluated for operational, technical, and economic feasibility.

6. Recommend a course of action--the best choice of the three possible alternatives was recommended (the database system).

7. Rough out a development plan--this was for the database system (the recommended course of action from the previous step) and follows the system life cycle steps. It is only an estimate which will be refined as the system life cycle progresses.

8. Write and present the feasibility study report--a formal report of the feasibility study results was prepared and presented to the user and Professor Davis.

The above steps were taken from Professor William S. Davis' book, 'Systems Analysis and Design, a Structured Approach'. The key people interviewed for this project dealing with the Unit Status Reporting System were Captain Mark Hiatt, USA and Captain Rose Haas, USA. Additionally, representative units from the 7th Infantry Division (Light), Fort Ord completed questionnaires (sample in Appendix C) concerning their needs for this system.

ANALYSIS

The purpose of this section is to present a high-level analysis of the proposed logical system. The objectives of this system are as follows:

1. Meet all of the requirements for the Unit Status Reporting System as prescribed by Army Regulation 220-1.

2. Provide unit commanders with a system which reduces the amount of time required for monthly report preparation by 50%.

3. Provide units with a flexible system which can incorporate other record keeping requirements, and thus reduce those requirements by 50%.

4. Provide units with a flexible system which will help meet other reporting requirements, and thus reduce that report preparation time by 50%.

5. Provide units with a system which has reduced data redundancy, increased data integrity, and is simple to use, thus reducing the error rate to 5% or less

Constraints on the system are as follows: the unit will only have access to one microcomputer (or possibly might have to share access with one or more units). Individual units within a larger organization may have implemented systems, including the supporting software. Units may have communications capability. The scope of the project is twelve (12) man-months (two people working fulltime) and $30,000. There are no key interfaces with other systems due to the lack of communications capability. If communications capability is added, the system would be interrelated with other systems in the organization's system (e.g., implementation

AD-A184 661 A DATABASE DESIGN FOR A UNIT STATUS REPORTING SYSTEM 2/2
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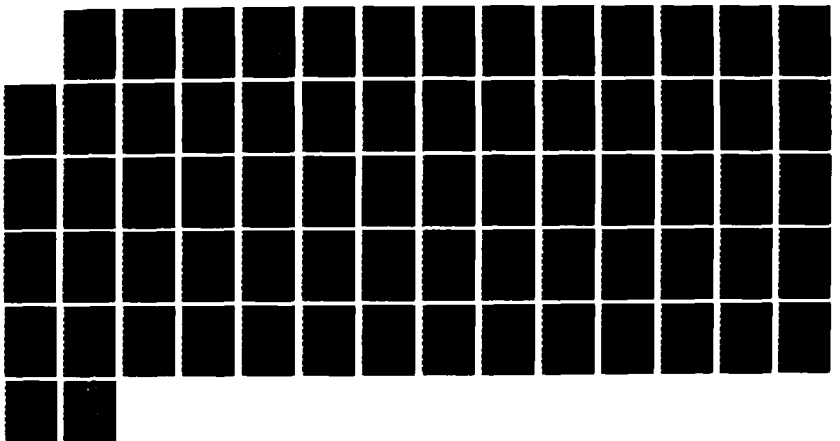
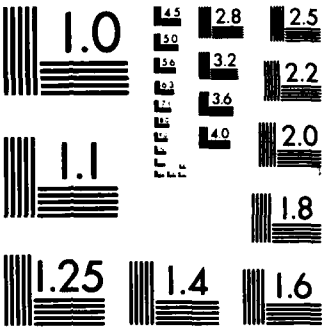
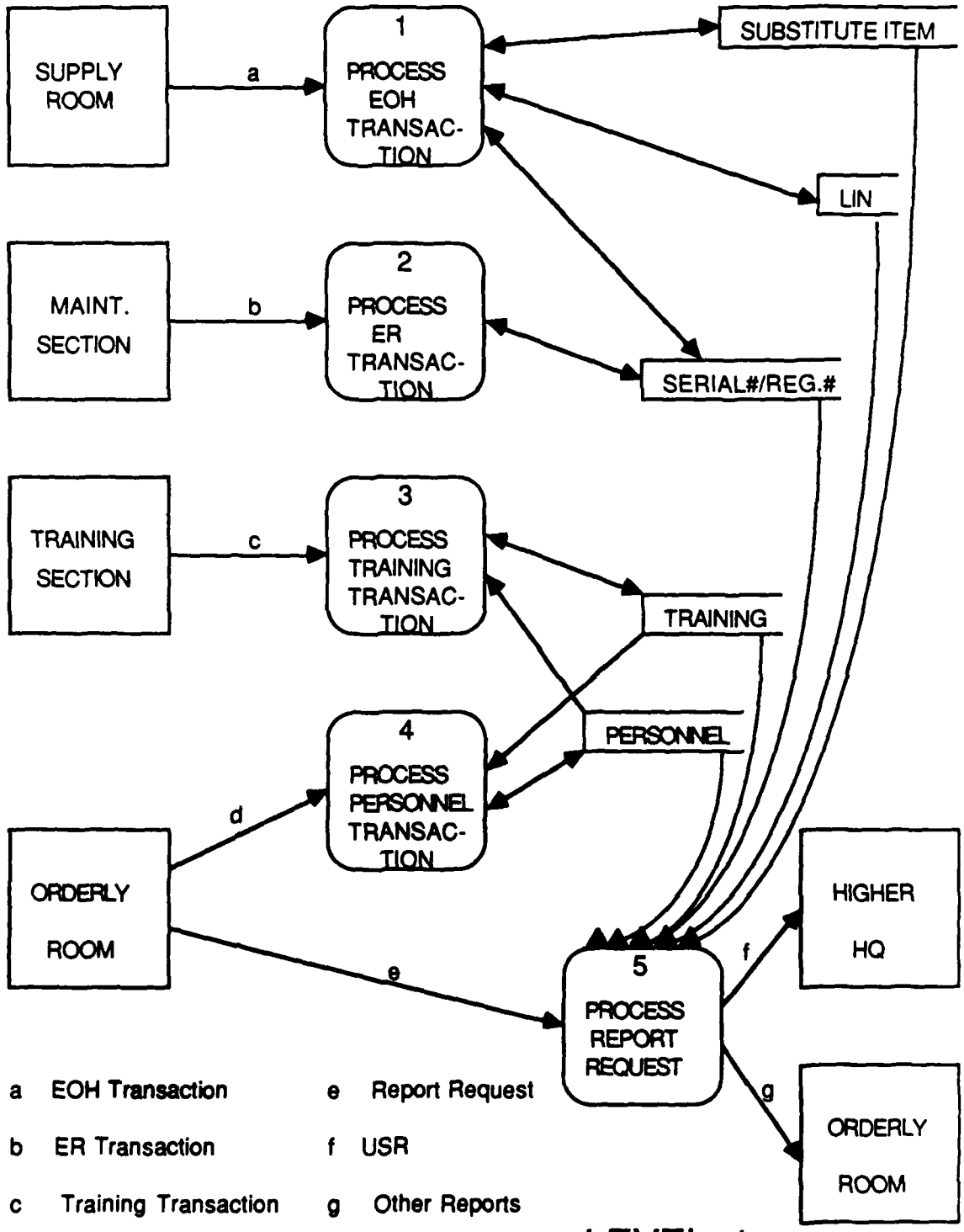




The data flow diagram (DFD) which follows was developed using guidelines outlined by Chris Gane and Trish Sarson in their book 'Structured Systems Analysis'. This technique (DFD) was chosen because it was believed to be the most effective way to document the proposed system as a logical model.

The first step was identifying the external entities involved: the orderly room, the supply room, the maintenance section, the training section, and higher headquarters. The next step was identifying the outputs expected and the necessary inputs. The outputs were the Unit Status Report (USR) and other reports; the inputs were the various transactions (equipment on-hand, equipment readiness, training, personnel, and report requests). The third step was identifying processes that were logically necessary, and the data stores required for all of the data needed to complete the (USR). These data stores included: personnel, training, serial#/ registration#, line item numbers (LIN), and substitute items. Once these components were identified, the first draft of the data flow diagram was drawn. Subsequent drafts were drawn to clarify the DFD. Then, each process was exploded to produce lower levels of the DFD. The user was consulted to ensure the system met requirements. The resulting DFD reflects the functions required by AR 220-1, as well as the needs specified by the user.

The data dictionary was developed by describing all of the data flows (including data structures and data elements), the data stores, the processes, and glossary entries (the user's vocabulary). A data descriptor language called 'OF' language was used in this data dictionary for consistency and ease of use.


SUPPLY ROOM
a
1
PROCESS EOH TRANSAC-TION
SUBSTITUTE ITEM
LIN
MAINT. SECTION
b
2
PROCESS ER TRANSAC-TION
SERIAL#/REG.#
TRAINING SECTION
c
3
PROCESS TRAINING TRANSAC-TION
TRAINING
PERSONNEL
4
PROCESS PERSONNEL TRANSAC-TION
d
ORDERLY ROOM
e
5
PROCESS REPORT REQUEST
f
HIGHER HQ
g
ORDERLY ROOM
a EOH Transaction
b ER Transaction
c Training Transaction
d Personnel Transaction
e Report Request
f USR
g Other Reports

LEVEL 1

ELEMENTARY DATA DICTIONARY

EOH Transaction	[Item Addition Info ¦ Item Update Info ¦ Item Deletion Info ¦ Query ¦ Codes Update Info]
ER Transaction	[Item Change In Status Info ¦ Item Service Info ¦ Query ¦ Codes Update Info]
Other Reports	(Any other reports the unit decides to include)
Personnel Transaction	[Personnel Inprocess Info ¦ Personnel Update Info ¦ Personnel Outprocess Info ¦ Query ¦ Codes Update Info]
Report Request	[Personnel Report Request ¦ EOH Report Request ¦ ER Report Request ¦ Training Report Request ¦ Other Report Request]
Training Transaction	[Training Inprocess Info ¦ Training Update Info ¦ Training Outprocess Info ¦ Query ¦ Codes Update Info]
Unit Status Report (USR)	Personnel Info, Training Info, ER Info, EOH Info, Personnel Rating, Training Rating, ER Rating, EOH Rating, Overall Unit Rating

The remainder of the data dictionary can be found in Appendix E.

ALTERNATIVES CONSIDERED

There were three alternatives considered in this feasibility study: keep the present system, a file processing system, and a database system. Each will be addressed in turn.

1. Present System

   a. Technical Feasibility--the present system has been implemented using current manual technology.

   b. Operational Feasibility--the present system is currently being implemented in the organization.

   c. Economic Feasibility--

      Development Costs: None (system is currently being implemented).

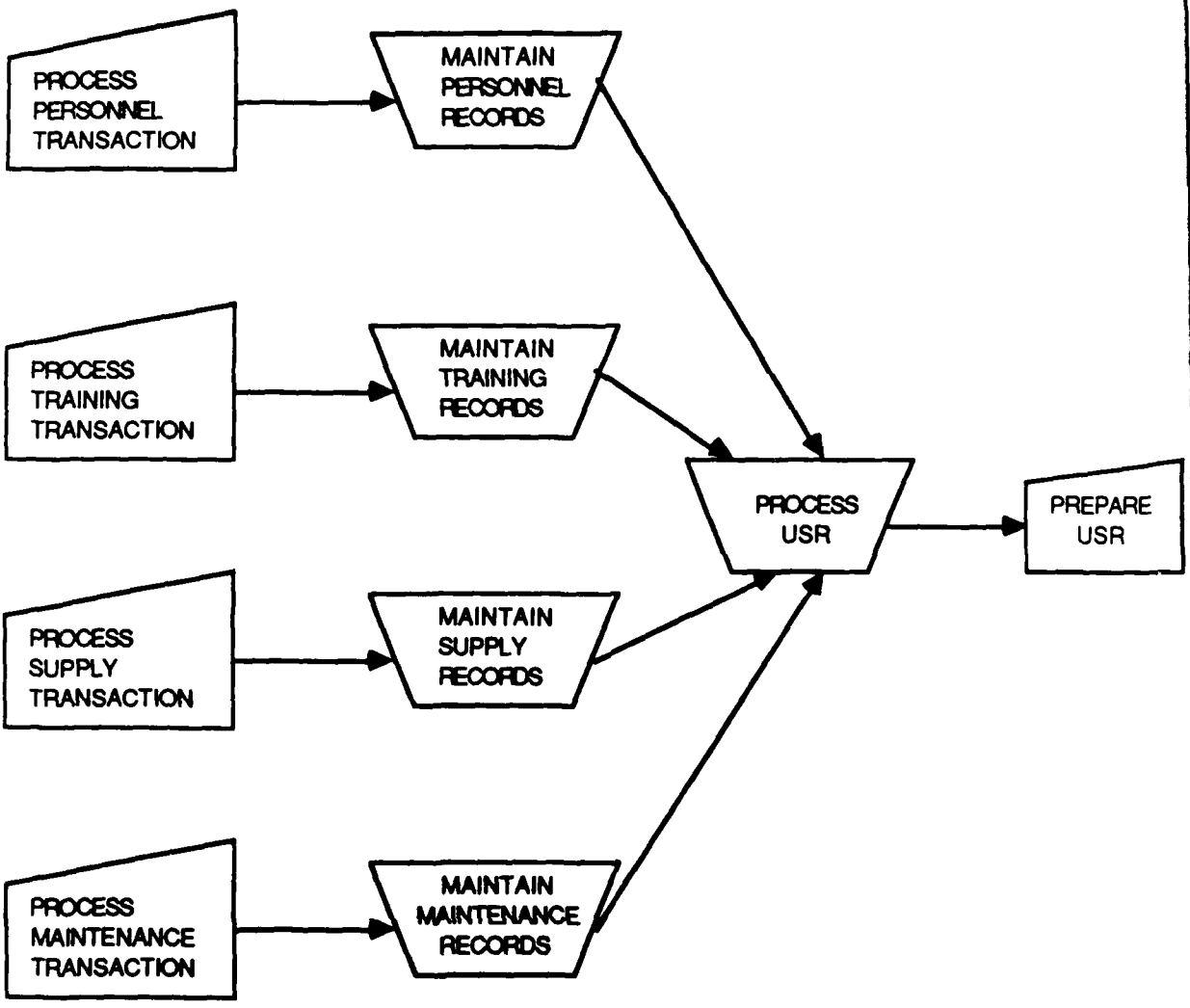
      Operating Costs*:

Report Preparation	$2,750/year
Maintenance of Data	5,000/year
Supplies	250/year
TOTAL	$8,000/year

      Annual Cost Savings: None

   d. Implementation Schedule--None (system is currently being implemented).

* The operating costs were calculated based on: two days/month report preparation time (@ $114.58/day) by the unit commander; three hours/day for maintenance of data (@ $6.94/hour) by an administration specialist; and $250/year for miscellaneous supplies related to these activities (paper, pencils, etc.).



PRESENT SYSTEM

2. File Processing System

a. Technical Feasibility--this system can be implemented using current microcomputer technology. Programs which use file processing systems can be obtained through the Command and Control Microcomputer Users' Group (C2MUG).

b. Operational Feasibility--this system can be implemented in the organization, providing a microcomputer and trained personnel are available.

c. Economic Feasibility--

Development Costs*:
Labor (5 months @ $4782/month) $23,910

Operating Costs--New System**:
Labor, Supplies (@ $80/week) $3,840/year

Operating Costs--Existing System: $8,000/year

Annual Cost Savings: $4,160/year

Year	Savings	Present Value (at 10%)	Cumulative P.V.
1	4160	3781.82	3781.82
2	4160	3438.02	7219.84
3	4160	3125.47	10345.31
4	4160	2841.34	13186.65
5	4160	2583.03	15769.68
6	4160	2348.21	18117.89
7	4160	2134.74	20252.63
8	4160	1940.67	22193.30
9	4160	1764.25	23957.55

Payback Period: 8.97 years

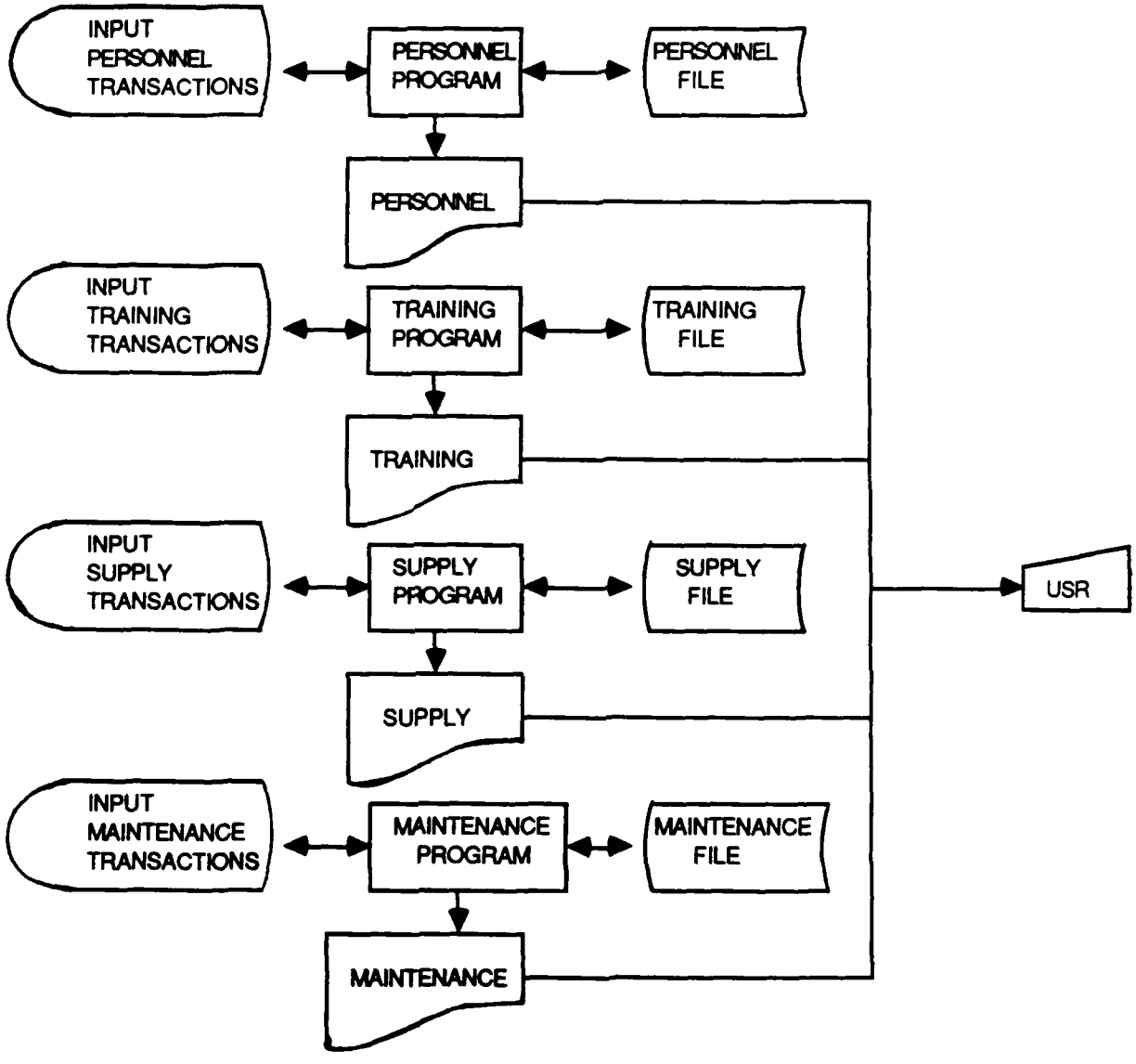
d. Implementation Schedule--

	Months
Feasibility Study	0.75
Analysis	0.75
System Design	1.50
Detailed Design	0.75
Implementation	1.25
TOTAL:	5.00 months

* Development costs were based on the implementation schedule above, with labor to be performed by two Army Captains (@ $2391/month).

** Operating costs were calculated based on: five hours/month for report preparation time (@ $14.32/hour) by the unit commander; one-and-one-half hours/day for maintenance of data (@ $6.94/ hour) by an administration specialist; and $10/week for miscellaneous supplies.

NOTE: The payback period appears to be relatively long based on these calculations for use of the system by one unit. However, the more units which utilize the system, the shorter the payback period will be (because the annual cost savings will be greater).



FILE PROCESSING SYSTEM

3. Database System

a. Technical Feasibility--this system can be implemented using current database technology (with a DBMS like dBASE III plus).

b. Operational Feasibility--this system can be implemented in the organization, provided a microcomputer, a DBMS, and trained personnel are available.

c. Economic Feasibility--

Development Costs*:
Labor (6 months @ $4782/month) $28,692

Operating Costs--New System**:
Labor, Supplies (@ $40/week) $1,920/year

Operating Costs--Existing System: $8,000/year

Annual Cost Savings: $6,080/year

Year	Savings	Present Value (at 10%)	Cumulative P.V.
1	6080	5527.27	5527.27
2	6080	5024.79	10552.06
3	6080	4567.99	15129.05
4	6080	4152.72	19272.77
5	6080	3775.20	23047.97
6	6080	3432.00	26479.97
7	6080	3120.00	29599.97

Payback Period: 6.71 years

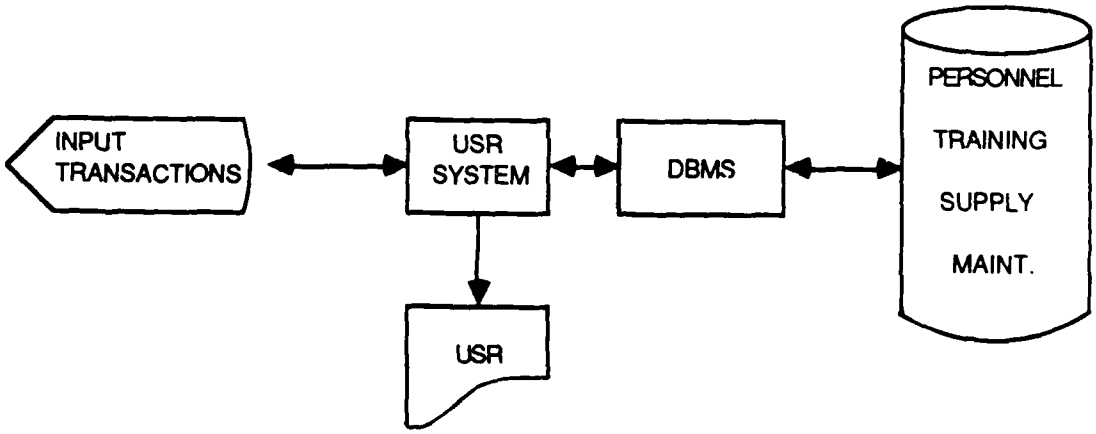
d. **Implementation Schedule--**

	Months
Feasibility Study	0.75
Analysis	1.50
System Design	1.75
Detailed Design	1.00
Implementation	1.00
TOTAL:	6.00 months

* Development costs were based on the implementation schedule above, with labor to be performed by two Army Captains (@ $2391/month).

** Operating costs were calculated based on: one hour /month for report preparation time (@ $14.32/hour) by the unit commander; one-half hour/day for maintenance of data (@ $6.94/hour) by an administration specialist; and $8/week for miscellaneous supplies.

NOTE: The payback period appears to be relatively long based on these calculations for use of the system by one unit. However, the more units which utilize the system, the shorter the payback period will be (because the annual cost savings will be greater).



DATABASE SYSTEM

RECOMMENDATIONS

The recommended course of action is the database system. The reasons for this recommendation are two-fold. The first reason is that the database system appears to have the greatest likelihood of meeting all of the objectives of the project. A database system allows all of the files to be integrated, with reduced data redundancy and increased data integrity. Utilization of a database system would require the least amount of manual preparation time for the USR. The present system is entirely manual, and based on the problems related to this, keeping the present system is undesirable. The file processing system is an acceptable solution, but would still require more manual input than the database system.

The second reason is that of economic feasibility. Based on the cost/benefit analysis, the database system has the shortest payback period and the highest annual cost savings of the three alternatives considered. Despite the higher development cost and longer development schedule, the economic benefits and greater possibility of meeting project objectives, outweigh these disadvantages. Refer to the cost/benefit analysis in the previous section.

DEVELOPMENT PLAN

The following table lists the projected schedule and the projected costs for each step in the system life cycle for the recommended course of action.

Step	Projected Schedule	Projected Costs
Feasibility Study	3 weeks	$3,586.50
Analysis	6 weeks	7,173.00
System Design	7 weeks	8,368.50
Detailed Design	4 weeks	4,782.00
Implementation	4 weeks	4,782.00
TOTALS:	24 weeks	$28,692.00

The following table is the detailed time estimates and cost estimates for the next step in the system life cycle--Analysis.

Analysis Activity	Time Estimate	Cost Estimate
Identify data elements	1.00 weeks	$1,195.50
Identify algorithms	1.25 weeks	1,494.38
Revise data dictionary	0.75 weeks	896.62
Document algorithms	0.50 weeks	597.75
Explode DFD's	1.00 weeks	1,195.50
Define logical system	0.50 weeks	597.75
Inspection & review	1.00 weeks	1,195.50
TOTALS:	6.00 weeks	$7,173.00

APPENDIX C--QUESTIONNAIRE

A research project is being conducted in cooperation with the Division G-4. The purpose of the project is to design a computer based file system to support unit commanders in maintaining all the necessary information for various unit reporting requirements (to include the Unit Status Report). A part of the design process is to determine user needs. In support of this requirement, please answer the following questions:

--What information would you want to maintain on "Personnel"?

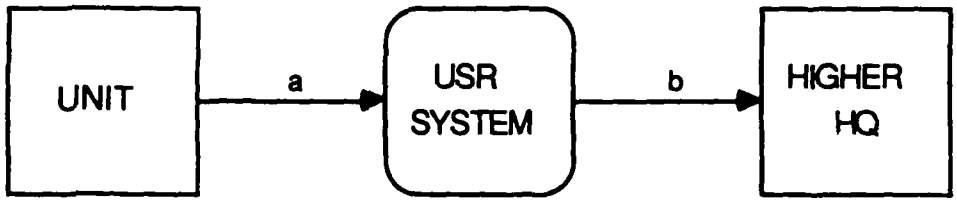
--What information would you want to maintain on "Equipment"?

--What information would you want to maintain on "Individual Training"?

--What other files would you include, and what information would you want to maintain in them?

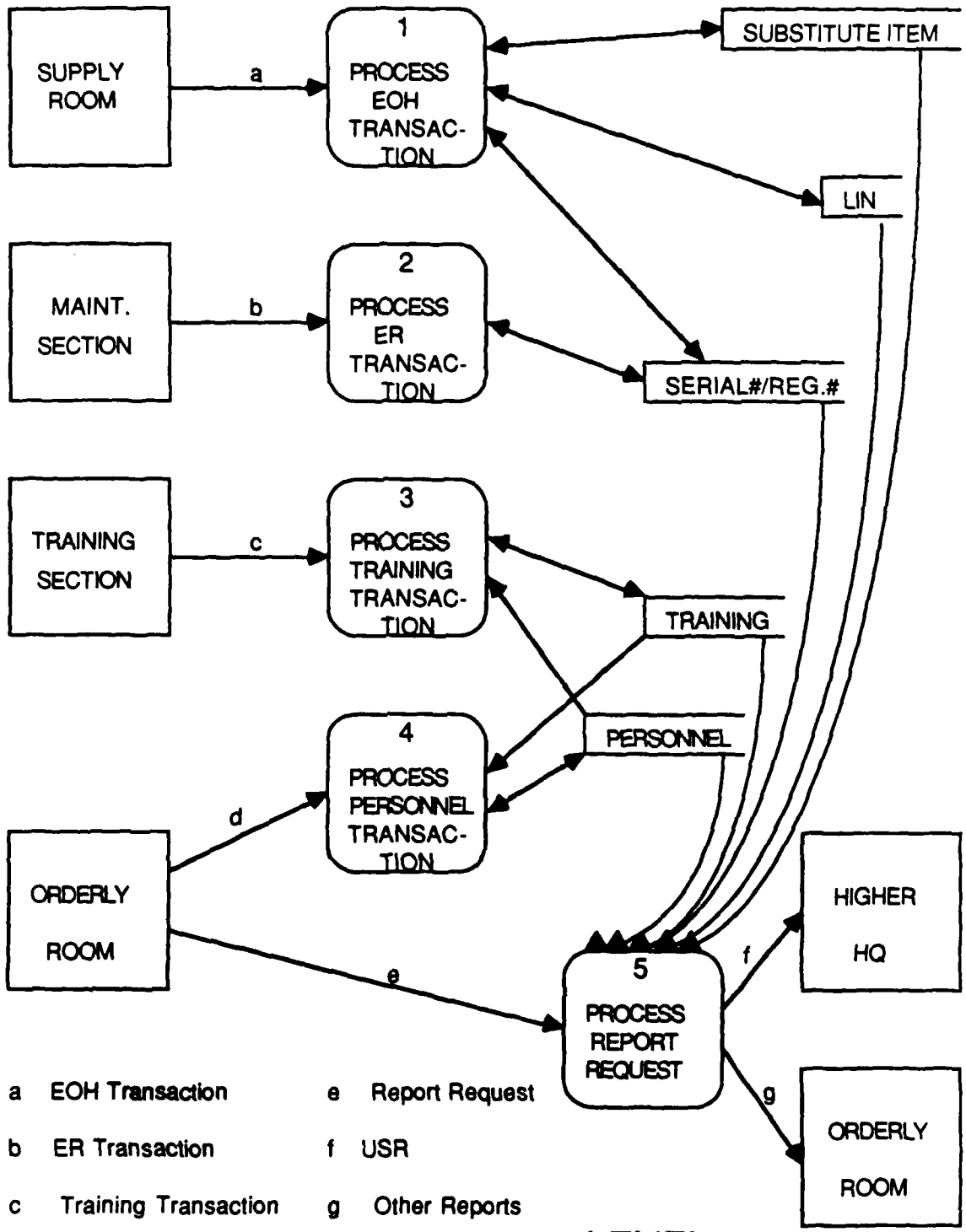
If more space is required, please use additional sheets. If you would be willing to answer further questions relating to this project, please include your name, unit and phone number.

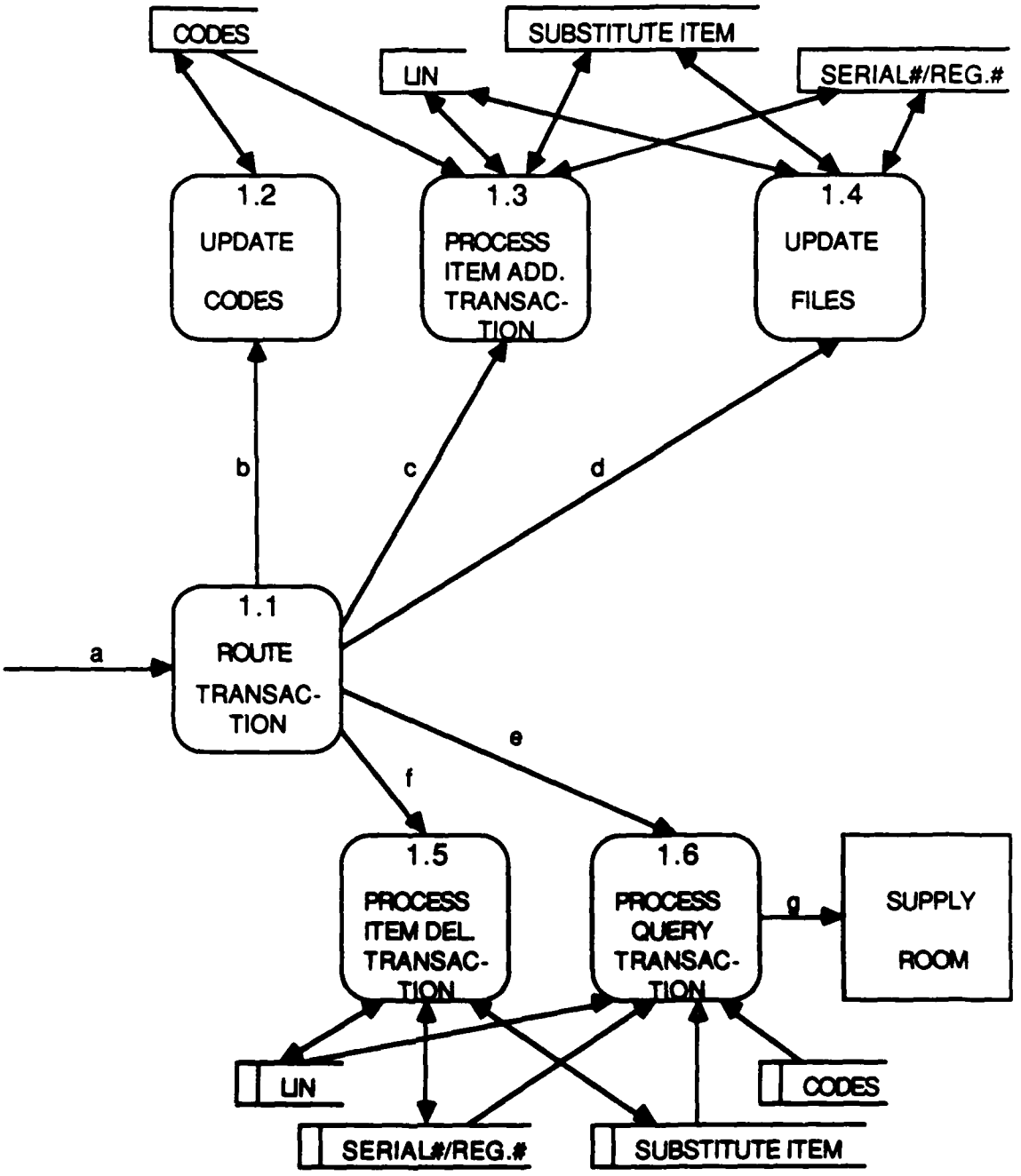
APPENDIX D--DATA FLOW DIAGRAMS



a Input Transactions b Unit Status Report

LEVEL 0


SUPPLY ROOM
a
1 PROCESS EOH TRANSAC-TION
SUBSTITUTE ITEM
LIN
MAINT. SECTION
b
2 PROCESS ER TRANSAC-TION
SERIAL#/REG.#
TRAINING SECTION
c
3 PROCESS TRAINING TRANSAC-TION
TRAINING
PERSONNEL
4 PROCESS PERSONNEL TRANSAC-TION
d
ORDERLY ROOM
e
5 PROCESS REPORT REQUEST
f
HIGHER HQ
g
ORDERLY ROOM
a EOH Transaction
b ER Transaction
c Training Transaction
d Personnel Transaction
e Report Request
f USR
g Other Reports
LEVEL 1



a EOH Transaction

b Codes Update Info

c Item Addition Info

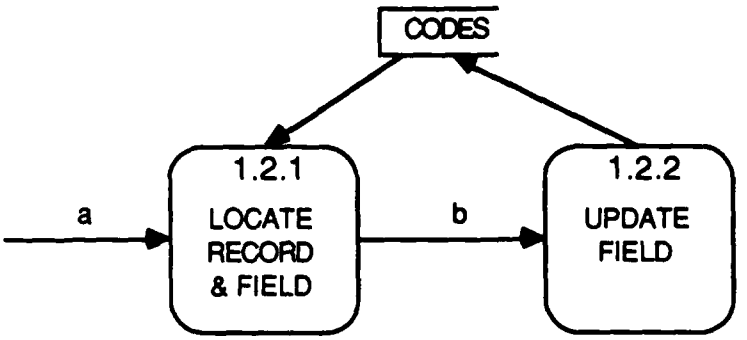
d Item Update Info

e Query

f Item Deletion Info

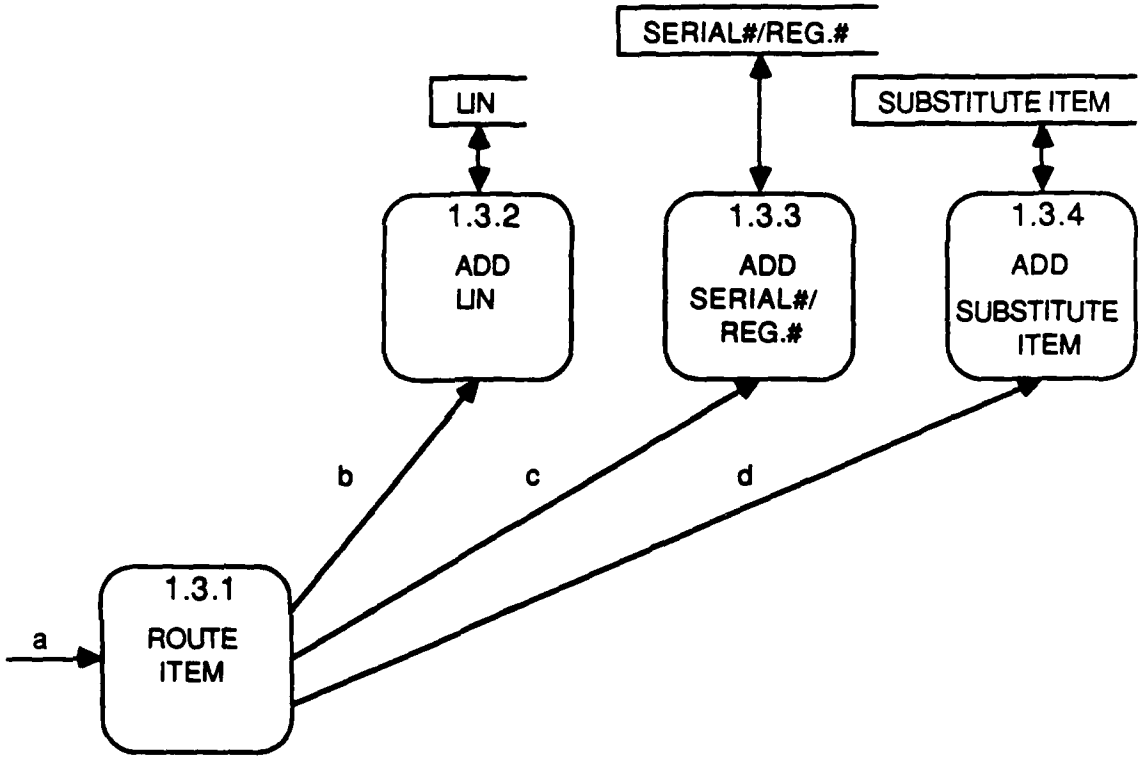
g Query Response

LEVEL 2



a Codes Update Info b Update Info & Current Field

LEVEL 3



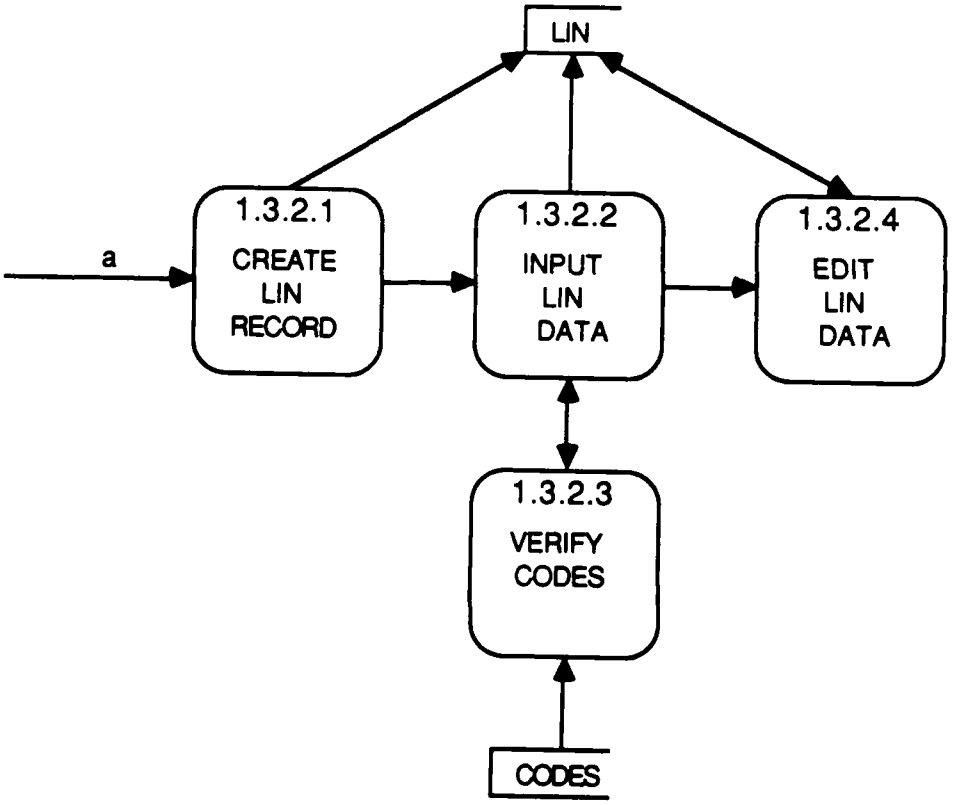
a Item Addition Info

b LIN Info

c Serial#/Reg.# Info

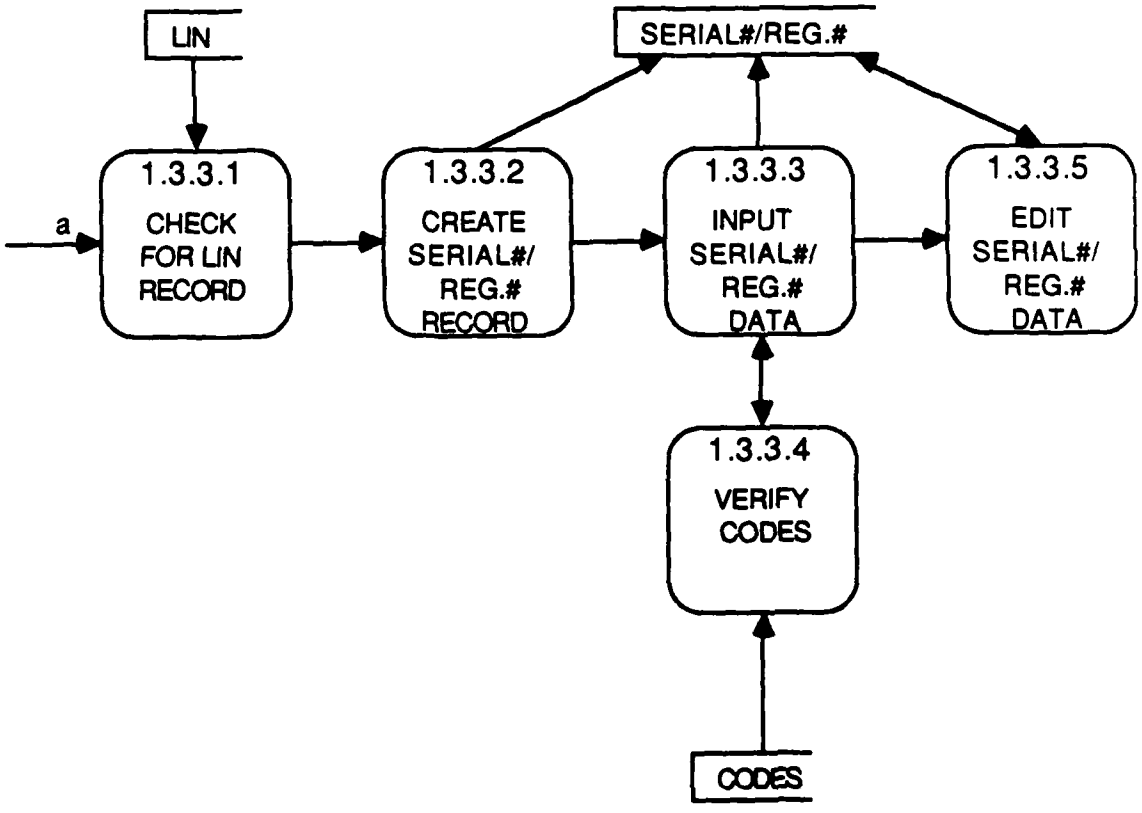
d Substitute Item Info

LEVEL 3



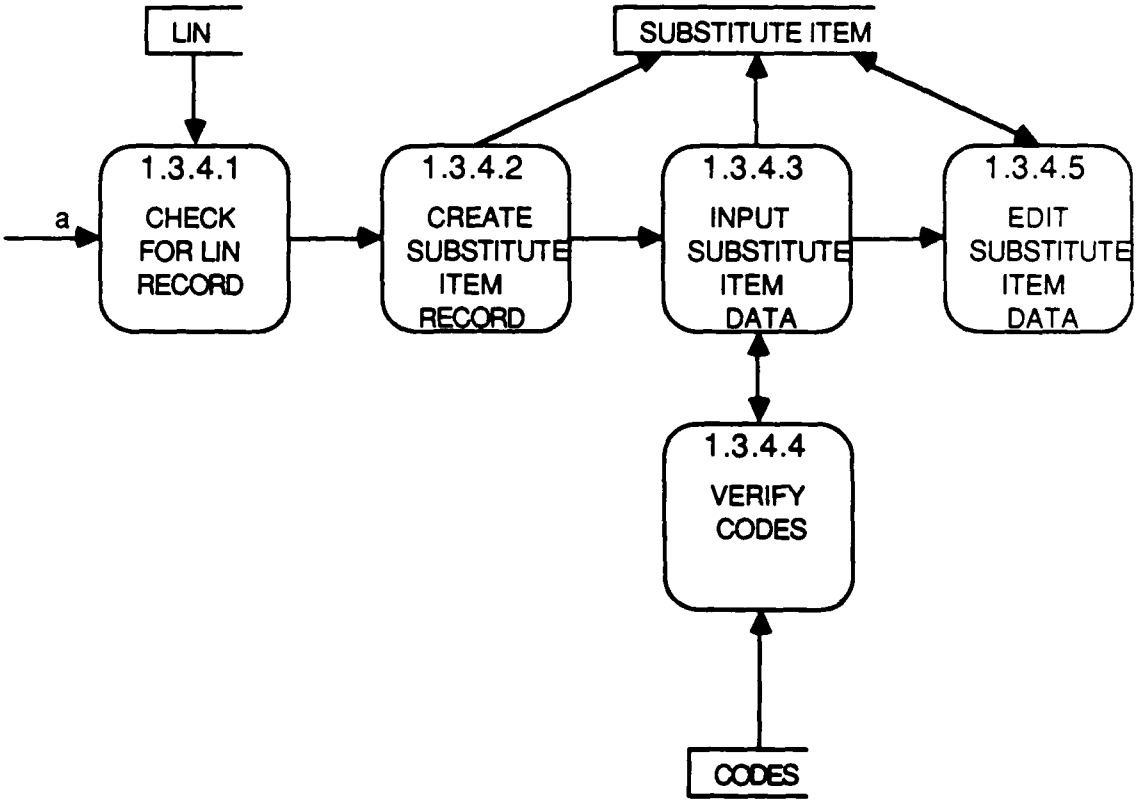
a LIN Info

LEVEL 4



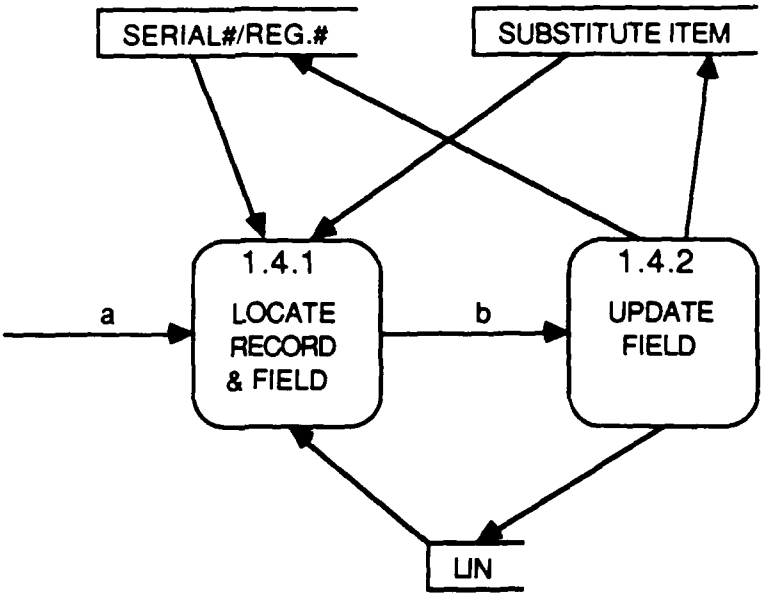
a Serial#/Reg.# Info

LEVEL 4



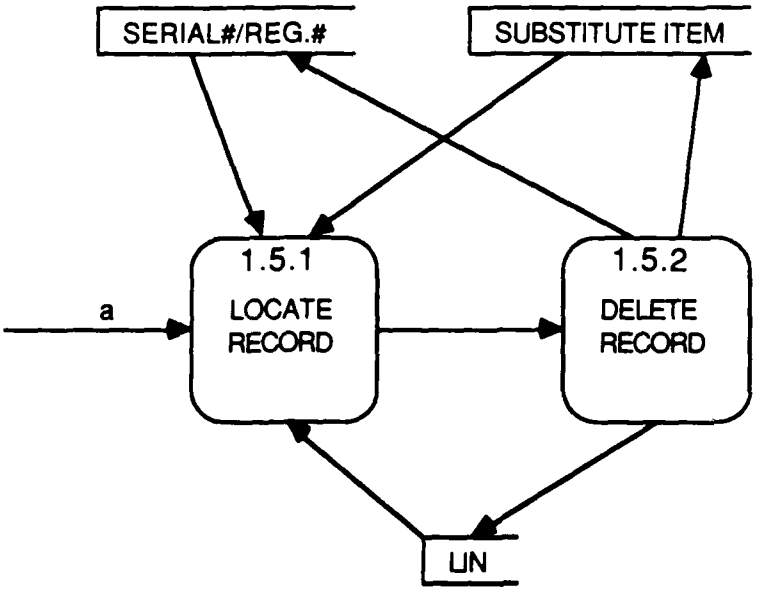
a **Substitute Item Info**

LEVEL 4



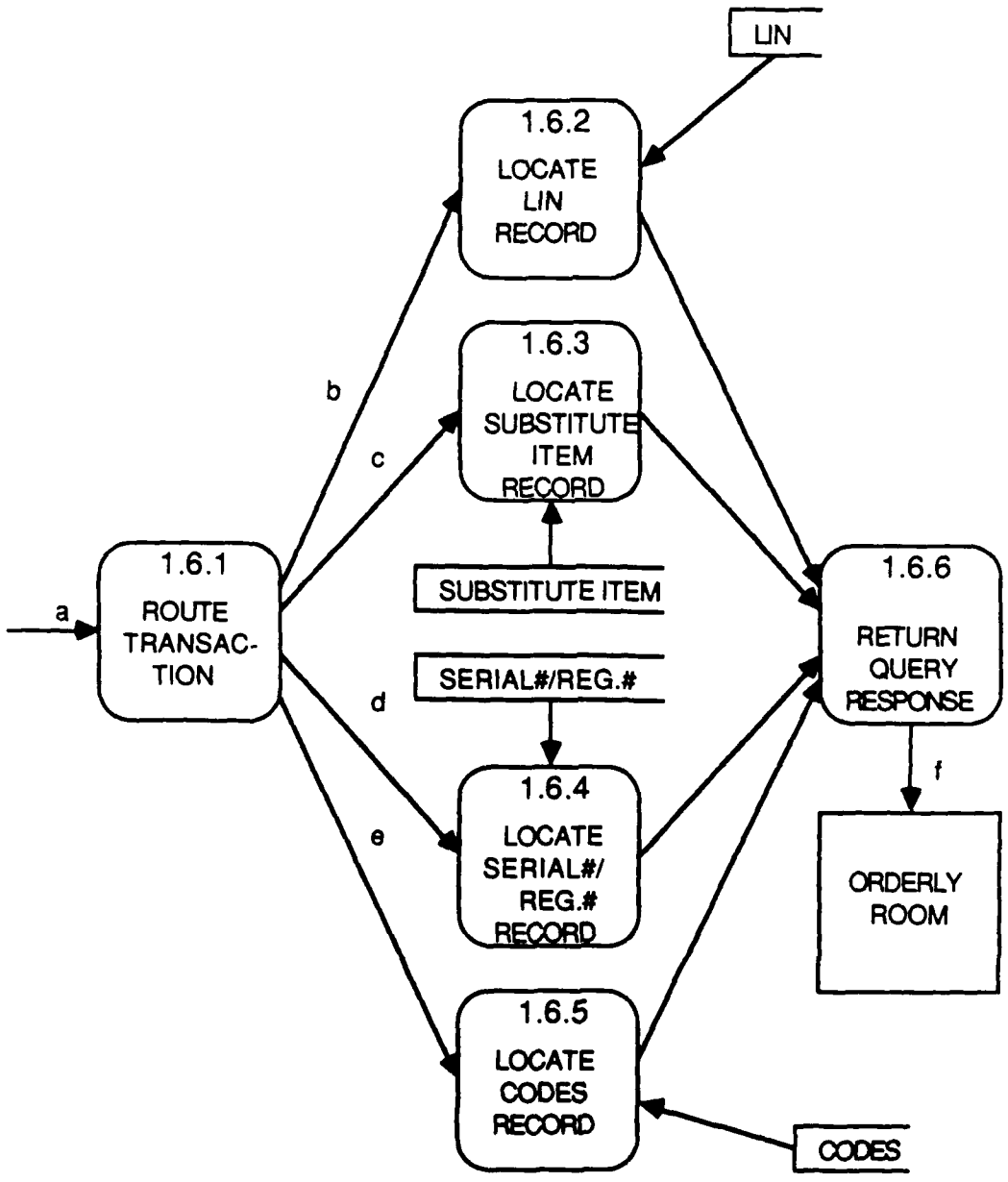
a Item Update Info b Update Info & Current Field

LEVEL 3



a Item Deletion Info

LEVEL 3



a Query

b LIN Query

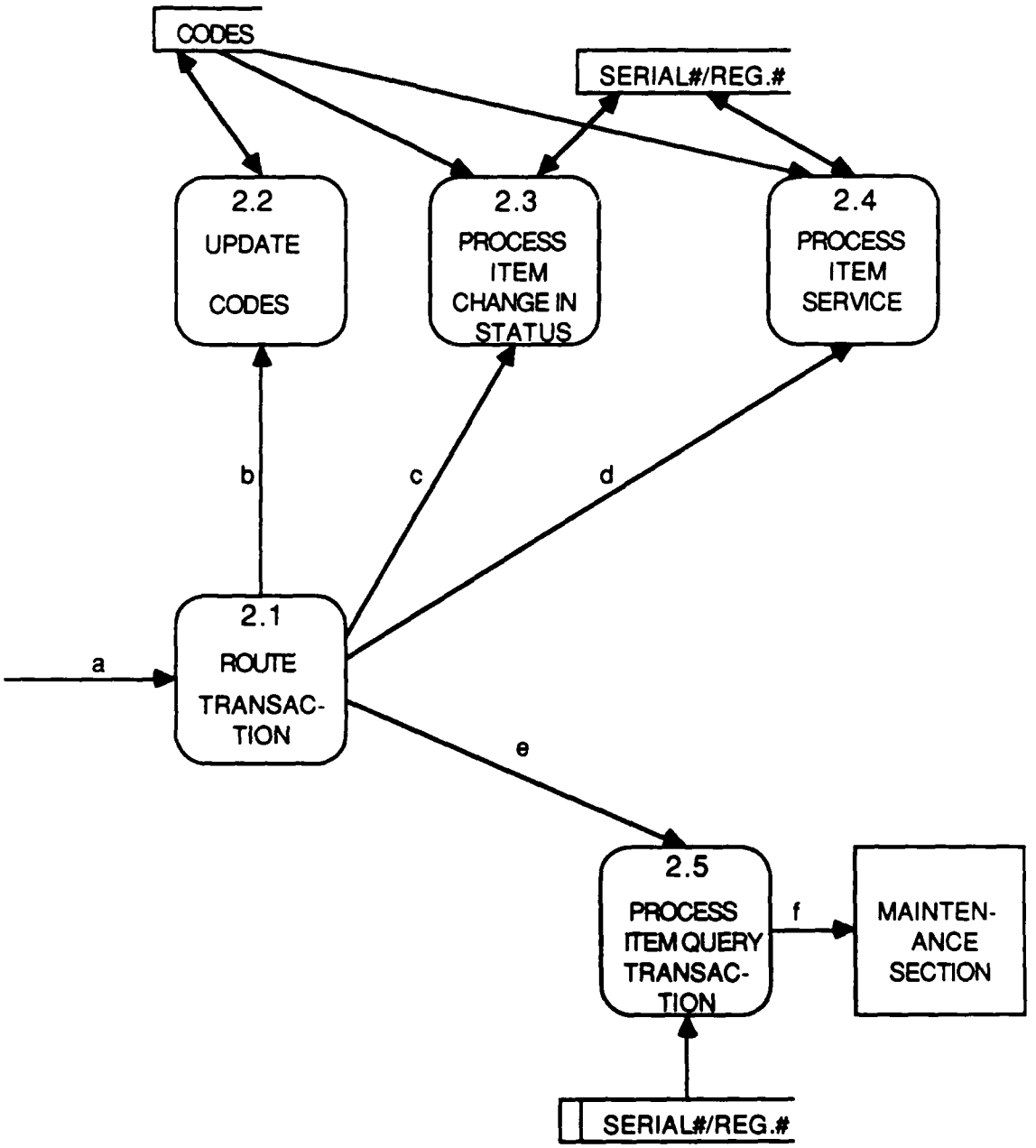
c Substitute Item Query

d Serial#/Reg.# Query

e Codes Query

f Query Response

LEVEL 3



a ER Transaction

b Codes Update Info

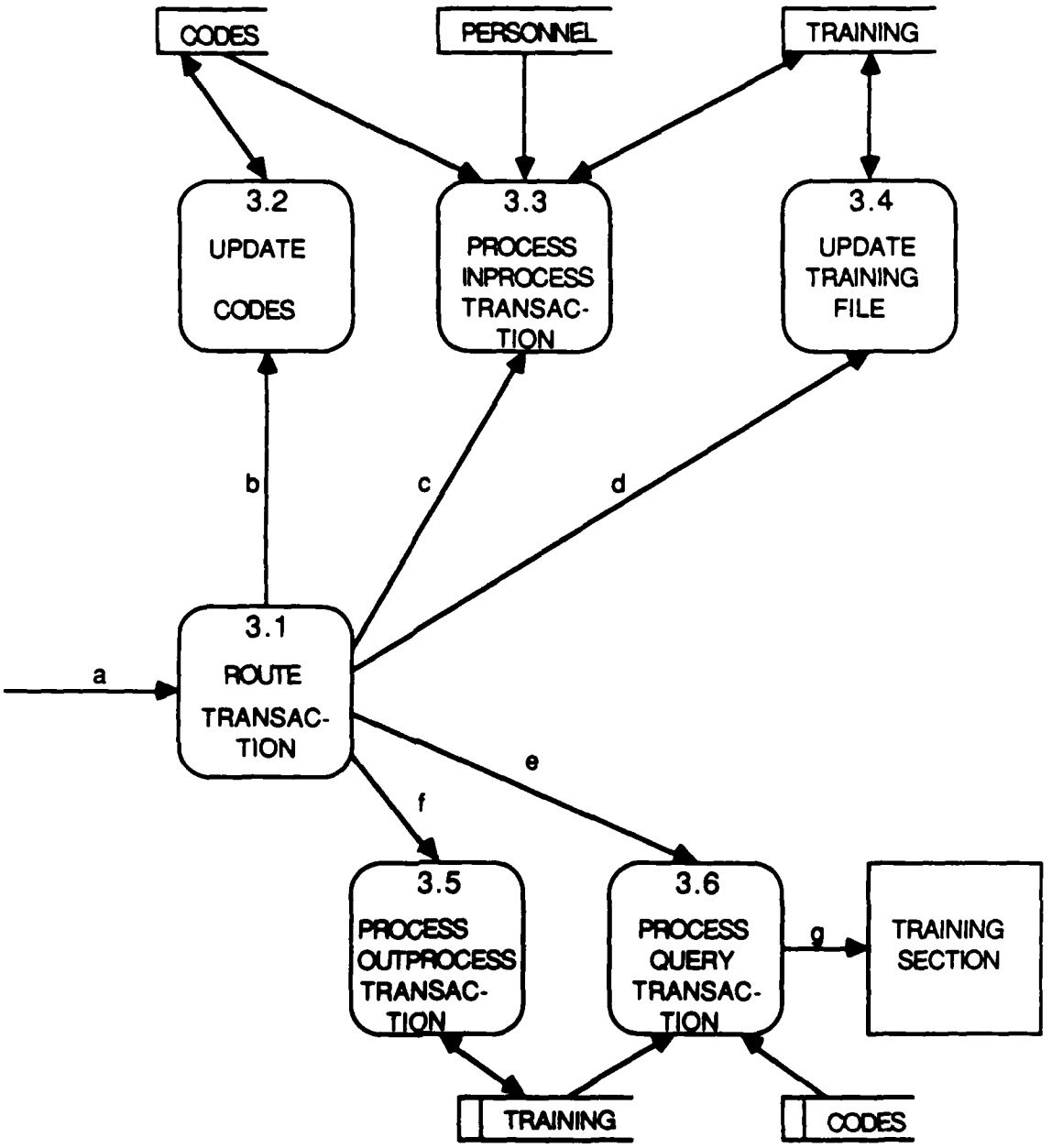
c Item Change in Status Info

d Item Service Info

e Query

f Query Response

LEVEL 2



a Training Transaction

b Codes Update Info

c Training Inprocess Info

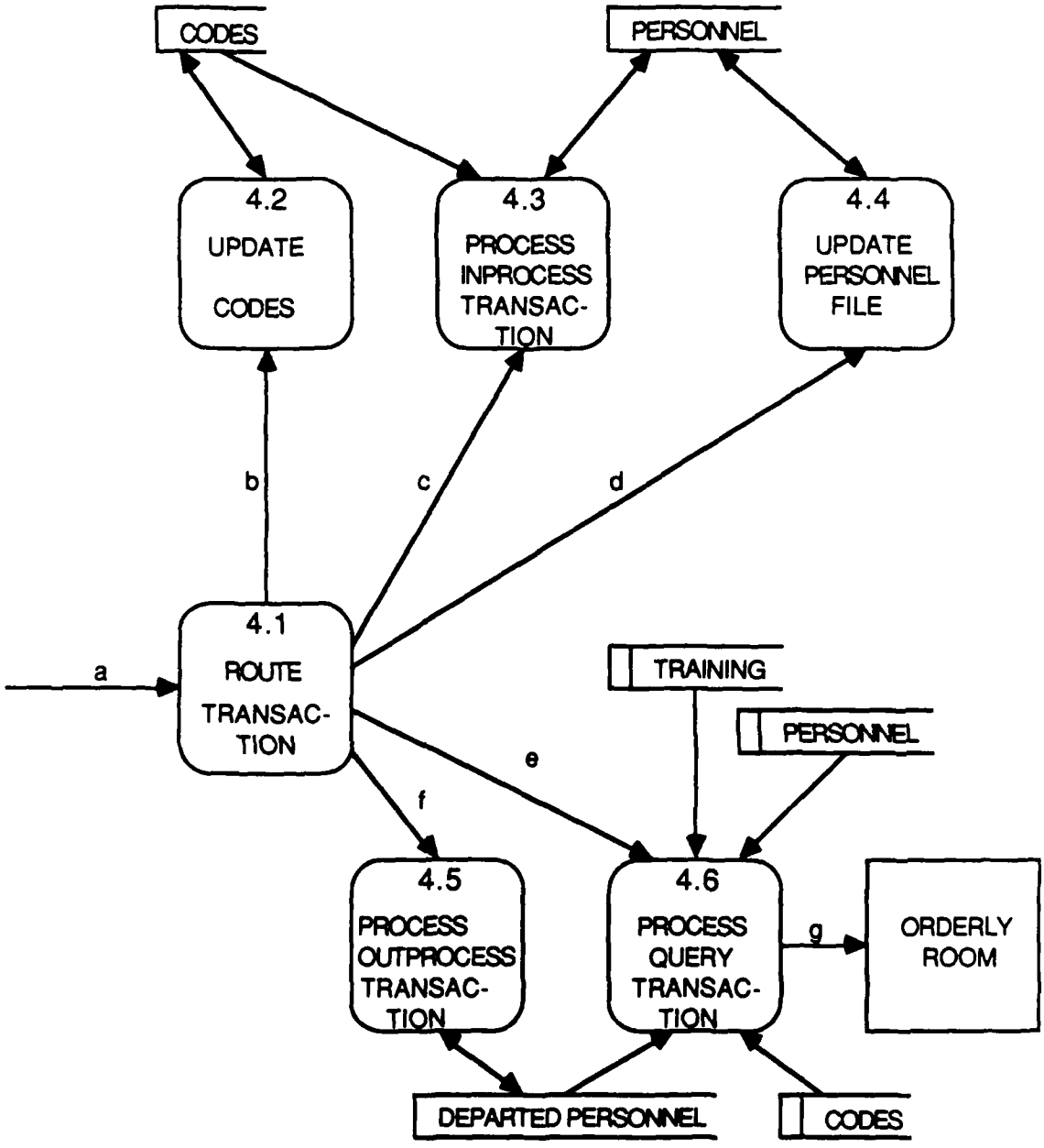
d Training Update Info

e Query

f Training Outprocess Info

g Query Response

LEVEL 2



a Personnel Transaction

b Codes Update Info

c Personnel Inprocess Info

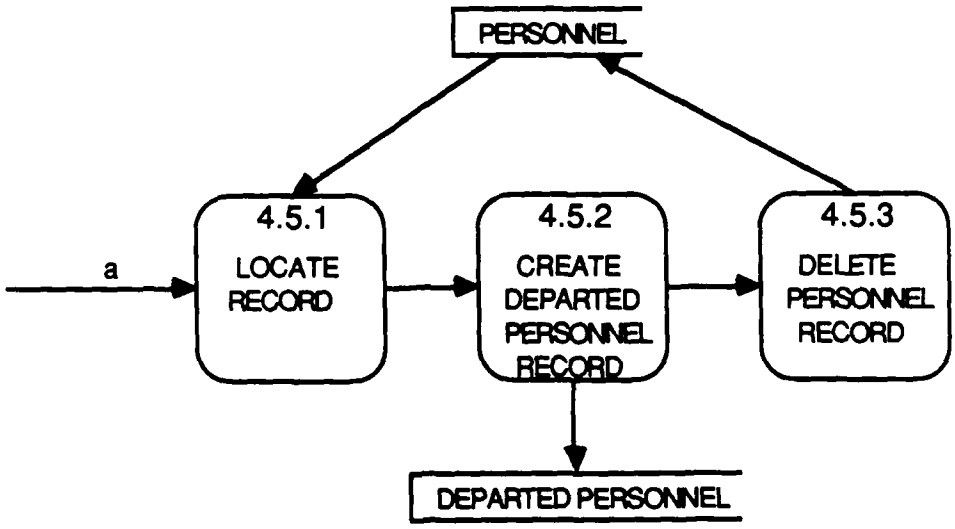
d Personnel Update Info

e Query

f Personnel Outprocess Info

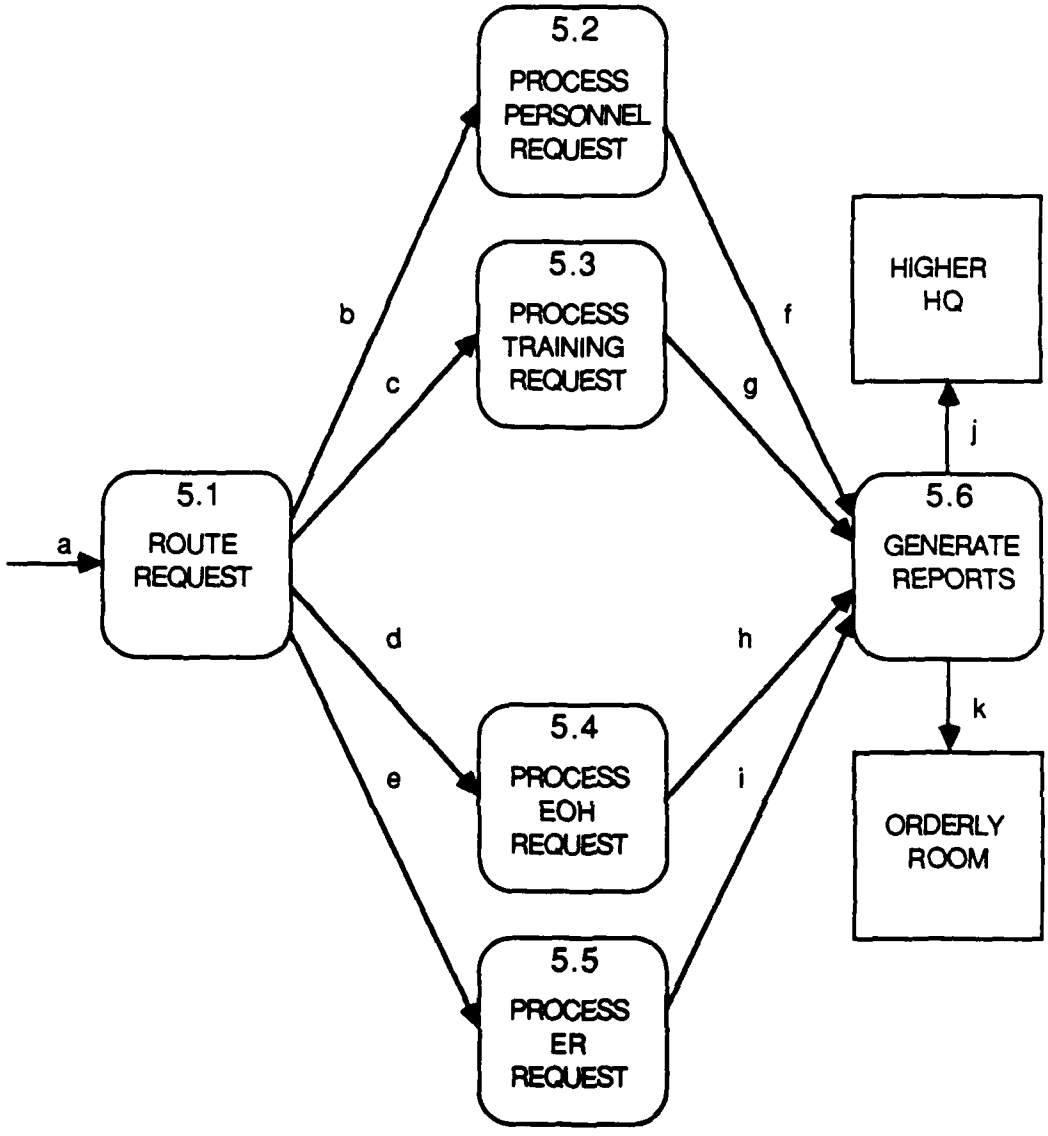
g Query Response

LEVEL 2



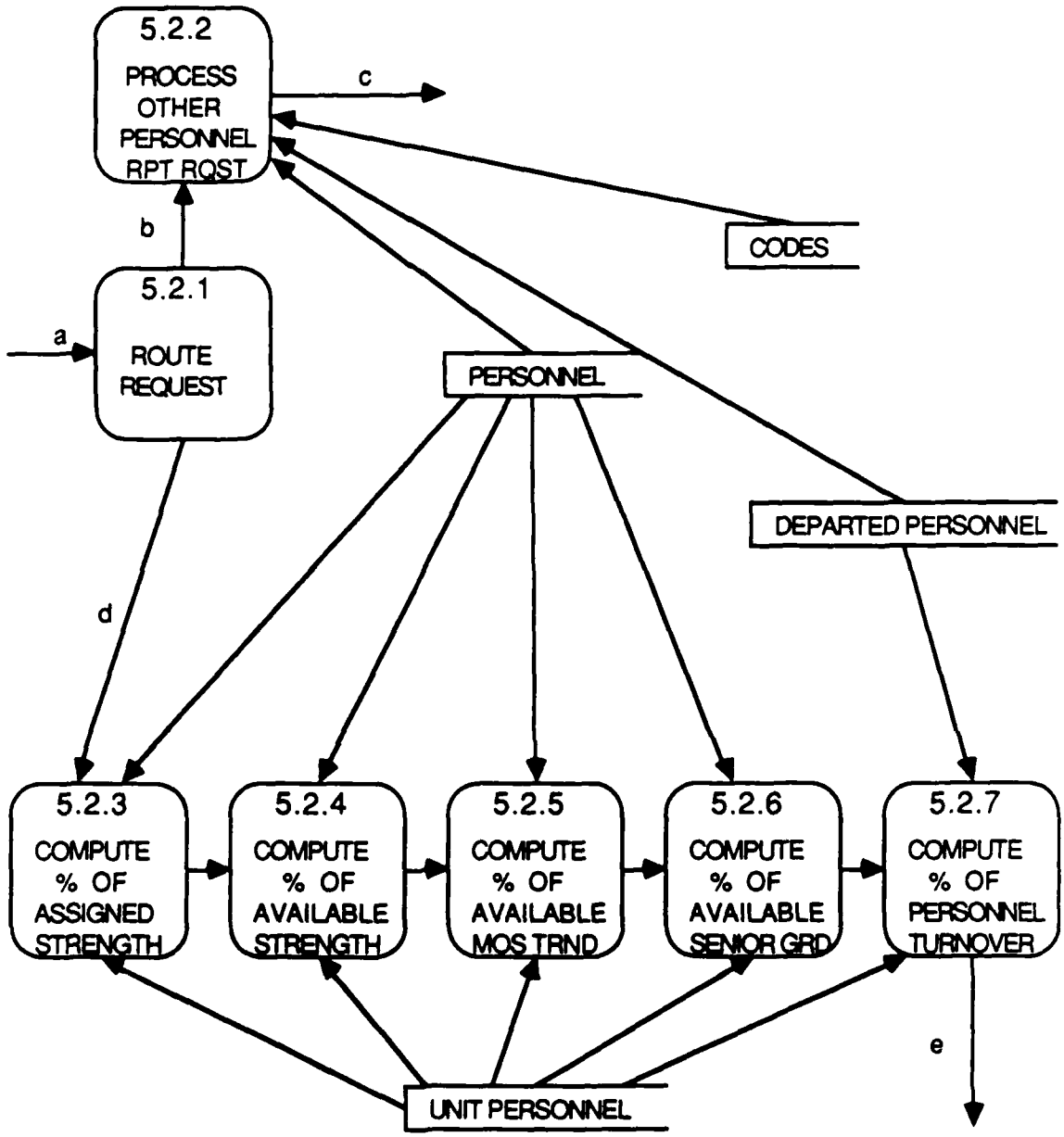
a Personnel Outprocess Info

LEVEL 3



a	Report Request	e	ER Report Request	h	EOH Info
b	Personnel Report Request	f	Personnel Info	i	ER Info
c	Training Report Request	g	Training Info	j	USR
d	EOH Report Request			k	Other Reports

LEVEL 2



a Personnel Report Request

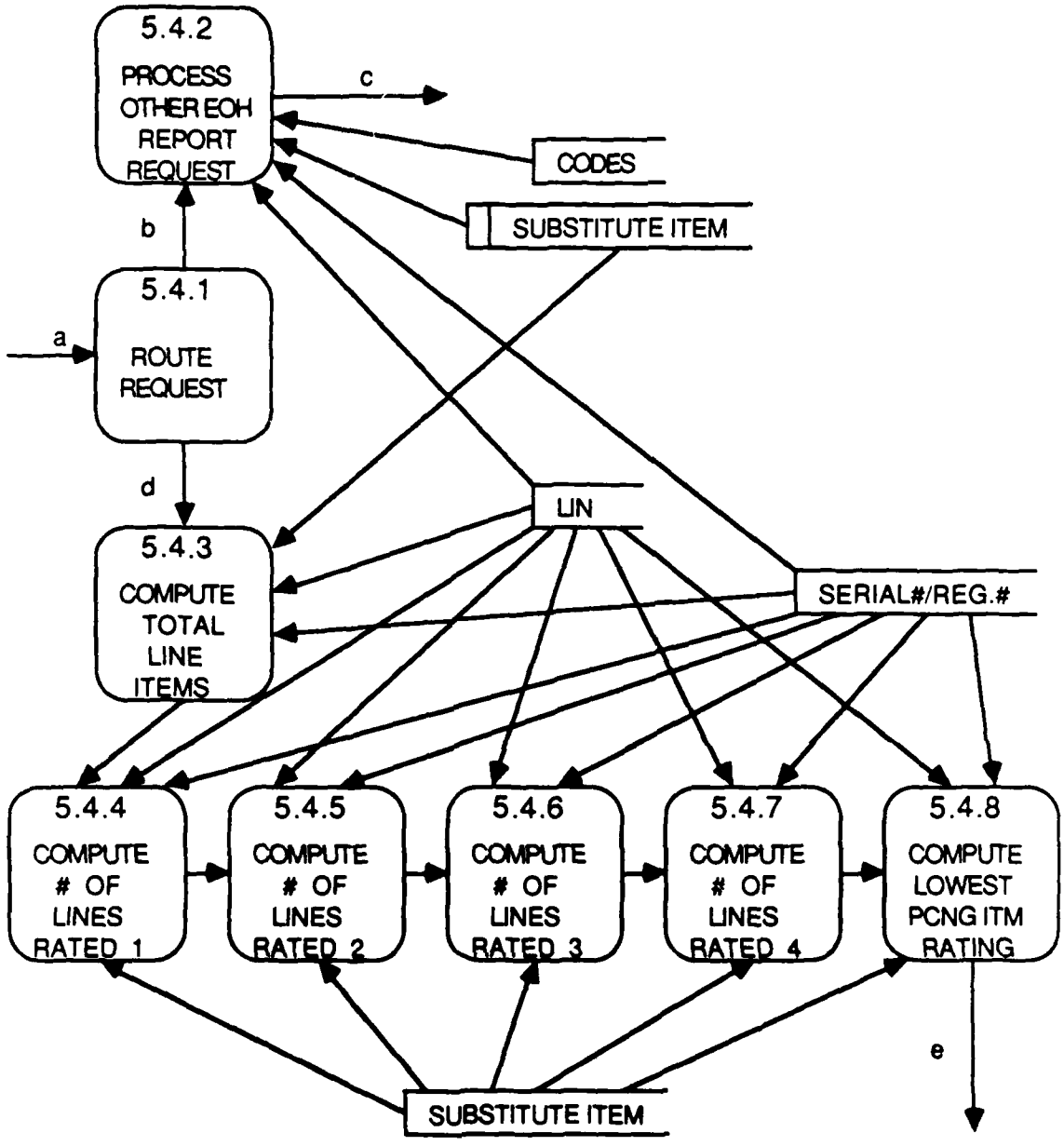
b Other Pesonnel Report Request

c Personnel Info

d USR Personnel Report Request

e USR Personnel Info

LEVEL 3



a EOH Report Request

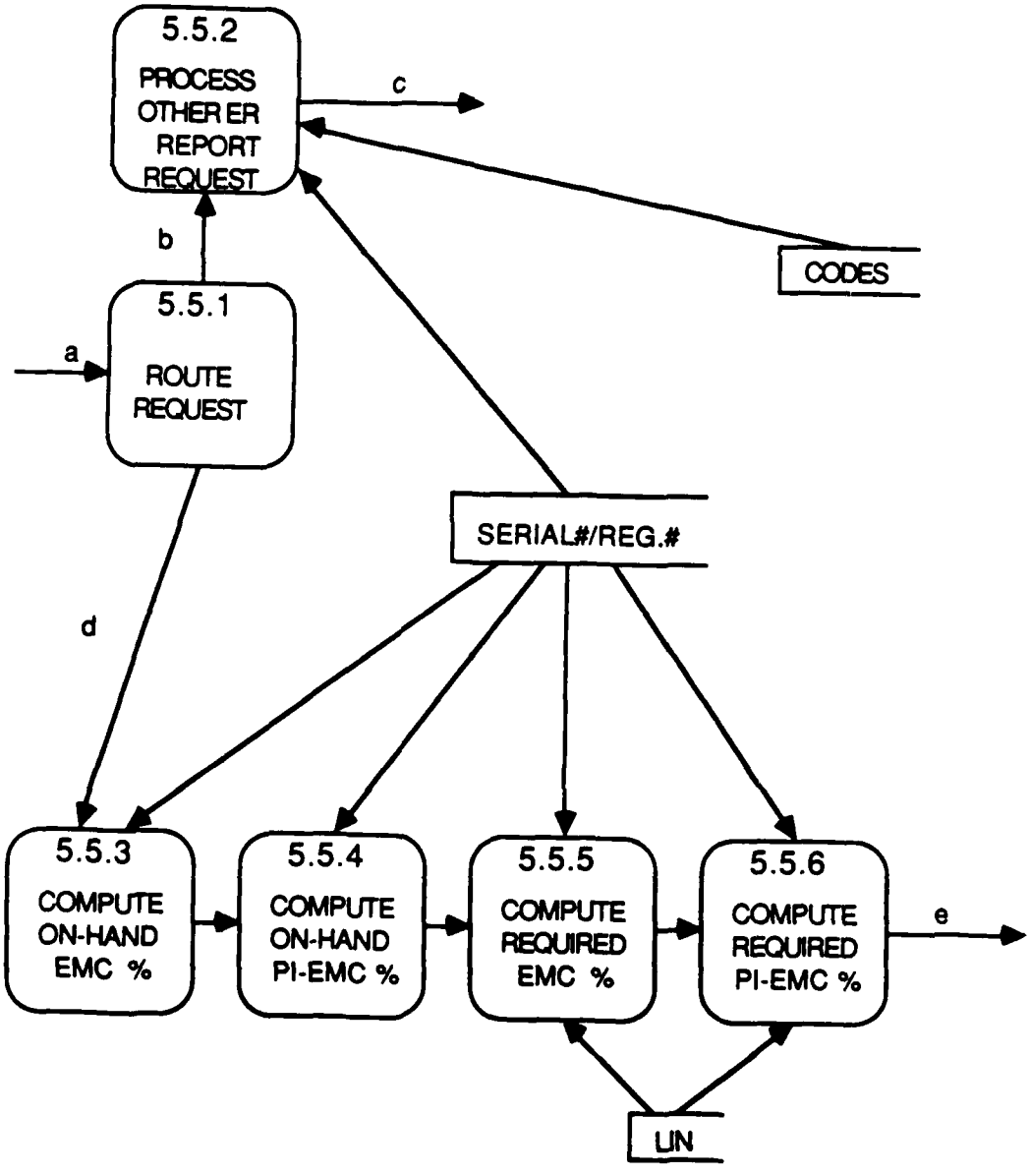
b Other EOH Report Request

c EOH Info

d USR EOH Report Request

e USR EOH Info

LEVEL 3



a ER Report Request

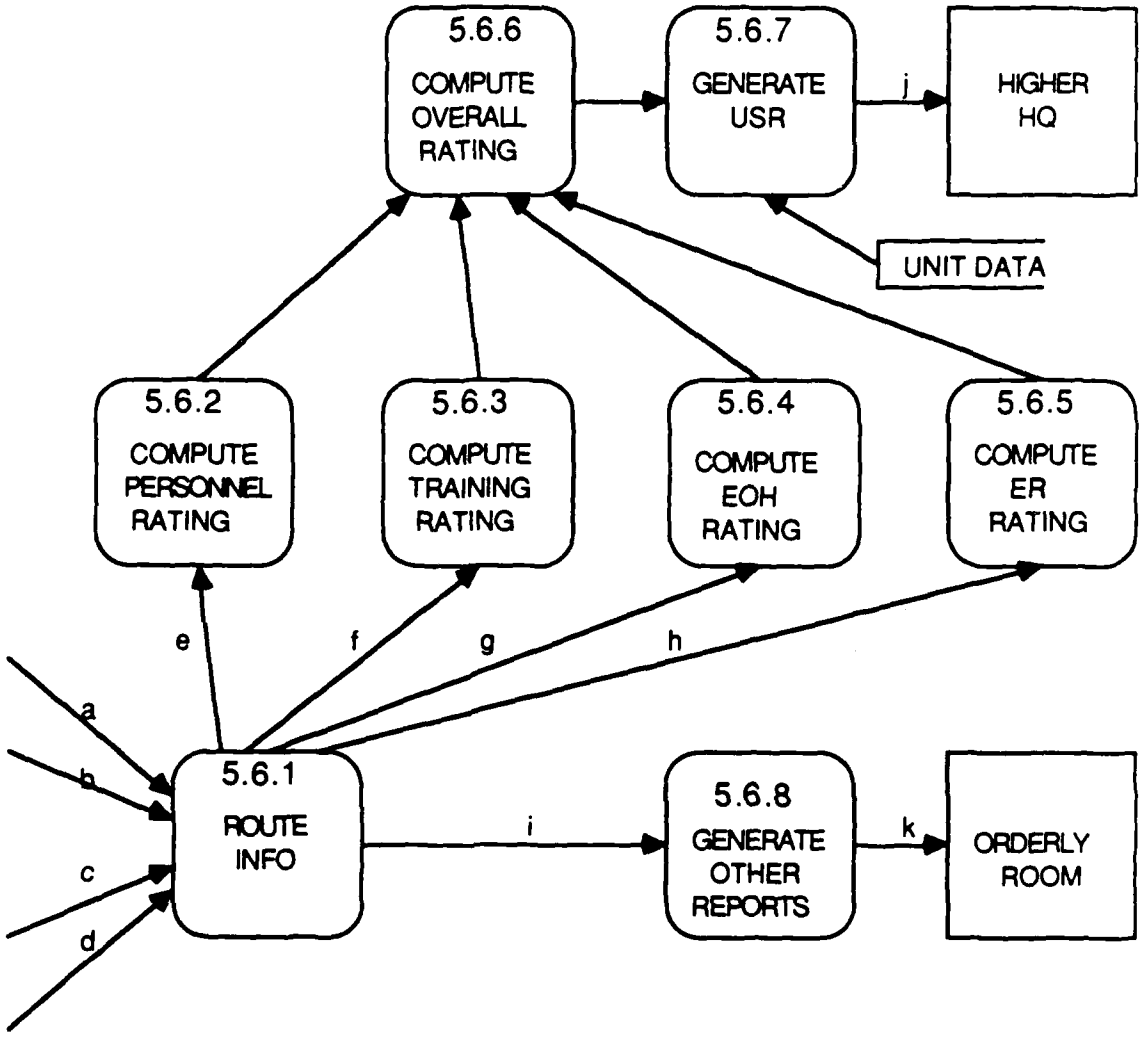
b Other ER Report Request

c ER Info

d USR ER Report Request

e USR ER Info

LEVEL 3



a Personnel Info

b Training Info

c EOH Info

d ER Info

e USR Personnel Infi

f USR Training Info

g USR EOH Info

h USR ER Info

i Other Info

j USR

k Other Reports

LEVEL 3

APPENDIX E--DATA DICTIONARY

The data dictionary in this thesis uses an IBM description convention called the 'OF' language. The subsequent section is a brief introduction to the convention, followed by the dictionary.

In a typical environment, a data element name may represent more than one element, and more than one name may be given to the same element by various groups. An example of the first case is: the order date may be the date the warehouse placed an order, or the date the procurement group ordered the material from a specific vendor (two different dates). An example of the second case is: the order number and the purchase order number (the same number).

One of the problems that faces the analyst during the building of a data dictionary is how to name the data elements in such a manner that will ensure:

1. All elements containing the same data will have the same name regardless of how various groups in an organization call them.
2. The name used will fully describe the actual content of the data element thus ensuring that future analysts will be able to understand each data element utilization without repeating the initial element identification phase.

IBM developed and recommended the 'OF' language to achieve the above objectives. The 'OF' language uses

descriptors and connectors to describe each element. Thus, a name may be:

NAME (of) CUSTOMER (which is) ABBREVIATED

The description is hierarchical, thus 'name' is more general than 'customer', etc. IBM developed a list of words which may be used as the first (Class) word and another list of connectors to be used. The other key words used are organization dependent. These lists appear as List Number One and List Number Two respectively. For the sake of clarity, the symbols shown in the two lists will not be used in this data dictionary (the whole word will be spelled out instead).

SYMBOL	CLASS WORD	DEFINITION
N	NAME	Alphabetic Data which identifies entities.
#	NUMBER	Numeric Data which identifies specific entities.
C	CODE	Data which identifies classification of entities (e.g. code of sex).
Q	COUNT (Quantity)	Number of units (does not include monetary amount).
$	AMOUNT (Money)	The quantity of monetary amount.
D	DATE	An actual date field.
T	TEXT	Data having relatively undefined content.
F	FLAG	A code expressed as a bit limited to two conditions.
K	CONSTANT	Data which does not change from one transaction to another.
%	PERCENT	Ratio between other data values.
X	CONTROL	Information used for control of other information during processing.

List Number One-- Class Words

SYMBOL	WORD	DEFINITION
⌀	OF	A blank space between terms designates 'OF'.
*	WHICH IS/ARE	Which is/are depending on the presence of an 's' prior to it.
-	HYPHEN	Causes two words to become a single word.
|	OR	Or.
&	AND	And.
/	BY/PER or WITHIN	By, per, or within

List Number Two - Connectors

Address	(Mailing Address)
Address of SM	[Barracks Room # ¦ Quarters Address ¦ Off-Post Address]
Address of SM's NOK	(Mailing Address)
Assigned Strength	(Total # of personnel permanently assigned on the "as of date")
Authorized Strength	(That portion of the required manpower which can be supported by the manpower available and which is reflected in the authorized column of authorization documents)
Available MOS Trained Personnel	(Total # of available strength matched by identity and MOSC)
Available Senior Grade Personnel	(Total # of senior grade personnel from available strength)
Available Strength	(Total # of assigned strength available for deployment)
Code of Item's 2406 Reportability	[R = Reportable ¦ N = Not Reportable]
Code of Item's Equipment Category	(Identifies item by major equipment category)
Code of Item's Equipment Readiness	[A ¦ P ¦ B ¦ C]
A	(Primary Weapons and Equipment-- PWE)
P	(PWE-- Pacing Items)
B	(Auxiliary Equipment-- AE)
C	(Administrative Support Equipment-- ASE)
Code of Item's Equipment Status	[F = Full Mission Capable ¦ P = Partial Mission Capable ¦ N = Not Mission Capable]
Code of Item's Next Service	[A = Annual ¦ S = Semiannual ¦ Q = Quarterly ¦ L = Lubrication ¦ T = Tire Rotation ¦ C = Calibration ¦ O = Oil Analysis Sample]

Code of Item's Reason Nonavailable	[A = Modification ¦ B = Parts ¦ C = Malfunction ¦ D = Support Maintenance]
Code of MOS	(Military Occupational Skill Code)
Code of Pacing Item	[P = Pacing Item ¦ N = Not Pacing Item]
Code of SM's Address	[B = Barracks ¦ P = On-Post ¦ O = Off-Post]
Code of SM's Alternate MOS	(Alternate Military Occupational Skill Code)
Code of SM's ASI	(Additional Skill Identifier)
Code of SM's Availability Status	[A ¦ B ¦ C ¦ D ¦ E ¦ F ¦ G ¦ H ¦ I ¦ J ¦ K ¦ L ¦ M]
A	(Available for deployment)
B	(Has not completed a minimum of 12 weeks basic or advanced training)
C	(Deceased -- not dropped from strength)
D	(Sole surviving family member or conscientious objector)
E	(Missing or prisoner of war)
F	(Less than 7 days to ETS)
G	(Legal processing precludes moving with or performing assigned duties in unit)
H	(Absent without leave-- AWOL)
I	(Pregnant)
J	(Assigned but not joined, or departed for next assignment)
K	(Hospitalized, convalescent, temporary profile, or needs emergency dental care)
L	(On temporary duty or leave and not able to return within prescribed response time)
M	(Commander's restriction)
Code of SM's Duty Section	(Defined by Unit)
Code of SM's Level of Civ. School	(Numeric code equivalent to the number of years of civilian school completed-- 2 digits)

Code of SM's Level of Mil. School	(Determined by Unit)
Code of SM's LIC	(Language Indicator Code)
Code of SM's Marital Status	[S = Single ¦ M = Married ¦ D = Divorced]
Code of SM's Over-40 Physical Status	[S = Scheduled ¦ C = Completed ¦ N = Not Applicable]
Code of SM's Primary MOS	(Primary Military Occupational Skill Code)
Code of SM's Profile	[A ¦ B ¦ C ¦ D ¦ E ¦ F ¦ G ¦ H ¦ J ¦ L ¦ M ¦ N ¦ P ¦ U]
A	(None)
B	(None)
C	(No crawling, stooping, running, jumping, marching, or standing for long periods)
D	(No mandatory strenuous physical activity)
E	(No assignment to units requiring continued consumption of combat rations)
F	(No assignment to isolated areas where definitive medical care is not available)
G	(No assignment requiring handling of heavy materials including other than individual weapons. No overhead work, no pullups or pushups)
H	(No assignment to unit where sudden loss of consciousness would be dangerous to self or others such as work on scaffolding, handling ammo, vehicle driving, work near moving machinery)
J	(No assignment or duty in an area where safety of individual or others requires acute hearing.
M	(No assignment requiring exposure to high environmental temperature)
N	(No continuous wearing of combat boots)
P	(No continuous wearing of woolen clothes)
U	(Limitation not otherwise described to be considered individually)

Code of SM's Race	[C = Caucasian ¦ A = Asian ¦ H = Hispanic ¦ B = Black ¦ O = Other]
Code of SM's Secondary MOS	(Secondary Military Occupational Skill Code)
Code of SM's Security Clearance	[N = None ¦ C = Confidential ¦ S = Secret ¦ T = Top-Secret]
Code of SM's Sex	[M = Male ¦ F = Female]
Code of SM's SQI	(Special Qualification Indicator)
Code of SM's Swimming Status	[S = Swimmer ¦ N = Non-Swimmer]
Code of SM's Weapon Qualification	[M = Marksman ¦ S = Sharpshooter ¦ E = Expert]
Codes File	[Personnel Codes ¦ Training Codes ¦ EOH Codes ¦ ER Codes]
Codes Update Info	Code Name, Description
Date of Item's Estimated Repair	Day, Month, Year
Date of Item's Next Service	Day, Month, Year
Date of Item's Non-availability	Day, Month, Year
Date of SM's APRT	Day, Month, Year
Date of SM's Assignment to Unit	Day, Month, Year
Date of SM's Availability Status	Day, Month, Year
Date of SM's Basic Pay Entry	Day, Month, Year
Date of SM's Beginning Active Service	Day, Month, Year
Date of SM's Birth	Day, Month, Year
Date of SM's CTT	(Common Task Test) Day, Month, Year
Date of SM's Detachment	Day, Month, Year

Date of SM's ETS	(Expiration of Term of Service) Day, Month, Year
Date of SM's Last EER	(Enlisted Efficiency Report) Day, Month, Year
Date of SM's Measurement	Day, Month, Year
Date of SM's NBC Qualification	(Nuclear Biological Chemical) Day, Month, Year
Date of SM's Over-40 Physical	Day, Month, Year
Date of SM's PCS	(Permanent Change of Station) Day, Month, Year
Date of SM's Profile	Day, Month, Year
Date of SM's Rank	Day, Month, Year
Date of SM's SQT	(Skill Qualification Test) Day, Month, Year
Date of SM's Weapon Qualification	Day, Month, Year
Departed Personnel File	(Contains Departed Personnel Info)
Departed Personnel Info	# of SM's Soc. Sec. Acct., Date of SM's Detachment, Personnel File
Equipment Days	(Number of days in the report period * the on-hand quantity)
Equipment On-Hand (EOH) Codes	[Code of Item's Equipment Category ¦ Code of Item's Equipment Readiness ¦ Code of Pacing Item ¦ Code of Item's 2406 Reportability ¦ Code of Item's Equipment Status]
EOH Info	[USR EOH Info ¦ Other EOH Info]
EOH Rating	(Use lowest rating of Pacing Item and Lines Rated 1, 2, 3, or 4)
EOH Report Request	[USR EOH Report Request ¦ Other EOH Report Request]

EOH Transaction	[Item Addition Info ¦ Item Update Info ¦ Item Deletion Info ¦ Query ¦ Codes Update Info]
Equipment Readiness (ER) Codes	[Code of Equipment Status ¦ Code of Item's Reason Nonavailable ¦ Code of Item's Next Service]
ER Info	[USR ER Info ¦ Other ER Info]
ER Rating	(Use lowest rating of % of Required Equipment Mission Capable and % of Required Pacing Items Mission Capable)
ER Report Request	[USR ER Report Request ¦ Other ER Report Request]
ER Transaction	[Item Change In Status Info ¦ Item Service Info ¦ Query ¦ Codes Update Info]
Grade	(Rank of SM)
Grade of MOS	(From the MTOE or TDA--identifies the necessary grade for an MOSC)
Height of SM in Inches	(Number of inches of height)
Input Transactions	[Personnel Transaction ¦ Training Transaction ¦ Equipment Readiness Transaction ¦ Equipment On-Hand Transaction ¦ Report Request]
Item Addition Info	[LIN Info ¦ Serial #/Reg. # Info ¦ Substitute Item Info]
Item Change In Status Info	[# of Item's Serial # ¦ # of Item's Reg. #], Date of Item's Nonavailability, Code of Item's Equipment Status, Date of Item's Estimated Repair, # of Item's Support Shop Job
Item Deletion Info	# of Item's LIN, [# of Item's Serial # ¦ # of Item's Reg. #] {# of Substitute's Item's LIN}
Item Service Info	[# of Item's Serial # ¦ # of Item's Reg. #], Code of Item's Next Service, Date of Item's Next Service

Item Update Info	[# of Item's LIN ; # of Item's Serial # ; # of Item's Reg. #] {Any information on item that needs to be updated}
LIN File	(Contains LIN Info)
LIN Info	# of Item's LIN, Nomenclature of Item, # of Item's NSN, Qty. of Item Required, Qty. of Item Authorized, Code of Item's Equip. Category, Code of Item's Equip. Readiness
Lowest Pacing Item Rating	(Determine Percent Fill for each Pacing Item, then determine Rating based on Percent Fill; use lowest Rating)
MTOE	(Modified Table of Organization and Equipment)
Name of SM	Last Name, First Name, Middle Name
Name of SM's NOK	Last Name, First Name, Middle Initial, Relationship
Nomenclature of Item	(Item's supply system name)
NOK	(Next of Kin)
Number of Item's LIN	(Line Item Number--alphanumeric number that identifies the generic nomenclature of specific types of equipment)
Number of Item's Model	(Alphanumeric supply system designation of item's model)
Number of Item's NSN	(National Stock Number--a supply system identification number)
Number of Item's Registration #	(Unique item identifier)
Number of Item's Serial #	(Unique item identifier)
Number of Item's Support Shop Job	(Determined by support shop)
Number of Lines Rated 1	(Total LIN's with at least 90% fill)

Number of Lines Rated 2	(Total LIN's with at least 80% but less than 90% fill)
Number of Lines Rated 3	(Total LIN's with at least 65% but less than 80% fill)
Number of Lines Rated 4	(Total LIN's with less than 65% fill)
Number of MTOE Line	(Line number from the personnel section of the MTOE to identify the position)
Number of SM's Assigned MTOE Line	(Number of MTOE Line against which SM is assigned)
Number of SM's Social Security Account	(Social Security Number)
Number of SM's Telephone	(Area code, prefix, and extension)
Number of Substitute Item's LIN	(LIN of Substitute Item)
On-Hand Quantity	(Total # of individual items for a particular LIN)
Other EOH Info	(Determined by unit)
Other EOH Report Request	(Determined by unit)
Other ER Info	(Determined by unit)
Other ER Report Request	(Determined by unit)
Other Info	[Other EOH Info ¦ Other ER Info ¦ Other Personnel Info ¦ Other Training Info]
Other Personnel Info	(Determined by unit)
Other Personnel Report Request	(Determined by unit)
Other Reports	(Any other reports the unit decides to include)
Other Training Info	(Determined by unit)

Other Training Report Request	(Determined by unit)
Overall Unit Rating	(Use lowest rating of Personnel, Training, ER, and EOH Ratings)
Pacing Item	(Major weapon systems, aircraft, and other items of equipment that are central to an organization's ability to perform its designed mission)
Percent Fill	On-Hand Quantity / Required Quantity * 100 for an individual LIN
Percentage of Assigned Strength	Assigned Strength / Required Strength
Percentage of Available MOS Trained	Available MOS Trained Personnel / Required MOS Trained Personnel
Percentage of Available Senior Grade	Available Senior Grade Personnel / Required Senior Grade Personnel
Percentage of Available Strength	Available Strength / Required Strength)
Percentage of On-Hand Equipment Mission Capable	Total Available Days / Total Possible Days * 100
Percentage of On-Hand Pacing Items Mission Capable	Pacing Item Available Days or Hours / Pacing Item Possible Days or Hours * 100 (If more than one Pacing Item, calculate % for each and use lowest)
Percentage of Personnel Turnover	Total # of Personnel Departed During Previous Three Months / Assigned Strength
Percentage of Required Equipment Mission Capable	Total Available Days / Total Required Days * 100
Percentage of Required Pacing Items Mission Capable	Pacing Item Available Days or Hours / Pacing Item Required Days or Hours * 100 If more than one Pacing Item, calculate % for each and use lowest)

Personnel Codes	[Code of SM's Address ¦ Code of SM's Marital Status ¦ Code of SM's Race ¦ Code of SM's Sex ¦ Code of SM's Duty Section ¦ Code of SM's Availability Status]
Personnel File	(Contains Personnel Inprocess Info)
Personnel Info	[USR Personnel Info ¦ Other Personnel Info]
Personnel Inprocess Info	Name of SM, # of SM's Soc. Sec. Acct., Rank of SM, Date of SM's Rank, Date of SM's Birth, Date of SM's Asgmt to Unit, Address of SM, Code of SM's Address, # of SM's Telephone, Code of SM's Marital Status, Code of SM's Race, Code of SM's Sex, Date of SM's [ETS ¦ PCS], Date of SM's Basic Pay Entry, Date of SM's Beg. Active Svc., Date of SM's Last EER, Code of SM's Duty Section, Qty. of SM's Dependents, Name of SM's NOK, Address of SM's NOK, Code of SM's Availability Status, Date of SM's Availability Status, # of SM's Assigned MTOE Line
Personnel Outprocess Info	Name of SM, # of SM's Soc. Sec. Acct., Date of SM's Detachment
Personnel Rating	(Use lowest rating of % of Available Strength, % of Available MOS Trained, and % of Available Senior Grade)
Personnel Report Request	[USR Personnel Report Request ¦ Other Personnel Report Request]
Personnel Transaction	[Personnel Inprocess Info ¦ Personnel Update Info ¦ Personnel Outprocess Info ¦ Query ¦ Codes Update Info]
Personnel Update Info	# of SM's Soc. Sec. Acct., {Any information that needs to be updated}
Quantity of Item Authorized	(From MTOE or TDA--designates amount of equipment unit is allowed to have on-hand)

Quantity of Item Required	(From MTOE or TDA--designates amount of equipment necessary to meet full wartime requirements)
Quantity of MOS Authorized	(From the MTOE or TDA--the number of personnel for an MOSC and grade authorized in the unit)
Quantity of MOS Required	(From the MTOE or TDA--the number of personnel for an MOSC and grade required in the unit)
Qty. of SM's Dependents	(The number of dependents)
Quantity of Substitute Item	(The number of a particular substitute item on-hand)
Query	(Request for a particular item or items of data or information)
Query Response	(Data or information retrieved as the result of a Query)
Rank of SM	[E1 thru E9 ¦ W1 thru W4 ¦ O1 thru O9]
Report Period	(From the 16th day of one month to the 15th day of the next month--always 28, 29, 30, or 31 days for the monthly report)
Report Request	[Personnel Report Request ¦ EOH Report Request ¦ ER Report Request ¦ Training Report Request ¦ Other Report Request]
Required MOS Trained Personnel	(Total # of required strength by identity and MOSC)
Required Senior Grade Personnel	Total # of senior grade personnel required from MTOE or TDA)
Required Strength	(Total # of personnel from MTOE or TDA)
Resource Constraint	[Assigned Strength Shortfall ¦ Special Duty Requirements ¦ Availability of Funds ¦ Availability of Equipment/Material ¦ Availability of Qualified Leaders or Status of Aviator Training ¦ Accessability of

	Training Areas/Facilities ¦ Availability of Ammunition ¦Availability of Time]
Resource Constraint Rating	[A ¦ B ¦ C ¦ D]
A	(Resource area is having an insignificant impact on training)
B	(Resource area is having a minor impact on training)
C	(Resource area is having a major impact on training)
D	(Factor prohibits training tempo necessary to maintain a satisfactory training status)
Score of SM's APRT	(Army Physical Readiness Test--3 digits, 1 to 300)
Score of SM's CTT	(Common Task Test)
Score of SM's GT	(General qualification Test)
Score of SM's SQT	(Skill Qualification Test)
Senior Grade Personnel	(All officers O-1 thru O-9, all warrant officers W-1 thru W-4, and all enlisted E-5 thru E-9)
Serial #/Reg. # File	(Contains Serial #/Reg. # Info)
Serial #/Reg. # Info	# of Item's LIN,[# of Item's Serial # ¦ # of Item's Registration #], # of Item's Model, Height of Item in Inches, Width of Item in Inches, Length of Item in Inches, Cube of Item in Cubic Inches, Weight of Item in Pounds, Code of Item's Equip. Status, Code of Pacing Item, Code of Item's 2406 Reportability, {Authorized Item LIN}
Substitute Item	(An item authorized for issue instead of or in place of an authorized standard item of like nature and quality)
Substitute Item File	(Contains Substitute Item Info)

Substitute Item Info	# of Substitute Item's LIN, # of Authorized Item's LIN Qty. of Substitute Item On-Hand
TDA	(Table of Distribution and Allowances)
Total Available Days	Total Possible Days — Total Non-available Days
Total Line Items	(Total LIN's with ERC "A" and a Required Quantity of one or greater)
Total Nonavailable Days	(Last date of Report Period--Date of Item's Nonavailability (or first date of Report Period, whichever is later) for each individual item which is 2406 reportable)
Total Possible Days	(Total # of equipment days the equipment was on-hand during the Report Period)
Total Required Days	(Number of days in Report Period * Required Quantity)
Training Codes	[Code of SM's Profile ¦ Code of SM's Primary MOS ¦ Code of SM's Secondary MOS ¦ Code of SM's Alternate MOS ¦ Code of SM's Security Clearance ¦ code of SM's Weapon Qual. ¦ Code of SM's Swimming Status ¦ Code of SM's Over-40 Physical Status ¦ Code of SM's ASI ¦ Code of SM's LIC ¦ Code of SM's SQI ¦ Code of SM's Level of Mil. School ¦ Code of SM's Level of Civ. School]
Training File	(Contains Training Inprocess Info)
Training Info	[Unit Training Info ¦ Other Training Info]
Training Inprocess Info	# of SM's Soc. Sec. Acct., Height of SM in Inches, Weight of SM in Pounds, Date of SM's Measurement, Code of SM's Profile, Date of SM's Profile, Code of SM's Primary MOS, Code of SM's Secondary MOS, Code of SM's Alternate MOS, Code of SM's

	Security Clearance, Score of SM's APRT, Date of SM's APRT, Score of SM's SQT, Date of SM's SQT, Score of SM's CTT, Date of SM's CTT, Type of SM's Weapon Qual, Code of SM's Weapon Qual, Date of SM's Weapon Qual, Date of SM's NBC Qual, Code of SM's Swimming Status, Code of SM's Over-40 Physical, Date of SM's Over-40 Physical, Score of SM's GT, Code of SM's ASI, Code of SM's LIC, Code of SM's SQI, Code of SM's Level of Mil. School, Code of SM's Level of Civ. School
Training Outprocess Info	# of SM's Soc. Sec. Acct.
Training Rating	(Based on Estimated Days to Complete Training)
Training Report Request	[USR Training Report Request ¦ Other Training Report Request]
Training Transaction	[Training Inprocess Info ¦ Training Update Info ¦ Training Outprocess Info ¦ Query ¦ Codes Update Info]
Training Update Info	# of SM's Soc. Sec. Acct., {any information that needs to be updated}
Type of SM's Weapon Qualification	(Specific type of weapon SM is qualified to use)
Unit Address	(Mailing Address)
Unit ALO	(Unit Authorized Level of Organization--establishes the authorized strength and equipment level for MTOE units. ALO 1 is 100%, ALO 2 is approximately 90%, ALO 3 is approximately 80%, and ALO 4 is approximately 70%)
Unit Data File	(Contains Unit Data)
Unit Data	Unit Name, Unit Address, Unit ALO
Unit Personnel File	(Contains Unit Personnel Info)

Unit Personnel Info	Code of MOS, Grade of MOS, # of MTOE Line, Qty. of MOS Required, Qty. of MOS Authorized
Unit Status Report (USR)	USR Personnel Info, USR Training Info, USR ER Info, USR EOH Info, Personnel Rating, Training Rating, ER Rating, EOH Rating, Overall Unit Rating
USR EOH Info	Total Line Items, # of Lines Rated 1, # of Lines Rated 2, # of Lines Rated 3, # of Lines Rated 4, Lowest
USR EOH Report Request	(Request for USR EOH Info)
USR ER Info	Percentage of On-Hand Equipment Mission Capable, Percentage of On-Hand Pacing Items Mission Capable, Percentage of Required Equipment Mission Capable, Percentage of Required Pacing Items Mission Capable Pacing Item Rating
USR ER Report Request	(Request for USR ER Info)
USR Personnel Info	% of Assigned Strength, % of Available Strength, % of Available MOS Trained, % of Available Senior Grade, % of Personnel Turnover
USR Personnel Report Request	(Request for USR Personnel Info)
USR Training Info	Unit Training Info
USR Training Report Request	(Request for USR Training Info)
Unit Training File	(Contains Unit Training Info)
Unit Trainfng Info	Estimated Days to Complete Training, Resource Constraints, Resource Constraint Ratings
Weight of SM in Pounds	(Number of pounds of weight)

APPENDIX F--SDM SCHEMA

```
PERSONNEL
     description:  individual personnel records of all
                   Service Members  (SM's) assigned to the
                   unit.

     member attributes:
          Number_of_SM's_Social_Security_Account
               value class:  SOCIAL_SECURITY_ACCOUNT_NUMBERS
               mandatory
               not changeable
          Name_of_SM
               value class:  PEOPLE_NAMES
               mandatory
          Rank_of_SM
               value class:  RANKS
          Date_of_SM's_Rank
               value class:  DATES
          Date_of_SM's_Birth
               value class:  DATES
               not changeable
          Date_of_SM's_Assignment_to_Unit
               value class:  DATES
               not changeable
          Address_of_SM
               value class:  ADDRESSES
          Code_of_SM's_Address
               description:  identifies whether  SM lives in
                             the barracks,  on-post, or off-
                             post
               value class:  ADDRESS_CODES
          Number_of_SM's_Telephone
               value class:  TELEPHONE_NUMBERS
          Code_of_SM's_Marital_Status
               description:  identifies whether SM is
                             single, married, or divorced
               value class:  MARITAL_STATUS_CODES
          Code_of_SM's_Race
               description:  identifies the SM's race
               value class:  RACE_CODES
               not changeable
          Code_of_SM's_Sex
               description:   identifies whether the SM is
                             male or female
               value class:  SEX_CODES
               not changeable
          Date_of_SM's_ETS
               value class:  DATES
          Date_of_SM's_PCS
               value class:  DATES
```

```
          Date_of_SM's_Basic_Pay_Entry
               value class:  DATES
               not changeable
          Date_of_SM's_Beginning_Active_Service
               value class:  DATES
               not changeable
          Date_of_SM's_Last_EER
               value class:  DATES
          Code_of_SM's_Duty_Section
               description:  identifies the duty section
                             within the unit to which the SM
                             is assigned
               value class:  DUTY_SECTION_CODES
          Quantity_of_SM's_Dependents
               value class:  INTEGERS
          Name_of_SM's_NOK
               value class:  PEOPLE_NAMES
          Address_of_SM's_NOK
               value class:  ADDRESSES
          Code_of_SM's_Availability_Status
               description:  identifies the status of  the
                             SM's availability  for deploy-
                             ment with the unit
               value class:  AVAILABILITY_STATUS_CODES
          Date_of_SM's_Availability_Status
               value class:  DATES
          Number_of_SM's_Assigned_MTOE_Line
               value class:  MTOE_LINE_NUMBERS

     identifiers:
          Number_of_SM's_Social_Security_Account          +
          Name_of_SM

TRAINING
     description:   individual training records of all SM's
                    assigned to the unit

     interclass connection:  subclass of PERSONNEL where
                             Number_of_SM's_Social_Security
                             _Account must be equal
     member attributes:
          Number_of_SM's_Social_Security_Account
               value class:  SOCIAL_SECURITY_NUMBERS
               mandatory
               not changeable
          Height_of_SM_in_Inches
               value class:  INTEGERS
          Weight_of_SM_in_Pounds
               value class:  INTEGERS
          Date_of_SM's_Measurement
               value class:  DATES
```

```
Code_of_SM's_Profile
     description:   identifies the SM's medical
                    profile status
     value class:   PROFILE_CODES
Date_of_SM's_Profile
     value class:   DATES
Code_of_SM's_Primary_MOS
     description:   identifies the SM's primary
                    Military   Occupational   Skill
     value class:   MOS_CODES
Code_of_SM's_Secondary_MOS
     value class:   MOS_CODES
Code_of_SM's_Alternate_MOS
     value class:   MOS_CODES
Code_of_SM's_Security_Clearance
     description:   identifies the level of the
                    SM's security clearance
     value class:   SECURITY_CLEARANCE_CODES
Score_of_SM's_APRT
     value class:   INTEGERS
Date_of_SM's_APRT
     value class:   DATES
Score_of_SM's_SQT
     value class:   INTEGERS
Date_of_SM's_SQT
     value class:   DATES
Score_of_SM's_CTT
     value class:   INTEGERS
Date_of_SM's_CTT
     value class:   DATES
Type_of_SM's_Weapon_Qualification
     description:   identifies the type of weapon
                    the SM is qualified with
     value class:   WEAPON_QUALIFICATION_TYPES
Code_of_SM's_Weapon_Qualification
     description:   identifies whether the SM  is a
                    marksman, expert,  or sharp-
                    shooter
     value class:   WEAPON_QUALIFICATION_CODES
Date_of_SM's_Weapon_Qualification
     value class:   DATES
Date_of_SM's_NBC_Qualification
     value class:   DATES
Code_of_SM's_Swimming_Status
     description:   identifies whether or not  the
                    SM can swim
     value class:   SWIMMING_STATUS_CODES
Code_of_SM's_Over-40_Physical
     description:   identifies the status of the
                    SM's over-40 physical
     value class:   OVER-40_PHYSICAL_CODES
```

```
          Date_of_SM's_Over-40_Physical
               value class:  DATES
          Score_of_SM's_GT
               value class:  INTEGERS
          Code_of_SM's_ASI
               description:   identifies the SM's additional
                              skills
               value class:  ASI_CODES
          Code_of_SM's_LIC
               description:  identifies the SM's language
                              skills
               value class:  LIC_CODES
          Code_of_SM's_SQI
               description:   identifies the SM's qualifica-
                              tion skills
               value class:  SQI_CODES
          Code_of_SM's_Level_of_Military_School
               description:  identifies the highest level of
                              military schooling  the SM has
                              successfully completed
               value class:  LEVEL_OF_MILITARY_SCHOOL_CODES
          Code_of_SM's_Level_of_Civilian_School
               description:  identifies the highest level of
                              civilian schooling  the SM has
                              successfully completed
               value class:  LEVEL_OF_CIVILIAN_SCHOOL_CODES

     identifiers:
          Number_of_SM's_Social_Security_Account

DEPARTED_PERSONNEL
     description:  archive of individual personnel  records
                   of SM's  previously assigned to the unit
                   (individual record from PERSONNEL  class
                   transferred to this class when SM departs
                   from unit)

     member attributes:
          Number_of_SM's_Social_Security_Account
               value class:  SOCIAL_SECURITY_NUMBERS
               mandatory
               not changeable
          Date_of_SM's_Detachment
               value class:  DATES

     identifiers:
          Number_of_SM's_Social_Security_Account
```

```
LIN
     description:   all line item numbers for types of
                    equipment the unit is authorized

     member attributes:
          Number_of_Item's_LIN
               value class:  LINE_ITEM_NUMBERS
               mandatory
               not changeable
          Nomenclature_of_Item
               value class:  ITEM_NAMES
          Number_of_Item's_NSN
               value class:  NATIONAL_STOCK_NUMBERS
               mandatory
          Quantity_of_Item_Required
               value class:  INTEGERS
               mandatory
          Quantity_of_Item_Authorized
               value class:  INTEGERS
          Code_of_Item's_Equipment_Category
               description:  the major category of equipment
                             to which the item belongs
               value class: EQUIPMENT_CATEGORY_CODES
          Code_of_Item's_Equipment_Readiness
               description:  identifies whether the item  is
                             primary, auxiliary, administra-
                             tive support,  or pacing item
                             equipment
               value class:  EQUIPMENT_READINESS_CODES

     identifiers:
          Number_of_Item's_LIN

SERIAL#/REGISTRATION#
     description:  all items of equipment the unit  has on-
                   hand by serial# or registration#

     interclass connection:   subclass of LIN where  Number_
                              of_Item's_LIN are equal

     member attributes:
          Number_of_Item's_LIN
               value class:  LINE_ITEM_NUMBERS
               mandatory
               not changeable
          Number_of_Item's_Serial#
               value class:  SERIAL_NUMBERS
               mandatory
               not changeable
               inverse:  Number_of_Item's_Registration#
```

Number_of_Item's_Registration#
value class: REGISTRATION_NUMBERS
mandatory
not changeable
inverse: Number_of_Item's_Serial#
Number_of_Item's_Model
value class: MODEL_NUMBERS
Height_of_Item_in_Inches
value class: INTEGERS
Width_of_Item_in_Inches
value class: INTEGERS
Length_of_Item_in_Inches
value class: INTEGERS
Cube_of_Item_in_Cubic_Inches
value class: INTEGERS
Weight_of_Item_in_Pounds
value class: INTEGERS
Code_of_Item's_Equipment_Status
description: identifies whether item is full, partial, or not mission capable
value class: EQUIPMENT_STATUS_CODES
Code_of_Pacing_Item
description: identifies whether or not the item is a pacing item
value class: PACING_ITEM_CODES
Code_of_Item's_2406_Reportability
description: identifies whether or not the item is 2406 reportable
value class: 2406_REPORTABILITY_CODES
Authorized_Item_LIN
description: identifies the LIN a substitute item replaces (only if item is from the SUBSTITUTE_ITEM class)
value class: LINE_ITEM_NUMBERS

identifiers: Number_of_Item's_LIN + Number_of_Item's_Serial# or Number_of_Item's_Registration#

SUBSTITUTE_ITEM
description: all items authorized for issue instead of or in place of an authorized standard item of like nature and quality

interclass connection: subclass of LIN where Number_of_Item's_LIN and Number_of_Substitute_Item's_LIN are equal

```
        member attributes:
             Number_of_Substitute_Item's_LIN
                  value class:  LINE_ITEM_NUMBERS
                  mandatory
                  not changeable
             Number_of_Authorized_Item's_LIN
                  value class:  LINE_ITEM_NUMBERS
                  mandatory
                  not changeable
             Quantity_of_Substitute_Item_On-Hand
                  value class:  INTEGERS

        identifiers:  Number_of_Substitute_Item's_LIN

   UNIT_PERSONNEL
        description:   quantities for all required and
                       authorized personnel positions for  the
                       unit, by  MOSC, grade, and number of MTOE
                       line

        member attributes:
             Code_of_MOS
                  description:  identifies the Military Occupa-
                                tional Skill
                  value class:  MOS_CODES
                  mandatory
                  not changeable
             Grade_of_MOS
                  value class:  GRADES
                  mandatory
                  not changeable
             Number_of_MTOE_Line
                  value class:  MTOE_LINE_NUMBERS
                  mandatory
                  not changeable
             Quantity_of_MOS_Required
                  value class:  INTEGERS
                  mandatory
                  not changeable
             Quantity_of_MOS_Authorized
                  value class:  INTEGERS
                  mandatory
                  not changeable

        identifiers:  Code_of_MOS
```

```
UNIT_DATA

     member attributes:
          Unit_Name
               value class:   UNIT_NAMES

          Unit_Address
               value class:   ADDRESSES
          Unit_ALO
               value  class:  AUTHORIZED_LEVELS_OF_ORGANIZA_
                              TION

     identifiers:  Unit_Name
```

APPENDIX G--USER VIEWS

ORDERLY ROOM

FILE NAME	INPUT	UPDATE	QUERY	DELETE	REPORT
Unit Data	X	X	X	X	X
Unit Personnel	X	X	X	X	X
Personnel	X	X	X	X	X
Personnel Codes	X	X	X	X	X
Departed Personnel	X	X	X	X	X
Training	X	X	X	X	X
Training Codes	X	X	X	X	X
LIN	X	X	X	X	X
LIN Codes	X	X	X	X	X
Serial#/Reg.#	X	X	X	X	X
Substitute Item	X	X	X	X	X

TRAINING SECTION

FILE NAME	INPUT	UPDATE	QUERY	DELETE	REPORT
Unit Data			X		X
Unit Personnel			X		
Personnel			X		
Personnel Codes			X		
Departed Personnel			X		
Training	X	X	X	X	X
Training Codes	X	X	X	X	X
LIN			X		
LIN Codes			X		
Serial#/Reg.#			X		
Substitute Item			X		

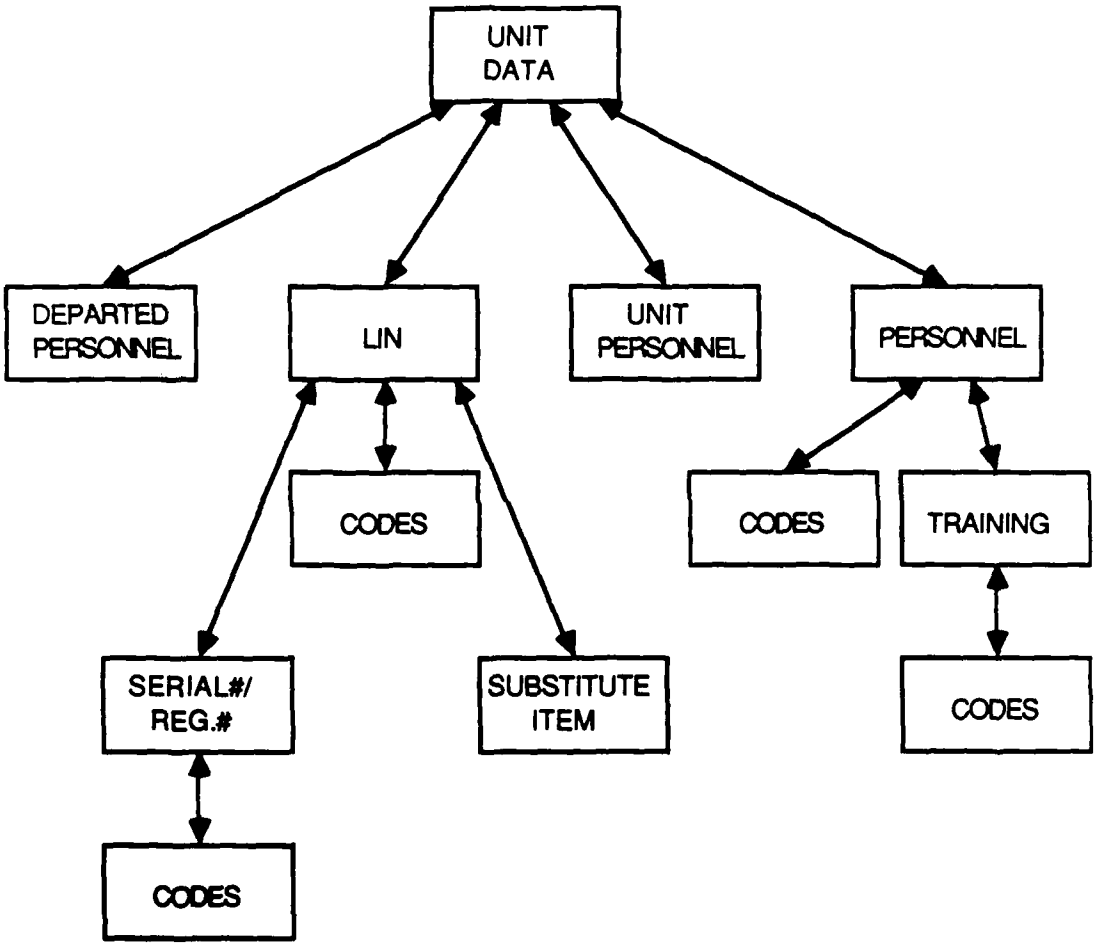
SUPPLY ROOM

FILE NAME	INPUT	UPDATE	QUERY	DELETE	REPORT
Unit Data			X		X
Unit Personnel			X		
Personnel			X		
Personnel Codes			X		
Departed Personnel			X		
Training			X		
Training Codes			X		
LIN	X	X	X	X	X
LIN Codes	X	X	X	X	X
Serial#/Reg.#	X	X	X	X	X
Substitute Item	X	X	X	X	X

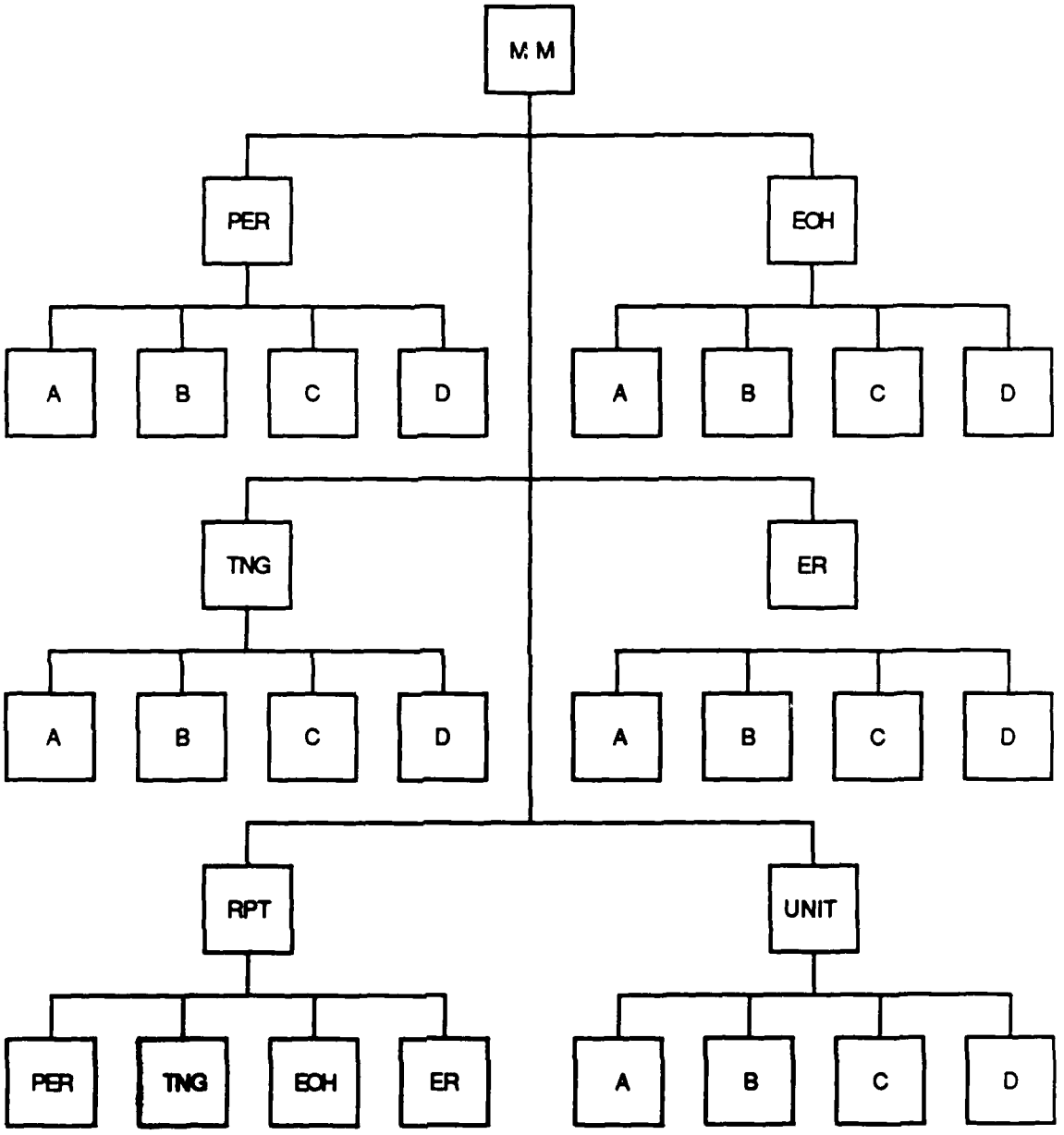
MAINTENANCE SECTION

FILE NAME	INPUT	UPDATE	QUERY	DELETE	REPORT
Unit Data			X		X
Unit Personnel			X		
Personnel			X		
Personnel Codes			X		
Departed Personnel			X		
Training			X		
Training Codes			X		
LIN			X		
LIN Codes			X		
Serial#/Reg.#	X	X	X	X	X
Substitute Item	X	X	X	X	X

APPENDIX H--BACHMAN DIAGRAM



APPENDIX I--HIERARCHY DIAGRAM



PER = Personnel Menu

TNG = Training Menu

RPT = Report Menu

A = Input

B = Update

C = Query

D = Delete

EOH = EOH Menu

ER = ER Menu

UNIT = Unit Menu

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