The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official indorsement or approval of the use of such commercial products. The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.
This report presents the results of an analysis of six automated data processing (ADP) systems used for status reporting of real estate activities. Details of the existing procedures, information flow between Corps of Engineers Districts and the Directorate of Real Estate at the Office of the Chief of Engineers, and system analyses are included for the real estate status reporting procedures in the acquisition, disposals, inleasing, and outgranting activities, and the relocation and homeowner's assistance programs. Interim recommendations for streamlining the six ADP systems to improve the timeliness.
Block 20 continued.

of information, reduce manual effort, and eliminate redundant or unnecessary data reporting are given for the systems both individually and collectively. Recommendations for analyzing additional ADP systems with which real estate personnel are involved are also presented. Finally, preparation of the functional requirements and preliminary design of upgraded, consolidated real estate status reporting system is recommended.
FOREWORD

This research was conducted for the Office of the Chief of Engineers (OCE), Directorate of Real Estate, Programs Division (DAEN-REP) under the O&MIA Program, Work Unit Title, "Real Estate Status Reporting Procedures." The OCE technical monitor was Mr. E. W. Merli (DAEN-REP). Additional direction was provided by Mr. L. L. Pitchford, Jr., Chief, DAEN-REP.

This study was conducted by the Facility Systems Division (FS), U.S. Army Construction Engineering Research Laboratory (CERL). The work was performed by Mr. C. P. Altheide, Principal Investigator, and Mr. G. M. Polin.

Mr. E. A. Lotz is Chief of FS. COL J. E. Hays is Commander and Director of CERL and Dr. L. R. Shaffer is Technical Director.
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ANALYSIS OF REAL ESTATE STATUS
REPORTING PROCEDURES

1 INTRODUCTION

Background

The Directorate of Real Estate (DAEN-RE) of the Corps of Engineers performs the functions of a real estate agent primarily for the U.S. Army, but also for the Air Force, the National Aeronautics and Space Administration (NASA), the Energy Research and Development Agency (ERDA), the National Park Service (NPS), and other Federal agencies. DAEN-RE's primary activities, as listed on ENG Form 1685 (Figure 1), include the following:

1. Project Planning
2A. Acquisition (Pre-Condemnation)
2B. Acquisition (Post-Condemnation)
3. Inleasing
4. Relocation Assistance
5. Compliance Inspections
6. Utilization Inspections
7. Outgranting
8. Disposals
9. Local Cooperation
10. Timber Harvest
11. Maneuver Permits
12. Care and Custody
13. Administrative Activities
14. District Overhead
15. Homeowner's Assistance (HA).

Corps Real Estate Districts are organized such that one branch, usually named the Planning and Control (P&C) Branch, is responsible for record-keeping and reporting on the District's activities to the Real Estate Programs Division (REP) at OCE. The Systems Operation and Management Branch (REP-S) of the Real Estate Programs Division is the branch of REP responsible for the status reporting tasks. REP-S is in communication with the P&C Branches in the field and also the Engineer Data Processing Center (EDPC), which handles the automated data processing (ADP) system work for REP.

Status reporting (vertical reporting of information between the Districts and REP) requires considerable effort by personnel at the
Districts and REP-S. A large number of update actions are processed quarterly by the Districts and REP-S, requiring considerable manual effort to physically handle and process the flow of paper and punched cards. Changes in data are often delayed nearly an entire fiscal quarter. This large volume of actions and lengthy turnaround time prompted REP to initiate the investigation documented in this report.

Purpose

The purpose of this study is to investigate and evaluate the existing status reporting procedures and associated ADP systems used by the Directorate of Real Estate, Programs Division, with a view toward improving the timeliness of information in the systems, reducing manual efforts, and eliminating redundant data reporting. The investigation was to determine whether (1) the current systems, with some streamlining and improvement, are adequate for the foreseeable future, or (2) a new consolidated status reporting system should be developed for the DAEN-RE. The determination was to be based primarily on improved efficiency in performing the workload and turnaround time; of secondary concern were to be improvements in the capabilities of the system(s), such as the capability to produce new reports or additional information in current reports.

Approach

Effort in this study was concentrated on the actual work of the P&C Branch, with particular emphasis given to the preparation of reports for REP-S.

Based on the work performed by the P&C Branches with respect to automated system reporting, some of the activities listed on ENG Form 1685 were eliminated from consideration: Project Planning, which involves little or no upward status reporting and does not have an automated data base; Administrative Activities and District Overhead, which do not involve upward status reporting; and Compliance and Utilization Inspections, which for the most part are not reported upwards. The Timber Harvest, Maneuver Permits, and Care and Control activities were also dropped from consideration due to their extremely small volume. In addition, Acquisition (Pre-Condemnation), Acquisition (Post-Condemnation), and Local Cooperation were combined into a single activity, since they are reported as such.

The following activities are then the focal point of the present study:
1. Acquisition
2. Disposals
3. Inleasing
4. Outgranting
5. Homeowner's Assistance
6. Relocation Assistance.

The existing (FY77) status reporting procedures were investigated by studying the work of the P&C Branches of Louisville (ORL) and Omaha (MRO) Real Estate Districts. Investigators visited each District and initiated mail and phone contacts as a means of collecting documents and clarifying details of operation. Visits and phone calls were also made to the Missouri River (MRD) and Ohio River (ORD) Real Estate Division offices. In general, it was found that none of the status reporting tasks for the six systems occurs at the Divisions and that the Divisions only review District status reporting actions. Status reports are sent from District offices directly to the DAEN-RE, with copies furnished to Division offices. Divisions are therefore not discussed further in this report. The work of REP-S was also studied.

The final step in the research effort was investigation of the existing computer facilities at EDPC and the six real estate ADP systems. Program documentation, system documentation, and magnetic tapes of the master files were obtained for each of the six systems.

Organization of Report

Chapters 2 through 6 of this report cover the six individual systems, with Inleasing and Outgranting combined into one chapter because of their similarities. Each of these chapters contains a description of the procedures and documents involved in the system, an analysis of these procedures, and a summary with recommendations for streamlining the system. These streamlining recommendations assume that the systems are to be maintained approximately as they stand; i.e., that no major revision of any individual system is contemplated.

Chapter 7 provides an overview of all six systems, with comments regarding their possible consolidation into one automated status reporting system.

Chapter 8 presents some observations made during the study on two additional ADP systems with which real estate personnel are involved.

Conclusions and recommendations for each of the six systems are presented in Chapter 9, along with general streamlining and consolidation recommendations.
Mode of Technology Transfer

The results of this study will impact on the following regulations defining real estate reporting procedures:

1. ER 405-1-105, Acquisition (16 August 1973)
2. ER 405-1-1041, Disposal (10 March 1967)
3. ER 405-1-1020, Records and Reports--Leaseholds (30 August 1974)
4. ER 405-1-1030, Records and Reports--Outgrants (24 April 1973)
5. ER 405-345-700, Homeowner's Assistance Program (1 September 1971)

Changes to these regulations based on conclusions and recommendations presented herein are solely the responsibility of DAEN-REP.
2 ACQUISITION

DAEN-RE's primary task is the acquisition of land for projects which have been authorized by Congress for the Departments of the Army (military or civil works) and Air Force, ERDA, NASA, NPS, and other Federal agencies. This is a lengthy process; 10 years may elapse between the first notification to landowners and the last court case. The Corps maintains extensive records for each tract of land, including such things as dates and dollar amounts of appraisals and offers. The rules for this recording and reporting are specified in ER 405-1-1015, which is primarily concerned with the proper methods of filling out the Acquisition Docket Sheet and an Acquisition Progress Report. The Acquisition Progress Report is the document used to provide REP with quarterly summaries of progress on a project. REP uses this information to augment its Acquisition Master File. District personnel use two different techniques to produce these reports. One is strictly a manual record-keeping procedure; the other is partially automated.

Procedures in the Manual System

Figure 2 shows the Acquisition Docket Sheet (ENG Form 1069). Land required for a project is divided into numbered tracts before acquisition begins. The first section of the docket sheet contains this tract information. For each tract, the landowner's name, the acreage involved, and two dates—the date the tract ownership was available and the date the tract mapping was completed—are recorded. Two types of acreage are also recorded—the acreage for which the Government requires absolute ownership (fee) and the acreage for which a lesser interest, such as an easement or other right of passage, is required. Possession dates and methods are also recorded.

A tract of land may be reappraised several times during the lengthy acquisition process; it is not uncommon for the same tract of land to be appraised as many as four times. New appraisal values and dates are noted by crossing out the current values and writing the new ones in above them.

Title evidence for each tract of land must be obtained carefully so that a project cannot be halted by claims against the land once construction has begun. If the landowner and the Corps can agree on a price, the amount agreed to and the dates of the events leading up to the closing are recorded.

1Acquisition, ER 405-1-105 (Office of the Chief of Engineers [OCE], 16 August 1973).
If the Corps and the owner cannot agree on a price, the property is condemned and the matter goes to court for legal proceedings known as condemnation. The primary stage of condemnation proceedings is the Government's filing of a Declaration of Taking, usually abbreviated as D/T. Once this document has been filed with the court (along with monies at least equal to the appraised value of the land, to show the Government's intent to pay for the land), the title of the land is transferred to the Government. Arguments in court over the exact price to be paid may continue for some time. This stage of the proceedings is referred to as post-condemnation. If rightful ownership is uncertain, if the land is tied up in an estate settlement, or if there is a large number of owners, a tract of land may also be condemned for title. The date of a final opinion is recorded for either purchase or condemnation and remarks may be recorded for local purposes.

Since a project may include several thousand tracts of land, as many pages of ENG Forms 1069 as required are bound together in a book in tract number order. The tract number is therefore the unique identifier on all documents relating to acquisition progress in the field offices and at the Districts.

Figure 3 shows the Acquisition Progress Report (ENG Form 2440), which summarizes the ENG Forms 1069 for a single project. Districts send ENG Forms 2440 to REP quarterly. The top of the form is concerned with the same information as the ENG Form 1069, identifying the project and its location and authorization directives. The second section of the form (Complete Project Requirements) tells how many acres, dollars, and tracts of land are needed to complete the entire project and how many have been authorized, and summarizes what has been achieved in the current quarter and to date.

The remainder of the form provides the detail upon which the summaries are based. It is organized as a matrix, composed of the intersection of the methods of obtaining the land (purchase, condemnation, etc.) with the type of interest obtained (fee simple, lesser interest, lease-use permit, or public domain). Intersections between some categories are not meaningful; some boxes in the matrix are therefore colored gray to indicate that they need not be filled.

As already stated, the information on ENG Form 1069 is arranged by tract number. However, the ENG Form 2440 quarterly report is organized by method and type of interest. Thus, preparing an ENG Form 2440 directly from the ENG Forms 1069 requires going through the entire book of docket sheets (20 to 30 sheets for an average project), line by line, looking for dates in the current quarter. Upon finding, for example, that an option was accepted in the current quarter, the number of tracts, acres, and dollar amounts involved must be copied to another sheet, from which the totals for the quarter can be determined.

Aside from the time-consuming nature of this task for large projects, the procedure has a tremendous potential for error. The book of docket sheets is handwritten, with much crossing out and many different
handwritings often spanning 10 years of acquisition history. One can therefore understand how a clerk might misread or simply miss a date from the current quarter.

For this reason, ORD created an intermediate document—the Project Summary Worksheet (Figure 4). When information is recorded on the ENG Form 1069, an entry is also made on the Project Summary Worksheet. The columns of the worksheet correspond to certain lines on the ENG Form 2440. By adding the entries in a column, the totals for that line are easily produced. Other columns on the form are used to produce totals for ORD Form 743 (Figure 5), an acquisition analysis report required monthly by ORD.

The Project Summary Sheet has no agency number on it. Whether other Districts with manual systems employ this summary sheet or a similar one, or work directly from the ENG Forms 1069 has not been determined. The Omaha District, however, has automated most of the Acquisition recording and reporting process, as discussed in the next section.

Procedures in the Automated System

An Acquisition Data Base (ADB) is at the heart of the Omaha automated system. For a new project, coded information for each tract of land is entered by punched cards to the ADB. The data entered for each tract are the same information that would be entered into a docket book when a new project is started—the tract number, the number of acres, the owner's last name, and the mapping date for the tract. One punched card with this information is required to enter each tract in the ADB, just as one line in the ENG Form 1069 docket sheet is required for each tract.

As in the manual system, two entries are needed to fully record events in the acquisition history of a tract. Louisville records each event on the docket sheet and Project Summary Worksheet; Omaha records each event on its own computer-generated docket sheets, MRD Form 0810 (Figure 6), and on 80-column coding forms (ENG Form 2900), one of which is shown in Figure 7. The changes made on the docket sheet printout serve to keep it up to date until it is reprinted. The ADB is updated monthly based on cards punched from the coding sheets, and the revised docket sheet is then reprinted based on the updated ADB.

Columns 1 through 13 of the coding form identify the project and tract involved. The coding sheet is then divided into pairs of field numbers and data sections. Each possible event in the process of acquiring a tract (such as an appraisal or an option accepted) has a field number associated with it; the data for that event (usually a date or a dollar amount) are recorded in the data column next to the field number column. All information on the docket sheet is coded in this way.
The ADB thus contains the information seen on the docket sheet. The rest of the information needed to complete an ENG Form 2440 ( alphanumeric heading information and cumulative totals from previous quarters) is stored in a separate data base. Quarterly, Omaha combines these two data bases and prints out an ENG Form 2440 for each project, to be sent to REP in lieu of the usual manually filled-out ENG Forms 2440.

Whether the ENG Form 2440 is produced manually or automatically, each District sends one form to REP for each active project. This form is placed into REP's "active" file, which contains the latest copy of ENG Form 2440 for every project. The old active copy is put into a "working" file, which extends back 1 fiscal year. When a non-final ENG Form 2440 is over 1 year old, it is destroyed. Final versions of ENG Forms 2440, however, are placed into an historical file.

A subset of the information on the active 2440s is transcribed at REP-S onto keypunch forms (ENG 0-4605, Figure 8), after which it is keypunched at EDPC. When the keypunching has been checked and verified by REP-S, the punched cards are returned to EDPC. A preprinted job request (ENG Form 0-4495, Figure 9) is sent with the punched cards to tell EDPC exactly which programs to run, what outputs to print, and how many copies of each are expected.

For the acquisition system, all of the EDPC outputs are used by REP; none are sent back to District offices. Examples of EDPC outputs include a printed copy of the Acquisition Master File and summaries of acquisition accomplishments by state and agency. Other outputs are produced yearly or upon special request.

Acquisition Information Flow

Figure 10 summarizes the Acquisition manual reporting process. A notifying document arrives at the District P&C Branch and is recorded on both the ENG Form 1069 docket sheet and a summary sheet. Quarterly, the summary sheet and the docket sheet are used to prepare the ENG Forms 2440 for each active project. The ENG Forms 2440 are then sent to REP.

At REP, the old active 2440 file and the old working 2440 file are merged into a new working file, after any ENG Forms 2440 over 1 fiscal year old have been thrown away. The new ENG Forms 2440 received from the District become the new active files. The information on the new active ENG Forms 2440 is then transcribed onto coding forms (ENG Forms 0-4605), which are keypunched at EDPC and returned to OCE for checking and correction. The punched cards, along with a preprinted job request, are then submitted to the Acquisition ADP system. The principal outputs of this system are a new Acquisition Master File (on tape) and a printed copy of this master file along with error reports and other listings (sent to REP).
Figure 11 is the flowchart summarizing the Omaha Automated Acquisition System. When a notifying document arrives at the P&C Branch, information is recorded by marking up the computer-generated docket sheet and by entering information on the ENG Form 2900 coding forms. The ENG Forms 2900 are periodically keypunched and checked.

Monthly, the punched cards are submitted to the Omaha ADP Acquisition System for updating the ADB and producing an updated docket sheet, which supersedes the previous one. At the end of the quarter, the Omaha ADP 2440 system is run; this system uses the ADB to produce a printout of the ENG Form 2440 information for each active project. These printouts are sent to REP, which accepts and processes them in lieu of the usual ENG Form 2440.

Analysis of the Automated and Manual Systems

The manual system, as studied at Louisville, functions effectively and efficiently. There is neither unnecessary record-keeping nor unnecessary steps in the process. From the Louisville District employees' point of view, the primary problem with Acquisition reporting is meeting the dual reporting requirements of the ORD Form 743 and the ENG Form 2440. The two reports are dissimilar enough in some aspects to require a certain amount of dual record-keeping. However, the Corps organizational structure allows Divisions to impose reporting requirements on their Districts, so the necessity for two such similar reports cannot be avoided in the current system. If a new consolidated system were to be developed, one report could be designed to satisfy both DAEN-RE and the Division, or the two reports could be generated automatically from a common ADB without any extra work for District employees.

A proper evaluation of the automated system at Omaha could only be made by comparing its cost with the cost of the former manual system at Omaha; this is impossible, however, since the automated system has been in operation several years and no records exist which would allow the comparison to be made.

If time is saved by using the automated system, it is in the preparation of the ENG Form 2440 information at the end of the quarter. The recording procedure for the two systems is quite similar. Each system requires that an entry be made on a docket sheet. Each system also requires that a second entry be made; for the manual system this involves the Project Summary Worksheet, while for the automated system the second entry is on a coding sheet. Since the entry on a coding sheet is more complex and the coding sheets must be keypunched, the automated system's only opportunity to save is in the production of the ENG Form 2440 reports. Yet initial estimates obtained by telephone from Omaha employees indicate that the automated system is less efficient than Louisville's manual system in this respect. Omaha requires an average of 5 man-days to produce the ENG Form 2440 reports.
using the automated system (Omaha still produces the reports for military construction projects manually); in contrast, Louisville, which has a similar reporting load, takes only 2 days to prepare the reports. While one would not wish to rely too heavily on this analysis (since interest in the efficiency of the systems is confounded with probable differences in employee efficiency and working conditions between the two Districts), the additional verbal reports from Omaha District employees about inefficiencies and problems with the automated system lead toward the conclusion that this automated system is certainly no more efficient than the manual and should not be pursued as a solution to Acquisition reporting problems. Although it is called an automated system here, it is in fact no more automated than reporting systems for other real estate activities since it relies on paper recording and punched card input media.

Summary of Acquisition Reporting

No interim change is recommended to the current Acquisition system. Both the automated and the manual versions of the system are workable; there are no extra steps in the process and no unnecessary record-keeping that can be eliminated. No significant developmental work should be done on the Acquisition system, since its technology is so close to being out of date (namely a paper and keypunch card system).

One change that was considered was moving the transcript coding and keypunching functions to the District. While this would make the Acquisition system look more like the systems for four of the other activities, there are only small benefits associated with such a change and large costs in the form of training of District workers, issuance of new regulations and instructions, and errors due to initial confusion. Even if initial costs are ignored, the volume of cards fed into the Acquisition system is quite small (641 in a recent quarter according to REP records). Transcribing and keypunching such a small number of cards in one place is clearly more efficient than spreading the function out over more than 30 offices. But if data entry into a consolidated system is planned for the Districts, transfer of that responsibility now with REP monitoring input errors would increase the benefits associated with such a change.

A second change considered was Corps-wide adoption of the Omaha automated system. It is clear from conversations with Omaha District personnel that the system is not satisfactory to them. While it might ultimately, after some modifications, prove to be satisfactory, the cost of the modifications cannot be justified by any benefits. Essentially, REP would be exchanging one paper and keypunch card system for another.
3 DISPOSALS

The Corps not only acquires land, but also disposes of it. Land acquired for the construction of a lake or a lock and dam may be of no further use to the Corps upon completion of the facility; buildings located on the land may also be disposed. Army installations with excess property for disposal also fall under the Corps' aegis. The DAEN-RE must execute and report on the stages in the disposal process from the time the property is declared excess until it is sold, transferred, or otherwise disposed.

Disposals Procedure

ER 405-1-1041\(^2\) prescribes the rules for progress reporting of inactive, excess, and surplus real property at Army and Air Force installations, civil works projects, and various Federal agencies for which the Corps acts as real estate agent. The two basic ways to dispose of excess property are (1) to transfer it to another Government agency which currently has a use for it, or (2) to sell or otherwise convey it to private parties.

The usual method of transfer from one Government agency to another is through the General Services Administration (GSA). A Standard Form (SF) 118 (Figure 12) must be filed with GSA for any excess property under a District Engineer's jurisdiction. If GSA knows of a Government agency with a need for this property, they will agree to take custody of the property, and the Corps' responsibility ends. If no Government agency requires the property, it is declared to be surplus, and the District Engineer has the responsibility of disposing of it, generally through an advertised sale with closed bidding.

The primary document in disposal recording is ENG Form 0-836, the Real Property Disposal Report (Figure 13). The top part of the form gives the basic data on the installation (in this example, the Indiana Army Ammunition Plant)--its name, Division, District, city, and state; a locally assigned audit number for the property involved; and the date and type (final or recurring) of the report. If the report is recurring, as in this case, there is more excess land or real property to be disposed. Additional data on the top of the form include the acreage of the entire installation (17,921 acres [72.5 km\(^2\)] in fee, 1557 acres [6.3 km\(^2\)] of easement, and 249 leased acres [1.0 km\(^2\)]), the agency owning the property (Army), the type of property (industrial), and a designation of whether the entire installation or merely a portion, as is the case here, is excess.

\(^2\) Disposal, ER 405-1-1041 (OCE, 10 March 1967).
The initial designation of a report of excess property at an installation is made by filling in the information in the header of the ENG Form 0-836 on an ENG Form 836a. REP returns a computer-printed ENG Form 0-836 to the District. Further changes in disposal progress are recorded on the form itself by adding lines or by crossing out the printed entries and writing in new ones. This marked-up ENG Form 0-836 is returned to REP quarterly, along with the supporting documents.

Further examination of the examples in Figures 13 and 14 may be helpful. For instance, the first line of Figure 14, an ENG Form 0-836 from Camp Atterbury, indicates that 20 acres of land that the Army owned at Camp Atterbury, reference number 0201, were declared excess on 14 April 1954. The land cost the Army $18,227. The land was reported to GSA for disposal on 26 August 1954, and the disposal by GSA was completed on 30 January 1956. In this case, GSA took the property into its custody; at other times, it may direct DAEN-RE to transfer the property directly, as it did for the property in line 3, which was disposed to the Department of Health, Education, and Welfare (HEW), and the property on line 6, which was transferred to the Agriculture Department.

These are examples of completed disposals. The line of Figure 13 with reference number 1801 shows property in the midst of disposal. It has the action code 12, meaning "to be sold." When the Omaha District receives confirmation that the property has been sold, the 12 is crossed out and an action code of 22, meaning "sold," and the date of the sale is entered in the appropriate columns, completing the disposal process for that tract. After the completion, the next quarter's computer printed ENG Forms 0-836 include the new status.

REP-S transcribes the change recorded by the District on a marked-up ENG Form 0-836 onto specially designed 80-column coding forms (ENG Forms 2900, Figure 15). There are four card formats (number 1 format is shown). Card formats 1 and 2 are used to create an ENG Form 0-836-a, an initial report of excess property at an installation, and card formats 3 and 4 are used to code the disposal process of the various tracts of land, i.e., the lines in the body of the ENG Form 0-836.

When the changes have been transcribed onto these coding forms, EDPC keypunches cards for REP. EDPC also verifies the keypunching. The cards and coding forms are returned to REP along with a listing, which is then checked again for errors. The cards are then returned to EDPC for computer processing. The ADP master file for Disposals is updated, and a new six-part ENG Form 0-836 is sent to REP for distribution. Three parts are retained at the DAEN-RE level—two for REP-S, and one for the Management and Disposal Branch. REP-S uses one of its copies as a file copy and the other as a working copy. Of the remaining three copies, one is sent to the Division and two to the District. The two District copies are marked Part 2 - Report of Change and Part 4 -
District Engineer. Part 4 is the working copy, which is retained, while Part 2 is marked with the next quarter's changes and returned to REP along with the documents substantiating the changes.

Disposals Information Flow

The flowcharts in Figure 16 summarize the Disposal status reporting process. An ENG Form 0-836-a is filled out upon the arrival of a notifying document, usually a copy of an SF 118, Report of Excess Property, which has been sent to GSA. Two copies of this form are sent to REP at the end of the quarter.

Disposal actions for property already declared as excess are recorded on ENG Form 0-836. Quarterly, one of the two copies of this form is sent to REP, while the other copy is retained at the District. The various notifying documents for disposal actions are sent along with the forms.

REP uses these notifying documents to check and correct any District errors in entering the data. When REP is satisfied with the correctness of the ENG Form 0-836, the information is coded onto preprinted coding forms (ENG Form 2900) using formats 1 through 4. The coding forms are then keypunched by EDPC and returned to REP for another error correction. The corrected punched cards, along with a preprinted job request are submitted to EDPC, and the Disposals ADP system is updated. The principal outputs of the system are an updated master tape, error reports and listings, and the updated ENG Forms 0-836, which are sent to the District.

Disposals System Analysis

The design of the Disposals system is very well suited to its small size; fewer than 1000 punched cards are input to the Disposal ADP system quarterly, representing a maximum of 500 disposal actions during the quarter. Assuming 63 working days per quarter and 30 reporting offices, the average office has a maximum of one disposal transaction to record every 3 days.

The ENG Form 0-836 is the key document in the system, serving as a means of recording change, a keypunch form, and the output of the ADP system for the new quarter. A clerk records information directly on it; a second copy is also filled in to provide a record to use during the 6 weeks or so before the updated forms arrive. Marking up two copies is a small chore because of the small volume of changes and the fact that most changes are recorded using fewer than six characters.

Transcription onto coding forms is performed at one location, REP, as befits a system of small volume. The original source document is
available so reality specialists at REP-S can check the entries made by the District recording clerks. The coding operation, which involves entering information on four different forms, is somewhat more complex than the other systems and is currently well-handled by the reality specialists at REP-S. There is no reason to move any REP-S disposal-reporting operations to the Districts.

The principal problems with the Disposals reporting system stem from the fact that the system does not work exactly as described herein nor as described in the regulation. The principal difference is that REP also keeps a complete set of ENG Form 0-836 sheets and records disposal actions as they receive evidence of them. The regulation states that all Disposals recording should occur at the District, and thus copies of all relevant documents should find their way to the P&C Branch at the District level. Unfortunately, not all do. Some documents are sent only to REP or arrive there sooner than at the District.

This problem is the reason for the dual docket sheet system. When the marked-up ENG Form 0-836 comes in from the District, the REP specialists resolve the differences between the two as best they can. If the District has a notifying document and REP does not, then REP accepts the District's changes. If there is no supporting document from the District, the change is usually accepted, but the District is requested to send the notifying document as soon as possible.

REP usually records any changes which they believe should be made but a District, for one reason or another, has not made. The District thus gets back output which does not match their input. Since ORL and MRO did not realize that REP was keeping their own record of changes, they did not understand why REP was changing and/or adding to their input.

This dual record-keeping system, although it creates extra work for REP and is confusing to the District, is clearly the only way to get a reasonably complete Disposals record under the current information system.

Summary of Disposals Reporting

Clearly what is needed to make the Disposals ADP system work more efficiently is to insure that all recording of disposal actions be done at the District. An investigation would determine the nature of the problem with respect to the flow of the notifying documents throughout the system. Correcting this problem would allow REP to phase out the maintenance of a separate record of disposal actions.
DAEN-RE keeps records and makes reports pertaining to real estate leases and permits. Inleasing includes all such agreements in which the Army or one of its agencies is the lessee. Allocations of space by GSA to other Federal agencies are included here. Out-granting includes all real estate leases in which the Federal Government is the lessor (e.g., Government-owned land is sometimes leased to private parties or other governmental units).

Inleasing Procedure

The Inleasing status reporting task begins with the arrival of a new lease or an old lease with supplemental agreements attached. The P&C Branch personnel record the salient facts from this lease according to ER 405-1-1020.a

ER 405-1-1020 prescribes the 80-column coding form (ENG Form 4477-R, Figure 17) for recording the information for new leases. Three 80-column cards of information are specified on this form; however, the third card is used only for recruiting and housing. The first two cards suffice for the recording of most leases.

Columns 1 through 26, called the keyword, contain the same information on each of the three possible cards. They fully identify the lease, including the using service, District, Division, and type of space. Other card columns include such information as the name of the installation or address of the land, identification of the buildings involved, the average, the effective and termination dates of the lease, and the fiscal year of its execution.

After a lease has been recorded on an ENG Form 4477-R, changes, supplemental agreements, or renewals are recorded by marking the changes on an ADP listing of District leases received from REP each quarter.

Figure 18 shows a page of an ADP listing. It contains the same information included on the input document, ENG Form 4477-R. Changes to a lease are made by crossing out the old information with a single red line, writing in the new value above that line, and inserting the proper change codes in front of the line. This procedure eliminates the need to reenter information already known to the computer. The preparer merely crosses out and replaces what has changed and specifies a change code to tell the computer the type of change. The keypuncher

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1Records and Reports—Leaseholds, ER 405-1-1020 (OCE, 30 August 1974).
only needs to punch the keyword (columns 1 through 26), the change code in columns 27 and 28, and the changed item, in whatever column it appears. Only for new leases must every column of the ENG Form 4477-R be filled.

Toward the end of the quarter, keypunching is done by the District directly from the marked-up ADP listing and the new ENG Forms 4477-R. After the District has checked and corrected the keypunching errors, the corrected deck is duplicated and listed twice. A copy of the card listing (referred to as an "80/80" listing in the regulation), the punched cards, and the marked-up ADP listing are sent to REP at the end of the quarter.

REP uses the marked-up ADP listing and the card listing to manually check for errors in the District work. Any errors are corrected, and a corrected set of punched cards is sent to EDPC to be processed by the Inleasing ADP System. The principal output of the system is an updated ADP listing of leases by District. Each District receives four copies of this listing. One copy is used as a working copy throughout the quarter; one copy is submitted, marked up, to REP; another marked-up copy is sent to the Division; and the fourth is either considered extra or is sent on to another branch which has use for it.

Inleasing Information Flow

The flowchart in Figure 19 summarizes the Inleasing process. For new leases, the pertinent information is recorded on ENG Form 4477-R; for changes or renewals to existing leases, the ADP listing is marked with the new information. The changes on the ENG Form 4477-R and on the ADP listing are keypunched, proofread, and corrected.

At the end of the quarter the punched cards are sorted and duplicated, and two listings are made. One set of punched cards and a listing are retained at the District; the other set goes to REP, along with another copy of an ADP listing which is marked up especially for REP.

Using the marked-up ADP listing and the 80/80 listing, the punched cards are checked for errors and corrected by REP. The ADP listing and the card listing are then filed. The punched cards are submitted to the Inleasing ADP system along with a preprinted job request. The principal output of the system is the updated ADP listings, of which four copies are sent to the District.

Outgranting Procedure

The Outgranting reporting procedure is almost exactly parallel to the Inleasing procedure. The regulation governing Outgranting recording,
ER 405-1-1030, prescribes an 80-column coding form (ENG Form 4476-R, Figure 20), which is very similar to ENG Form 4477-R. Copies of an Outgranting ADP listing (Figure 21) received from REP are used to record changes and as keypunch documents. The marked-up ADP listing, the punched cards, and an 80/80 listing all must be submitted to REP at the end of the quarter.

The most notable difference between the two systems lies in what is returned to the Districts by the ADP systems. For Outgranting, the District receives a punched card for each lease that is due to expire in the coming quarter. If the Outgrant is not renewed, all the District clerk need do is punch a termination code onto the card and submit it as part of the next quarter's input. No record of leases about to terminate is provided for Inleasing. The District Inleasing clerks must manually search the list each quarter to find this information.

Outgranting Information Flow

The flowcharts in Figure 22 summarize the Outgrant status reporting procedure. The principal difference between this procedure and Inleasing is that the ADP system prepares a set of punched cards for those grants about to terminate in the current quarter. Otherwise the flow of information, consisting of the transmittal of ADP listings, marked-up copies, and punched cards, is similar.

Inleasing and Outgranting Systems Analysis

Procedurally, Inleasing and Outgranting are fairly efficient ADP systems. New leases are entered on a preprinted coding sheet; changes to leases need only be marked directly onto a listing that serves as both a keypunching document and the primary source of information about District leases. However, in their execution, these two systems suffer problems which degrade their efficiency considerably. Most of the problems center around the ADP listing.

To review briefly, a District receives four copies of this listing. One is used as a working copy; one is marked up and sent to REP; one is marked up and sent to the Division; and one is considered extra. Notice that the copy of the listing used as a working copy during the quarter is not the copy sent to REP, although that is implied in the regulation. In fact, one of the principal and time-consuming tasks from the District's standpoint is preparing a marked-up copy of the ADP listing for REP to accompany the punched cards.

A question arises as to why the District cannot send the ADP listing which they have been marking up throughout the quarter. The

"Records and Reports -- Outgrants, ER 405-1-1030 (OCE, 24 April 1973).
answer relates to turnaround time. The Louisville District gives the following actual dates as being representative: for a quarter ending September 30, the punched cards and listings are sent to REP by October 12, and the new listings are received from REP around November 4. Occasionally, the listings are not received until a full 8 weeks after the end of the quarter.

It simply is not feasible for recording clerks at the District to hold all lease recording from 6 to 8 weeks. Thus, data for leases arriving at the P&C Branch during this interval are recorded on one of the copies of the last quarter's listings, usually in a different color ink to distinguish them. Since ER 405-1-1020 provides very particular specifications concerning the marked-up docket, such as "one red line through changed entries," and since the clerks involved often need to make notes on their listing to aim them in their work, the working copy of the listing is never in the required form.

When the new listings do arrive, the clerks may copy the changes made so far that quarter onto them; however, knowing that they will have to repeat this copying task at the end of the quarter, they often simply put the new lists away until the end of the quarter, when they mark up copies for themselves, their Division, and REP. Thus, in effect, the useful turnaround time for these systems is a full quarter.

Another problem is the design of the ADP listing. While it is possible to keypunch directly from it, it is not well-designed for keypunching. At Louisville District, where keypunching is done outside the P&C Branch, the ADP listing is not used as a keypunch source document because it was found to be too difficult for an outsider to follow. Louisville therefore records all changes and keypunches from the ENG Form 4477-R (or 4476-R). However, they still must mark up an ADP listing at the end of the quarter to send to REP. Thus although the listing was designed to provide an output document that could also be used as a keypunch source and a record of changes, it has actually resulted in creation of an extra chore for the District.

As mentioned earlier, REP uses the marked-up ADP listings for error checking, and indeed a great deal of error checking occurs in the Inleasing and Outgranting procedures. When a lease arrives at the P&C Branch, the information is extracted from the lease. The lease is not usually referred to again by either the P&C Branch or REP. Thus a likely source of errors--the original transcription and coding of the data--remains unchecked.

The next stage of error checking is that of checking the keypunching against the source. This is best done by verifying, a procedure in which the material is rekeyed, usually by a different operator, and the two versions are compared. If the cards punched are reasonably accurate, the verifying takes less time than the original punching and
produces a deck that is notably free from errors. This verification procedure is used by EDPC in the decks which they keypunch for REP (Acquisition and Disposals).

However, this procedure is not used by either the Louisville or Omaha Districts. After the cards are punched, they are given to the District employee in charge of that activity to be checked for keypunch errors. The difficulty concentrating on such a tedious task cannot be appreciated unless one has attempted to check a large pile of cards and their listing against a handwritten source.

Note again that coding errors cannot be detected at this point unless they are obvious (such as entry of an "18" to designate a month). The alert employee may catch obvious errors, but it is a duplication of effort, since the edit programs at EDPC already look (or should look) for this kind of error. No doubt some coding errors are caught at this point that are not so easily detected by a machine, but the primary purpose of the check at this point is finding keypunching errors, and it is to be expected that the majority of the attention of the checker is directed toward keypunch errors. When keypunching is done at the end of the quarter, there is a great rush to get the cards to REP, and little effort can be placed on finding coding errors which may have occurred up to 3 months previously.

Final error checking is done by REP-S. REP-S looks for procedural errors, i.e., those where the District has tried to make some reasonable change but has not done so correctly. For these types of errors, the computer will process the input data but may not give the desired results; e.g., a new rental amount for $420 per month may be read as $42 per month if incorrect columns were keypunched. Checking for these types of errors seems to be a reasonable procedure, but it is not at all clear that it is cost-effective. REP-S devotes considerable time to detecting a relatively small number of errors, and Districts spend a great deal of time marking up an ADP listing for REP-S, the sole purpose of which is to allow REP-S to check and correct District errors. If this step were eliminated, the Districts would obtain feedback on their errors, which they would have to correct themselves; they would thus learn from their mistakes.

Summary of Inleasing and Outgranting Reporting

It is recommended that REP discontinue the practice of checking the Districts' input cards to the Inleasing and Outgranting systems. The practice of specially marking up an ADP listing at the end of the quarter to allow REP-S to do this error checking should also be discontinued. This change alone could save several man-days of effort each quarter at each District. The Districts may or may not continue to mark changes and keypunch from the ADP listing, as it suits their requirements and situation.
A second recommendation for Inleasing is that a record of which leases are due to expire in the future (next quarter, next two quarters, next 12 months, etc.) be sent to the District, as is done in the Out-granting system. This record would save District P&C clerks much time, and a duplicate copy of this list would no doubt be a great aid to the leasing personnel at the Districts also.
5 HOMEOWNER'S ASSISTANCE PROGRAM

When a military base is closed, property values in the vicinity often decline. The Homeowner's Assistance Program was established to partially compensate civilian employees of DOD and military personnel who sustain losses in the sale of a personal residence. DAEN-RE is responsible for administration of this program and the concomitant record-keeping and reporting.

Homeowner's Assistance Procedure

The central document for Homeowner's Assistance (HA), as prescribed by ER 405-345-700, is the HA Docket Sheet (ENG Form 4153, Figure 23). Each ENG Form 4153 contains up to 640 characters (eight punched cards) of information about a single application for assistance. The unique number of each applicant is punched into columns 1 through 14 of each of the eight cards, but is specified only once on the form— at the top left. Lines 1 through 3 in Section I (General Information) fully identify the military installation, the applicant, and his property. These lines are filled out upon receipt of all applications.

The remainder of the form is filled out as action is taken on the application. Line 4 of Section I is concerned with the determination of eligibility of the homeowner and any appeals, if found to be ineligible. Sections II and III are used only after eligibility is determined. Section II is concerned with the amount and type of relief to which the homeowner is entitled. Section III is concerned with the details of whatever payments and mortgage closings are required.

Both new applications and changes to old applications are recorded directly on the ENG Form 4153. Keypunching is also done directly from this form at the District; each line of the form corresponds to an 80-column card, and the keypunch columns for each data item are preprinted as part of the form.

Monthly, the keypunch cards corresponding to the marked-up ENG Forms 4153 are submitted to REP along with an 80/80 listing of the cards. The marked-up ENG Forms 4153 remain at the District so that the new dockets sent from DAEN-REP can be checked for errors; after this is done, the forms are discarded.

Homeowner's Assistance Information Flow

The flowchart in Figure 24 summarizes the HA reporting process. ENG Form 4153, the HA docket, is used to record both new applications

and changes to existing ones. At the end of the month the docket cards are keypunched and the errors corrected. The docket cards are then filed; the punched cards are sorted, listed, and duplicated. One listing and punched card set is filed at the District; the other is sent to REP.

At REP, the cards are again checked for errors, after which the 80/80 listing is filed. The corrected cards are submitted to the HA ADP system, whose principal product is a set of updated Homeowner's Docket Sheets.

Homeowner's Assistance System Analysis

The HA status reporting procedure is perhaps the best-designed system of the six real estate status reporting systems. A minimum of paper is used and circulated. Only one form is required--ENG Form 4153, which serves the multiple function of source document for keypunch input, output from the ADP system, and a record of the progress of an individual applicant. The volume of the system (about 3000 cards per quarter, 1000 every month) is well-suited to having all information about an applicant on a single sheet of paper. A complete listing of all the Districts' applications is not reprinted each month; instead, only applications containing changes are reprinted and sent to the Districts. For those Districts which do have large volume, HA information is furnished on microfilm, from which a machine in the District office can provide a hard copy of the film as it is necessary.

Summary of Homeowner's Assistance Reporting

No interim changes are recommended to the current system; it functions quite efficiently as it is currently executed.
6 RELOCATION ASSISTANCE

When the Government purchases land from a private landowner, it not only pays for the land acquired, it may also pay the owner for some moving and related expenses under the Relocation Assistance Program passed by Congress in 1970. These expenses may include costs to relocate a personal dwelling, business, and/or farm. The Corps will also assist the owner in finding a suitable comparable relocation.

Relocation Assistance Procedures

The Relocation Assistance (RA) status reporting task, as defined by ER 405-1-663, is concerned with reporting on the progress of an individual's application for assistance, as is the HA task. However, two documents are used for RA, whereas only one document (ENS Form 4153) is required for HA.

The RA Docket Sheet, ENG Form 4606-R (Figure 25) is the nine-card, 720-character docket sheet for recording new RA applications and changes to current ones. The use of this single-docket sheet began with the third quarter, FY77. It replaced a three-part docket ENG Form 4382-R, ENG Form 4382A-R, and ENG Form 4382B-R. The information on the ENG Form 4606-R is identical to that on the ENG 4382 series; only the format was changed to allow an applicant's record to fit on a single page.

Lines 1, 2, and 3 of ENG Form 4606-R serve substantially the same function as the same lines in HA: to identify the applicant, the property acquired from the applicant, and various relevant dates, such as the date of the notification to vacate and the date the application was received. The determination of eligibility and information on any appeals filed is filled in as progress occurs on the application.

When an application is approved, appropriate items in lines 4 through 9 are filled out. Included are the various expense categories which may be paid under this program, such as moving expenses, payments for direct loss in a business or a firm, and expenses incurred in searching for a new location.

The ENG Form 4606-R is merely a recording docket sheet; it is not an ADP output, as is the ENG Form 4153 of HA. The ADP output of RA is a printout of the input information in a different display (Figure 26). Since this printout is not on a form, there are no preprinted column numbers, and a marked-up copy of this printout cannot be used for keypunching. The District clerks may mark it up to correspond to changes which are entered on the ENG Form 4606-R, but there is no requirement to do so.

Quarterly, the cards punched from the ENG Form 4606-R and a listing are sent to REP, which checks for and corrects District errors and submits the punched cards to EDPC. A new ADP output is then sent to the District. The new outputs are checked at the Districts against the marked-up outputs of the previous quarter, after which the marked-up outputs are discarded.

Relocation Assistance Information Flow

The flowcharts shown in Figure 27 summarize the status reporting tasks for relocation assistance. It consists of recording the notifying document onto both the computer-generated docket sheet and the ENG Form 4606-R coding forms. The computer-generated docket sheet is not essential to the process; keypunching is done from the ENG Form 4606-R. The cards are checked, sorted, listed, and duplicated. One set is kept at the District, and the other set is sent to REP.

At REP, the cards are checked against the punched card listing for errors and corrected before submittal to the RA ADP system. The principal output of this system is the updated relocation docket which is sent to the District.

Relocation Assistance System Analysis

The most striking feature of the RA system is that it depends on both an input docket (ENG Form 4606-R) and an ADP output docket to do the job that is done by a single docket (ENG Form 4153) in the HA system, which is greatly preferred by the clerks in the field due to its simplicity. Since the HA system is the older of the two, it is not a case of a better design being found for the newer system. There is no apparent reason why the RA system could not be designed with a single docket to parallel the HA system.

The change from a three-page (ENG Form 4382 series) docket to a one-page (ENG Form 4606-R) docket was much needed. The single-page docket is much more convenient to work with. However, this change does not eliminate the problem of separate input and output dockets. The other major area of interest is the input error checking performed by REPs. The following examples are from the RA system, but the general features of the discussion apply to all four of the systems which are coded at the District: RA, HA, Inleasing, and Outgranting.

Appendix I of ER 405-1-663 lists seven possible types of applicants. A one-digit code representing the type of applicant is placed on the ENG Form 4606-R in column 70 of the number one card. It determines what other columns must be filled out and which ones need not be filled out.
As an example, if the application is for a business, then on lines 4 through 9, only those subsections of the various expense categories marked as business should have numbers in them. Those marked as farm or dwelling expenses should have no data entered into them. Thus, either the presence of data in a wrong category or the absence of data in the proper category is considered an error. Figure 28 shows the Master File Edit Listing for the Omaha District as of 12/31/76. This is an error report generated by the RA ADP system and sent to the District about 6 weeks after the end of the quarter. Line 1 of the form gives the diagnostic message "Missing Dwelling Information." While it is impossible to tell this from merely looking at this figure, the application is for Grapevine Mine Inc., which is really a business. Hence, what is really wrong with this RA record is the type of applicant information, which was coded incorrectly as a dwelling.

The point here is that the RA ADP system checks for this type of error and brings it to the attention of District personnel. This fact is important because REP-S employees do this exact same checking manually before the cards go to EDPC.

The reason for this dual human and computer checking system is simple enough: to attempt to preserve an accurate data base. REP-S employees correct whatever errors they find, because otherwise it will be at least the next quarter before District errors can be corrected. Although some errors still occur, REP-S employees try to minimize the number of errors in the interest of having as accurate a record as possible on which to base their reports.

There are several disadvantages to such a dual system, however. The first is the cost, in terms of man-hours, of doing manually something the computer already does. The second is a less quantifiable cost, that of the level of responsibility expected from the Districts.

To the Districts, the situation is sometimes very confusing, since they never receive full feedback on the results of their own actions. While REP-S often informs the Districts when it changes their input, from a learning point of view, it would be better for the Districts to get back a listing of every error they made and to correct their own errors. While it is possible that the error lists would be longer and the master file further removed, one must consider whether the manual error checking is cost-effective. This question is not easily answered without a statement of REP objectives and without a record of the number of errors corrected in this manner each quarter and the amount of time spent making these corrections. For instance, is it cost-effective to correct District entries such that a report is 98 percent up-to-date instead of 95 percent up-to-date, if 10 man-hours are spent achieving that extra percentage of accuracy? The data required to answer the question simply do not exist. REP-S employees
do not keep track of the number of cards corrected in this way, the percentage of errors among the total records submitted, nor the cost to correct them. Even if this were known, a statement of REP objectives would still be necessary to determine whether the improved accuracy is "worth" the cost.

**Summary of Relocation Assistance Reporting**

If the current system is to be maintained for some time in the future, it is recommended that the RA system be designed to look and perform like the HA system; that is, that it have a single docket sheet used as a keypunch source and as the new ADP output document of the system. However, design and conversion costs will be incurred, and it is not recommended that this be done if RA is to be included in a consolidated system any time in the near future.

It is recommended that the manual error checking be discontinued for RA.
OVERVIEW OF THE SIX SYSTEMS

The six real estate status reporting systems discussed in Chapters 2 through 6 were designed by different people at different times. Each system design depends on the technologies and resources available when being designed and on the penchant of the designers. Several of the systems have undergone changes in the current decade, but no work has yet been undertaken to transform these systems into a single information system for DAEN-RE. Each of the six systems has significant operating differences from the others; thus, a District employee who can quite competently handle one system may be incapable of working with another.

Aside from operating differences, there was another type of inconsistency that needed to be resolved. This inconsistency was in the coding information in the ADP systems for the Division/District codes and the state codes. During the fourth quarter FY77, however, codes were made consistent according to the December 1975 version of ER 18-1-12.7

Other similar examples of nonstandardization can still be cited. The state abbreviations are not constant, varying from the five-character abbreviations given as part of AR 18-12-108 to the instruction given in the Homeowner's Assistance regulation to abbreviate to four letters without any reference to an existing list of abbreviations. In fact, many different versions of abbreviations of the same state show up in the Homeowner's Assistance Master Tape. Also dates are not recorded in standard format. Most of them are in the form, year-month-day with two digits for each; however, Homeowner's Assistance dates are in the order, month-day-year, and Acquisition dates are ordered day-month-year.

These examples of inconsistency clearly indicate why the current systems cannot be considered a consolidated information system. Yet changing any or all of these coding schemes would be an expensive, time-consuming process. Not only would revisions to almost all the current regulations be required, but a large number of ADP programs which produce the reports for Army commands, Congress, and other Federal agencies, as well as all the current data in the ADP data bases would require modification. With such a large man-hour cost and little or no increase in productivity resulting from such a change, it can be understood why the situation has remained as it is.

7Interim and Standard Data Elements and Codes, ER 18-1-12 (OCE, 1 December 1975).
8Catalog of Standard Data Elements and Codes--Security and Intelligence, AR 18-12-10 (Department of the Army, 12 December 1969).
Standardization of coding systems, while a necessary part of any attempt at consolidation, is not itself a reason to attempt a consolidation. There are no astounding inadequacies in the existing real estate systems, provided there is little concern for how far out of date the information in them is at any given moment. A change to a lease, for example, will generally not be reflected in any real estate report for 3 months, since the change does not even enter the ADP system until the end of the quarter and does not show up in an updated system report for another month. If a mistake is made in entering lease data, another quarter will pass before that mistake can be corrected.

The degree to which all reports and information are out of date is matched by the degree to which the technology employed for these systems is out of date. Management is increasingly demanding "instant" information. A paper and keypunch batch system simply cannot provide that kind of response time because the transactions to be entered in a batch must first be collected to form the batch. Transactions thus must wait for processing while the batch is being formed; if for some reason they are not processed, they must wait for the next batch. Thus, any management report is only as current as the last batch, and demands for novel or unexpected reports can rarely, if ever, be handled in a timely manner.

The demands for timely and accurate reports could be met by developing a consolidated system based on modern technology, which provides for greater capabilities than the coding, keypunching, and batch processing technology used in the current systems.

Installation of an intelligent terminal with a cathode ray tube (CRT) at the Districts would permit coding clerks to enter their changes directly to the computer using a picture of the form on the screen. The computer could edit the input at the time of entry, inform the clerks of errors, and prevent transmission of data until the errors are corrected. The computer could also signal inconsistent or incomplete entries, thus performing the functions that REP-S personnel and ADP editing programs now perform. If desired, the correct entry could be sent directly to the main REP data base, thus producing a data base that is fully up to date. Alternatively, if the cost of this option proved to be prohibitive, the changes could be stored at the District computer and sent to update the main data base every week, month, or quarter, as desired. Another possibility would be for REP to access each District's data base and update the central data base rather than relying on the Districts to send the data. Since the changes could be sent via some magnetic recording device, such as a floppy disk, a cassette tape, or by telephone line, all would be prechecked by a computer, REP employees would not need to check them, and the workload involved in updating the data base would be reduced, since prechecking at EDPC could be considerably reduced. An intelligent terminal installed at REP would provide nearly instant access to the latest information.
Such a change has vast implications. District workload could be considerably reduced, since there would no longer be any need for key-punching, coding onto coding sheets, and checking coding sheets and keypunch cards. A slightly higher grade clerk might be needed to enter the data, but the data entry onto the computer would be all that would be required for each task. There would be no large tasks to be performed at the end of the quarter, such as marking up a listing or completely copying a working draft.

During this changeover, a large number of new programs would need to be written and extensive modifications made to old programs and regulations. This period would thus be ideal for standardizing the inconsistencies in operation and coding discussed in this chapter. When the activities in the consolidated system are consistent in coding and operationally similar, each District clerk should be able to handle status reporting for any of the activities. This fact plus the elimination of work that must be done at the quarter's end, should reduce and smooth the District workload sufficiently so that the cost of the changeover would be recovered in a few years.
8 RELATED REPORTING PROCEDURES

During the investigation of the six real estate status reporting systems, District and REP personnel identified two other reporting procedures as being time-consuming and tedious: updating the Real Property Inventory (RPI) and verifying the GSA Standard Level Users Charge (SLUC) billings.

Analysis of the RPI Data System was not included in this research effort, since EDPC was modifying it for use during FY77 at the time of the study. However, the system should be analyzed in depth to develop interim and/or streamlining recommendations and possible interface capabilities with a consolidated system.

Considerable manual effort is expended by District and REP personnel in locating and resolving inconsistencies between the GSA SLUC billings and the Real Estate Inleasing Master File. Automation of the process for locating the inconsistencies would reduce the burden considerably, since the Districts would then only be required to resolve the inconsistencies in conjunction with GSA.
CONCLUSIONS AND RECOMMENDATIONS

This study indicated that the current real estate status reporting systems cannot be considered a consolidated information system. Consolidating the systems without changing their current level of technology would not be cost-effective. However, a consolidated information system based on modern technology could recover conversion costs quickly and provide significant benefits.

The following sections present conclusions and summarize interim and streamlining recommendations for the six systems, both collectively and individually, as well as for two related procedures. Recommendations for proceeding with development of a consolidated status reporting system are also presented.

General Streamlining

Checking of District input is a large task; REP processes over 20,000 punched cards each quarter. The amount of employee time needed to check these cards is prodigious. Dual error checking is not cost-effective and has created results that are detrimental to the proper functioning of the Corps' information system; such results include the lack of complete feedback to (and thus responsibility on the part of) the District offices. In addition, any consolidation of the systems will necessarily mean greater responsibility for the District to input data accurately at the point of entry.

It is therefore recommended that greater responsibility for maintaining the accuracy of the reporting systems be assigned to the District and that less verification and correction of input data be required of DAEN-REP-S personnel.

As an adjunct to that, however, REP would need to maintain records of the District errors and receive from the District an annotated copy of the past quarter's error list, showing the changes the District has made to correct them. Recording District error rates and insuring that the past quarter's errors are properly corrected would be a much smaller task for REP personnel, requiring many fewer man-hours. Initially, this practice might result in longer error lists, but the Divisions and Districts should be made aware that their error rate is their own responsibility, and that it will be considered a measure of their performance to be published in CEPMS (the Corps of Engineers Performance Measurement System). With this incentive, the error listings should diminish and the accuracy of the work should be maintained at a high level.
Acquisition

The Acquisition system works quite well. No interim changes are recommended. No significant developmental work should be done to change this ADP system because its technology is close to being out of date. However, REP should note that not all the information on the ENG Form 2440 is being transcribed and entered into the Acquisition ADP system. If this unused information is not needed, some cost savings would be accrued by eliminating its collection.

Disposals

The flow of documents for the Disposals activity is not a well-defined procedure. According to regulation, all recording is to be done at the District, but in practice some recording is also being done at REP because REP is receiving copies of documents that the Districts are either not receiving or receiving much later. Thus, there is a dual record-keeping system for Disposals, with a docket for each District being maintained at REP.

It is recommended that this dual record-keeping system be abandoned. All notifying documents should go to the District, and all recording should be done there, as per the regulation. Cost savings could be effected by eliminating this duplicate effort at REP. The necessity for REP personnel to match their docket and the District docket each quarter to resolve discrepancies would be eliminated. Considerable time would also be saved at the Districts if their dockets came back from REP without unanticipated changes.

Inleasing and Outgranting

The requirement that the Districts send marked-up ADP listings for Inleasing and Outgranting to REP should be eliminated. These listings are only used to allow REP to check District inputs. At some Districts, the marked-up ADP listings are produced solely for that purpose, while at others they are not in the correct form and must be recopied, a time-consuming task. In conjunction with this recommendation, it is recommended that REP discontinue error-checking of District input as discussed previously in the general streamlining section of this chapter.

It is recommended that the Inleasing ADP system be augmented to produce a listing of leases due to expire in the future as an aid to the Districts in performing their task. Such a list is currently produced for Outgranting.
Homeowner's Assistance

The Homeowner's Assistance system works quite well; no specific interim changes are recommended for it.

Relocation Assistance

If the current Relocation Assistance system is to be maintained for some time in the future, it is recommended that it be redesigned to resemble the more efficient Homeowner's Assistance system; i.e., it should employ a single-docket sheet to be used both as a keypunch source and as the ADP output of the system. Because of the conversion and design costs that would be incurred by such a change, this change is not recommended if Relocation Assistance is to be included in a consolidated system in the near future, since there would not be enough time to recover these costs.

Related Procedures

District and REP personnel indicated that the RPI updating procedure is time-consuming and tedious. It is recommended that this system be analyzed in depth with respect to the reporting procedures and updating processes used, so that interim and/or streamlining recommendations can be determined and interface capabilities with a consolidated system can be developed.

Considerable manual effort is expended by District and REP personnel in resolving inconsistencies between the GSA SLUC billings and the Real Estate Inleasing Master File. Even though the GSA SLUC billing is not a real estate system, it is recommended that a complete analysis of the real estate reporting procedures for satisfying this requirement be conducted. Initial investigation should begin with the feasibility of GSA providing a magnetic tape of their data. Then a computer program could be written to determine any inconsistencies with the Inleasing Master File. A list of inconsistencies could then be sent to the Districts, REP, and GSA. This procedure would eliminate the need for District personnel to find the inconsistencies, which is the tedious task; they would only be required to resolve them in conjunction with GSA.

Development of a Consolidated System

It is recommended that General Functional System Requirements (GFSR) and an economic analysis of a consolidated Real Estate Automated Status Reporting System (REASRS) based on the modern technology described in Chapter 7 be prepared for approval, along with a preliminary
design concept. Such a system would increase the timeliness and accuracy of the information systems while standardizing operations and internal codes. The consequent reduction in the District work-load would result in rapid recovery of the conversion costs.

In addition, the feasibility of interfacing the real estate finance and accounting procedures with the consolidated status reporting system into one Real Estate Management Information System (REMIS) should be investigated.
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**TOTAL ACTUAL STRENGTH**

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<th>APPRAISAL BRANCH</th>
<th>LEASING BRANCH</th>
<th>MANAGEMENT &amp; DISPOSAL BRANCH</th>
<th>PLANNING &amp; CONTROL BRANCH</th>
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IF NECESSARY, USE REVERSE SIDE FOR "REMARKS"

* INSERT AGENCY FOR WHOM WORK IS BEING PERFORMED
** INSERT NAME OF OFFICE AND STRENTH IN "REMARKS" ON REVERSE SIDE OF THIS FORM
III PERSONNEL NOT ACCOUNTED FOR ELSEWHERE IN THE REPORT

<table>
<thead>
<tr>
<th>DATE</th>
<th>TYPED NAME AND TITLE</th>
<th>SIGNATURE</th>
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</table>

Figure 1. ENG Form 1685.
## DEPARTMENT OF THE ARMY
### CORPS OF ENGINEERS
### REAL ESTATE
### ACQUISITION DOCKET SHEET (FIELD)

This Docket Sheet is provided to record acquisition progress and is
the basis for preparation of ENG Form 2180 reports on all projects. It
will be maintained separately for each directive on Military and each
individual authorization on Civil Works projects. Public Domain
withdrawal, public land transfers, lease permits, etc. and leases from pri-
cipal parties will be recorded on the Docket Sheet apart from fee and
lessor interests in a manner to permit ready identification.

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<tr>
<th>TRACT No.</th>
<th>LANDONE</th>
<th>A-NOTICE</th>
<th>POSITION</th>
<th>DESCRIPTIONS</th>
<th>DATE Acquired</th>
<th>Method</th>
<th>DATE Deposited</th>
<th>DATE Acceptor</th>
<th>DATE Amount</th>
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**Figure 2. ENG Form 1069.**
Figure 3. ENG Form 2440.
## CIVIL WORKS REAL ESTATE ACQUISITION
### PLANNING, SCHEDULING, AND PROGRESS

**Table**

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<td>I</td>
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<td>II</td>
<td>Summary of Accomplishments</td>
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<td>III</td>
<td>FY Allocation of Funds</td>
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<tr>
<td>IV</td>
<td>Current FY Schedule &amp; Accomplishments</td>
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<td>V</td>
<td>Activities Progress</td>
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**Figure 5.** ORD Form 743.
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**Figure 6.** Omaha Automated System Docket Sheet (MRD Form 0810).
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<th>FIELD NO.</th>
<th>DATA</th>
<th>FIELD NO.</th>
<th>DATA</th>
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<th>DATA</th>
<th>FIELD NO.</th>
<th>DATA</th>
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<th>DATA</th>
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Figure 7. ENG Form 2900.
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<th>Installation</th>
<th>Directive Number</th>
<th>Directive Date</th>
<th>FA, NO, Year</th>
<th>Method of Acquisition</th>
<th>Number of Tracts</th>
<th>Number of Acres</th>
<th>Option Price, Deposit</th>
<th>Deficiency Award</th>
<th>Assignment Acquired</th>
<th>Installation/Project Name</th>
<th>Country</th>
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Figure 8. ENG Form 0-4605.
### JOB REQUEST

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<tr>
<td>JOB TITLE</td>
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<tr>
<td>DATE</td>
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<tr>
<td>NAME (CUSTOMER CONTACT)</td>
<td>Ms. B.L. Jones</td>
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<tr>
<td>TELEPHONE</td>
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<tr>
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<tr>
<td>SECURITY CLAS (CIRCLE)</td>
<td>GP1 GP2 GP3 GP4</td>
<td>BR/ORG SJO68</td>
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<td>REGARDING INSTRUCTIONS</td>
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</tr>
<tr>
<td>NAME (CUSTOMER CONTACT)</td>
<td>Ms. N. Talley</td>
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<tr>
<td>TELEPHONE</td>
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<tr>
<td>DUE DATE</td>
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<tr>
<td>SECURITY CLAS (CIRCLE)</td>
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<tr>
<td>REGARDING INSTRUCTIONS</td>
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</tr>
<tr>
<td>DISTRIBUTION, NUMBER COPIES PER ADDRESSEE, COVER SHEET TITLE</td>
<td>FORWARD ALL COPIES TO: Ms. N. Talley Rm 3F075 Forrestal Bldg. Ex. 36288</td>
<td></td>
</tr>
<tr>
<td>SPECIAL INSTRUCTIONS/REMARKS</td>
<td>include details of PCM operations, e.g., sort sequence, size and part paper for listings, additional binding and binding instructions (see reverse side of this form if necessary).</td>
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<tr>
<td>LEAVE COVER SHEETS BLANK</td>
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<tr>
<td>FOR COMPUTER DIVISION USE</td>
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<td>ACTUAL COUNT</td>
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<td>CARDS</td>
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**For Computer Division Use**

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Figure 9. ENG Form 0-4495.
Figure 10. Acquisition Flowchart--Manual System (Louisville).
NOT ALL INFORMATION ON 2440 IS KEYPUNCHED

Figure 10 (cont'd)

55
EDPC (A)

A

ENG FORM 4605 CODING FORMS

KEYPUNCH, LIST & VERIFY AT EDPC

ENG FORM 0-4605

LISTING OF PUNCHED CARDS

PUNCHED CARDS

TO REPS (B)

Figure 10 (cont'd)
Figure 10 (cont'd)
Figure 11. Acquisition Flowchart--Automated System (Omaha).
OMAHA DISTRICT

A

PUNCHED CARDS

UPDATED DOCKET

OMAHA ADP ACQUISITION SYSTEM (MONTHLY)

OMAHA ADP 2440 SYSTEM (QUARTERLY)

2440 PRINTOUT (1 PER ACTIVE PROJECT)

TO OCE

Figure 11 (cont'd)
STANDARD FORM 118  
DECEMBER 1973  
OFFICE OF FOODERIAL  
SERVICES ADMINISTRATION  
RESERVATION 2/F 118  00  

1. HOLDING AGENCY NO.  
LOUE-413  
2. DATE OF REPORT  
23 June 1972  
3. TO (Furnish address of GSA regional offices)  
General Services Administration, Region 4  
1776 Peachtree Street, NW  
Atlanta, Georgia 30309  
4. FROM (name and address of holding agency)  
Department of the Army  
Office of Chief of Engineers  
Washington, D.C. 20407  
5. NAME AND ADDRESS OF REPRESENTATIVE TO BE CONTACTED  
District Engineer, Louisville District  
Corps of Engineers, P. O. Box 59  
Louisville, Kentucky 40201  
6. NAME AND ADDRESS OF CUSTODIAN  
District Engineer, Louisville District  
Corps of Engineers, P. O. Box 59  
Louisville, Kentucky 40201  

7. PROPERTY IDENTIFICATION  
3.47 acres of land in fee, being a portion  
of Lock and Dam No. 1, Barren River, with  
structures located thereon.  

On right bank of Barren River, approximately  
3 miles south of Richmondville, Warren  
County, Kentucky.  

8. SPACE DATA  

<table>
<thead>
<tr>
<th>USE</th>
<th>NUMBER OF BUILDINGS (1)</th>
<th>FLOOR AREA (in sq. ft.) (2)</th>
<th>NUMBER OF FLOORS (3)</th>
<th>FLOOR LOAD CAPACITY (4)</th>
<th>CLEAR HEADROOM (5)</th>
<th>(if from SF 118A) (6)</th>
<th>ACRE OR SQUARE FT.</th>
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<tr>
<td>A. OFFICE</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>B. STORAGE</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C. OTHER (See 5):</td>
<td>B 6 6.896</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>D. TOTAL (from SF 118A)</td>
<td>B 6.896</td>
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9. GOVT INTEREST:  

| (1) OWNER | B 6.896 | | | | | | |
| (2) TENANT | | | | | | | |

10. LAND  

<table>
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<tr>
<th>ITEM</th>
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<th>COST</th>
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<td>A. BUILDINGS, STRUCTURES, UTILITIES, AND MISCELLANEOUS FACILITIES</td>
<td>A (Cal. 1)</td>
<td>110,211.00</td>
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<tr>
<td>B. LAND</td>
<td></td>
<td>750.00</td>
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<tr>
<td>C. RELATED PERSONAL PROPERTY</td>
<td>C (Cal. 2)</td>
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<td>D. TOTAL (sum of A, B, and C)</td>
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<td>111,241.25</td>
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11. COST TO GOVERNMENT  

Approximately $9,000.00  

12. LEASEHOLD(S) DATA (Use separate sheet if necessary)  

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<td>C. DATE LEASE EXPIRES</td>
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<tr>
<td>D. NOTICE REQUIRED FOR RENEWAL</td>
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<tr>
<td>E. TERMINAL DATE OF RENEWAL RIGHTS</td>
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<tr>
<td>F. ANNUAL RENTAL RENT PER SQ. FT. OR ACRE</td>
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<tr>
<td>G. TERMINATION RIGHTS</td>
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13. DISPOSITION OF PROCEEDS  

Approximately $9,000.00  

14. TYPE OF CONSTRUCTION  

See Form 118-A attached  

15. HOLDING AGENCY USE  

Portion of lock and dam facility  
(inoperative).  

16. RANGE OF POSSIBLE USES  

Home sites and recreational.  

17. NAMES AND ADDRESSES OF INTERESTED FEDERAL AGENCIES AND OTHER INTERESTED PARTIES  

Rollie N. Blancett, P. O. Box 147, Calhoun, Kentucky 42327  

18. REMARKS  

This property has been screened against the known needs of the Department of Defense.  

19. REPORT AUTHORIZED BY  

NAME:  
FRED MORGAN  
TITLE:  
Chief, Real Estate Division  
SIGNATURE:  
/s/ Fred Morgan  

Figure 12. SF 118.
Figure 13. ENG Form 0-836, Indiana Army Ammunition Plant.
### Figure 14. ENG Form 0-836, Camp Atterbury.
Figure 16. Disposals flowchart.
NOTIFYING DOCUMENTS FOR DISPOSAL ACTION

RECORD INFORMATION ON ENG FORM 0-836

ENG FORM 0-836 COPY 2, COPY 4

ENG FORM 0-836 COPY 2

TO REP

ENG FORM 0-836 COPY 4

FILE AT DISTRICT

Figure 16 (cont'd)
Figure 16 (cont'd)
Figure 16 (cont'd)
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<th>CONTRACT NUMBER</th>
<th>RPI CITY</th>
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<th>AREA</th>
<th>U/L AMOUNT BLDG NO</th>
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<th>TERM</th>
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<th>NAVY RECRUITING</th>
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<td>RENT</td>
<td>SQ FT</td>
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Figure 18. Inleasing ADP listing.
Figure 19. Inleasing flowchart.
DISTRICT

Figure 19 (cont'd)

71
Figure 19 (cont'd)
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<tr>
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<th>NO</th>
<th>GRANTEE</th>
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<th>OR</th>
<th>PUR EFF.</th>
<th>PSE DATE</th>
<th>DATE</th>
<th>ACRES</th>
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**Figure 21.** Outgranting ADP listing.
Figure 22. Outgranting flowchart.
Figure 22 (cont'd)
Figure 22 (cont'd)
**Figure 23. ENG Form 4153.**

**ENG FORM APR 68** 4153 REPLACES ENG FORM 4153 R, MAR 68, WHICH IS OBSOLETE. (ER 405-345-700)
Figure 24. Homeowner’s Assistance flowchart.
HA PUNCHED CARDS

SORT, DUPLICATE, AND LIST BOTH DECKS

DUPLICATE PUNCHED CARDS

FILE

DUPLICATE LISTING

PUNCHED CARD LISTING

HA PUNCHED CARDS

MONTHLY, NOT QUARTERLY

Figure 24 (cont'd)
LISTING OF PUNCHED CARDS

CHECK AND CORRECT CARDS

FILE

PUNCHED CARDS

HOMEOWNER'S ADP SYSTEM

PREPRINTED JOB REQUEST

FILE AT EDPC

ERROR REPORTS AND OTHER LISTINGS

UPDATED HOMEOWNER'S DOCKET

END

Figure 24 (cont'd)
Figure 26. Relocation Assistance ADP output.
Figure 27. Relocation Assistance flowchart
Figure 27 (cont'd)
Figure 27 (cont'd)
### MASTER FILE EDIT
**AS-OF 76123**

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**DIAGNOSTIC: MISSING DWELLING INFORMATION**

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**DIAGNOSTIC: APPLICANT IS A BUSINESS, NON PROFIT CODE IS NOT REPORTED**

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<th>ETHNIC GROUP</th>
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<tr>
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**DIAGNOSTIC: ELIGIBILITY DETERMINED: APPLICANT HAS NOT BEEN ADVISED.**

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<th>ETHNIC GROUP</th>
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**Figure 28.** Relocation Assistance Master File Edit Listing.
REFERENCES

Acquisition, ER 405-1-105 (Office of the Chief of Engineers [OCE], 16 August 1973).

Catalog of Standard Data Elements and Codes—Security and Intelligence, AR 18-12-10 (Department of the Army, 12 December 1969).

Disposal, ER 405-1-1041 (OCE, 10 March 1967).

Homeowner’s Assistance Program, ER 405-345-700 (OCE, 1 September 1971).

Interim and Standard Data Elements and Codes, ER 18-1-12 (OCE, 1 December 1975).

Records and Reports—Leaseholds, ER 405-1-1020 (OCE, 30 August 1974).

Records and Reports—Outgrants, ER 405-1-1030 (OCE, 24 April 1973).

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V Corps
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Altheide, Carl P

Analysis of real estate status reporting procedures / C.P. Altheide, G.M. Polin. - Champaign, IL ; Construction Engineering Research Laboratory ; Springfield, VA; available from National Technical Information Service, 1978.

86 p. ; 27 cm. (Technical report - Construction Engineering Research Laboratory ; P-96)