TISA PROJECT REPORT NO. 36

COMMERCIAL MICROFILM SYSTEMS FOR VENDOR PRODUCTS INFORMATION AND SPECIFICATIONS

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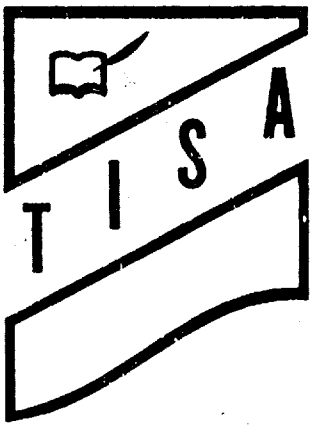

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13. ABSTRACT

Users of vendors' product information, Military and Federal Specifications and Standards, and OCE (Office, Chief of Engineers) Guide Specifications were surveyed to determine the nature and extent of their needs for these types of information and to assess utilization of an installed, commercially supplied microfilm system and of conventional hard copy collections of these materials to satisfy their requirements. Three commercially available microfilm systems are described and compared in relation to the specific requirements of the users studied.

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COMMERCIAL MICROFILM SYSTEMS FOR VENDOR PRODUCT INFORMATION AND SPECIFICATIONS IN THE SAVANNAH DISTRICT, CORPS OF ENGINEERS

SECTION I: INTRODUCTION

This report presents the findings and recommendations resulting from a two-phase study conducted in the Savannah District, Corps of Engineers to assess the utilization and costs of commercially available microfilm systems containing vendors' product information, Military and Federal Specifications, and OCE (Office, Chief of Engineers) Guide Specifications and to compare these systems with the utilization and costs of counterpart collections of vendor catalogs and Specifications maintained in conventional hard copy forms.

The study was conducted as part of an ongoing Army Technical Information Support Activities (TISA) project in the Savannah District, which began in 1968. The overall goals of this TISA project - called the "Model Technical Library" project - are quoted from the project Charter as follows: "(a) to develop, test, and evaluate a modern highly effective technical information facility that may be related to Army-wide use" and "(b) to evaluate relevant techniques and concepts of modern information technology."

Background and Purposes of the Study

Installation of microfilm systems, the Visual Search Microfilm File (VSMF)* systems, began in the Savannah District in January 1968, almost two and one-half years prior to this study. At that time, one 16mm reader-printer and a complete Plant Engineering File were installed, followed one year later (January 1969) by an 8mm satellite viewer with the Architectural and Structural Sections only of the Plant Engineering File. In June 1969, the District added the remaining Sections of the

*Supplied by Information Handling Services, Inc., Arlington, Virginia.

Plant Engineering File for the 8mm satellite viewer, three more 8mm satellite viewers with complete Plant Engineering Files, plus 16mm Military and Federal Specifications and OCE Guide Specifications Files for the main reader-printer installation. Finally, one additional 8mm satellite viewer with the complete Plant Engineering File was acquired in January 1970.

The 16mm reader-printer, accompanied by the Plant Engineering File and the Military and Federal Specifications and OCE Guide Specifications Files, was installed in the Design Branch for centralized use by all personnel. The five portable 8mm satellite viewers, with Plant Engineering Files, were placed, one each, in the Mechanical, Electrical, Structural, and Architectural Sections of Design Branch and in the Specifications and Estimating Section of the Service Branch. Early in 1970, 16mm and 8mm VSMF Building Products Files were installed, replacing all VSMF Plant Engineering Files, which were discontinued by the supplier.

In very brief summary, the most important purpose of Phase I of the study was to investigate District employees' use of the VSMF microfilm systems for vendor catalog information and for specifications as well as their use of vendors' catalogs and specifications in hard copy forms to determine if these materials in hard copy forms could feasibly be replaced by the microfilm systems. Although the major focus of the study was on the employees in the District Office in Savannah, another purpose of Phase I was to investigate the possibility that employees at certain outlying field offices, outside Savannah, in Georgia, North Carolina, and South Carolina, might also need the information support that microfilm systems of vendors' catalogs and specifications can offer.

Since the study was conducted in the context of the District's TISA project - the Model Technical Library project - a further study aim was to determine the feasibility of relocating the systems to the District Library, where the Library staff would be responsible for maintaining these systems for the use of employees in the District Office.

The purpose of Phase II of the study was to investigate various commercially available systems that deal with vendor product information and specifications on microfilm and to compare and evaluate these competitive systems in relation to Savannah District employees and their requirements for vendor product information and specifications, as these requirements were defined by the results of Phase I.

The following three commercially available microfilm systems were covered in the Phase II investigation:

Visual Search Microfilm File (VSMF), available from Information Handling Services, Inc., a Division of Indian Head, Inc.

Showcase Microfilm Library (SML), available from the Showcase Corporation.

Automated Information Management (AIM), available from Specialized Business Services, Inc.

Herner and Company conducted Phase I of the study during an approximate 16-week period, beginning in mid-May, 1970 and concluding on August 31, 1970. In scope, the investigation covered all professional and technical employees in the Design Branch (the Branch Chief and his staff, plus Electrical, Mechanical, Architectural, Structural, Engineering Analysis Support, Hydraulic Power Equipment, and Paving and Grading Sections) and all professional and technical employees in the Specifications and Estimating Section of the Service Branch. Also included were employees at two outlying sites selected by the Savannah District: Construction Field Offices at Fort Gordon, Georgia, and at Fort Bragg, North Carolina.

Phase II began just before the conclusion of the first study phase, with data on the three competitive commercial systems being collected at that time. After the findings were available from the first phase, the three commercial systems were compared and evaluated in terms of their suitability for meeting the informational requirements peculiar to employees in the Savannah District.

The findings and recommendations contained in this report were originally presented in two separate volumes, one for the first and one for the second phase of the study. At the request of TISA program personnel, the findings and recommendations for both phases have been combined into this single final report, with Sections II through XI covering the results of Phase I and Section XII covering the results of Phase II.

SECTION II: SUMMARY OF STUDY APPROACH AND METHODOLOGY

The major investigative technique employed in the first phase was a face-to-face interview survey conducted with a representative cross-section of District employees in the Sections where the VSMF systems are installed and of the employees at each of the two Field Construction Offices selected by the District (Fort Gordon and Fort Bragg). To gather additional information concerning the operation and maintenance of the systems under study, informal discussions and interviews were also held with appropriate personnel in the District Office, supplemented by on-site examination and observation of these system activities.

The Survey Universe and Sampling Plan

At the time the study was initiated, in mid-May, 1970, there was a total of 85 District Office employees in the Sections where VSMF systems were installed. This total excluded secretarial, clerical, and other non-technical personnel. Using standard random selection procedures, we drew a representative sample of 51 names from this total universe (60 percent of the total). This sampling plan was adopted purposely so that the interview sample would include a representative sample of both users and non-users of vendors' catalog information, of Military and Federal Specifications, and of OCE Guide Specifications. The size of the sample, 60 percent, was chosen because this would permit us to draw inferences from the interview results that would be statistically valid, with a maximum sampling error of plus or minus 5 percent at the 0.90 confidence level.

As mentioned earlier in this report, the District designated the Construction Field Offices at Fort Gordon, Georgia and Fort Bragg, North Carolina as the two outlying District offices to be included in the survey. From the total of 15 engineers and engineering technicians at these two sites, we also drew a 60 percent sample of 9 individuals for the survey.

The Survey Instrument

In order to ensure that data obtained from the interviewees would be collected in a uniform manner, a structured interview guide was designed and developed for the administration of the face-to-face interviews. The questions in the interview guide (151 in total), were organized within the following framework:

Section I - General Background Information on Respondents

Section II - Use of Information on Vendors' Products, Equipment, and Supplies

A. Use of this kind of information in general

B. Use of VSMF system for this kind of information

C. Use of hard copy catalogs for this kind of information

D. Most recent instance when this kind of information was used

Section III - Use of Military and Federal Specifications

A. Use of these specifications in general

B. Use of VSMF system for these specifications

C. Use of hard copy files of these specifications

D. Most recent instance when these specifications were used

Section IV - Use of OCE Guide Specifications

A. Use of these specifications in general

B. Use of VSMF system for these specifications

C. Use of hard copy files of these specifications

D. Most recent instance when these specifications were used

Section V - Experience and Training in Use of Microfilm Systems

A. Prior experience in using microfilm systems similar in nature to VSMF systems

B. Training or indoctrination received in use of VSMF systems

As the foregoing outline shows, the interview questions concerning vendors' catalog information, Military and Federal Specifications, and OCE Guide Specifications, in Sections II, III, and IV, were posed in the same pattern and led from questions of a more general nature to questions requiring increasingly more detailed answers. Each of these three Sections culminated in a "critical incident" question series - a technique whereunder each respondent was asked to recall the most recent instance when he had had a need to look for or to try to obtain catalog information or a specification of the type under discussion. In employing this technique, our aim was to elicit recent case history information, as it were, that would help reveal the respondents' usual informational practices and patterns of behavior and their attitudes toward the use of the VSMF systems in lieu of the hard copy files or collections.

The tabulated responses to the questions posed in the interview guide administered to District Office employees are presented in Section XI of this report. The results obtained from the interviews conducted at the two Constuction Field Offices, where certain parts of the interview guide were omitted since no VSMF systems are installed at field sites, are only summarized, for brevity's sake, Section IX, where field requirements are discussed (Requirements of Employees in Outlying Field Offices).

Conduct of the Survey

After the interview guide was thoroughly pretested by professional Herner and Company interviewers, the interviews were conducted in Savannah during the period June 15 through June 23 and at the field sites on June 24, 25, and 26. Two senior interviewers administered all of the 60 interviews

SECTION III: DESCRIPTION AND ANNUAL COSTS OF VSMF SYSTEMS AND OF THE DISTRICT'S HARD COPY COLLECTIONS

General Description of VSMF Systems

As stated in the Introduction to this report, the VSMF installation in the Savannah District includes the following equipment: one 16mm microfilm reader-printer (3M Company Filmac 400C), located in the Design Branch for use of all personnel, and five satellite viewers (VSMF Satellite II), one each, in Mechanical, Electrical, Structural, and Architectural Sections of the Design Branch and in Specifications and Estimating Section of the Service Branch. The VSMF microfilm files include Military and Federal Specifications, OCE Guide Specifications, and vendor catalog files, located with the 16mm reader-printer, plus 8mm vendor catalog files located with each of the five satellite viewers.

With regard to the VSMF vendor catalog files, these were originally Plant Engineering Files subsequently discontinued and replaced by VSMF Building Products Files. At the time this study was initiated, the Building Products File contained catalog data on architectural and construction-related products from about 3,000 manufacturers, but a subsequent update contained data from 600 additional manufacturers, for a present total of approximately 3,600 manufacturers. The file is organized according to the 16-division Construction Specification Institute format for construction specifications and the product information is presented in side-by-side listings to permit comparisons of the characteristics of similar items. It is accompanied by three indexes: by name of manufacturer, by brand name of product, and by product characteristics. Updating is programmed for a six-month cycle.

The Military and Federal Specifications File includes all sections (assemblies, electrical, instruments, mechanical, procedures, general, and historical). Including the historical section, the file contains in excess of 70,000 entries, with five alphabetical and numerical indexes that can be used, for example, for performing various kinds of searches of the file or for determining if a needed specification is present in the file, and locating it in the file. The file update cycle is every two months; however, "Hot Specs," indexed by document number, are sent to subscribers every 15 days. These are the most recent changes and additions to the file which are then merged into the first available regular addendum to the file.

The OCE Guide Specifications File is prepared and updated on the basis of inputs furnished by the Corps of Engineers to microfilm system suppliers such as VSMF. The VSMF program calls for updating the OCE Guide Specifications File every six months.

General Description of District's Hard Copy Collections

Hard copy vendor catalog collections are maintained in the five Sections where VSMF systems are installed. In 1968, there were an estimated 2,900 catalogs held and maintained. These collections were subsequently weeded so that an estimated 1,800 - 2,000 catalogs now remain.

Structural Section shelves the catalogs alphabetically by the name of the supplier, but does not maintain a list of the catalogs or an index to the catalogs held. Access is by the indexes contained in the individual catalogs. A secretary handles most of the updating of the catalogs, as changes and additions are received, assisted occasionally by other persons in the Section. Architectural Section holds an insignificant number of vendor catalogs and these are maintained with the help of sales representatives (as is the case in other Sections also).

Mechanical Section assigns accession numbers to catalogs and keeps a card index file of catalogs held. The card file is arranged alphabetically by vendors' names and, on the card for each vendor, a list of that vendor's products is recorded. The collection is updated by a secretary when catalog changes and additions are received.

Electrical Section has attempted to keep a card index of the catalogs held, arranged alphabetically by the name of the vendor, with additional cards added behind each vendor card identifying the products supplied by that vendor. Actual maintenance work on the catalogs and index ceased about six months prior to the survey, since there was no person available for assignment to this task.

Specifications and Estimating Section shelves vendor catalogs alphabetically by the name of the supplier and there is a product-to-vendor index to the catalogs held. Separate index card files are maintained on specific materials, equipment, components, etc., where the latest available pricing information

is recorded for use by estimators. The catalogs are maintained chiefly by a non-technical member of the Section, but assisted by an engineer and, occasionally, by other individuals in the Section.

The Savannah District holds selected hard copy Military and Federal Specifications totalling about 3,000 in the categories of assemblies, electrical, instruments, mechanical, and procedures. Historical specifications are not maintained. The District also holds 455 OCE Guide Specifications in hard copy.

Annual Costs for VSMF Systems and for Maintenance of Hard Copy Collections

The annual rental costs for the VSMF installations in the Savannah District are itemized below (GSA discounts deducted):

Items	Annual amount
One Building Products File (16mm)	$ 4,147
Five Building Products Files (8mm; includes satellite viewers)	7,475
One 16mm reader-printer	864
One Military and Federal Specifications File (16mm)	3,015
One OCE Guide Specifications File (16mm)	(No charge)
Annual Total	$15,501

The annual costs for maintaining the collections of hard copy vendor catalogs and of Military and Federal and OCE Guide Specifications are shown below:

Collections	Annual amount for maintenance
Hard copy vendor catalogs	$2,000
Military and Federal and OCE Guide Specifications	4,500
Annual Total	$6,500

The annual costs for maintaining the collections of hard copy vendor catalogs are extremely difficult to estimate, since so many individuals take an occasional hand in the updating. However, using the time estimates and salaries of those individuals who are regularly assigned these duties as well as those individuals who most regularly assist in catalog maintenance, we arrived at the estimate given above, which must be regarded as minimal. It is pointed out that the above estimate for catalog maintenance also excludes the collection of approximately 320 catalogs in Electrical Section. As previously mentioned, this latter collection has not been maintained for about six months. Thus, for the present, the collection can be used for design reference purposes with a reasonable degree of certainty that designs will be based on current products available, but the collection cannot be relied upon for pricing information.

SECTION IV: USERS' REQUIREMENTS IN THE SAVANNAH DISTRICT OFFICE

Vendors' Product Information

The survey results indicate that there are about 70 employees in Design Branch and Specifications and Estimating Section who use vendor product information in connection with their work. Three-quarters of these employees use hard copy vendor-furnished catalogs as their most frequently-used source for this kind of information, and about one out of eight most frequently relies on direct contact with vendors. Predominantly, these latter individuals are in Specifications and Estimating Section, where direct contact with vendors is the major channel for one-third of the employees. The most frequently used categories of vendors' product information are listed in Section XI, Table 5.

On the basis of the survey results, we may estimate that over 30 of the 70 users need vendors' product information, on the average, one, two, or more times daily; 10, about one to three times weekly; 8, about one to three times a month; and 22, less than once a month. The least frequent users are the employees in Structural Section and the most frequent users are in Electrical, Mechanical, and Architectural Sections.

The survey results also indicate that 25 of the 70 users spend, on the average, less than one hour per month looking for product information in hard copy vendor catalogs; 17 spend only one or two hours per month; 13 spend three to six hours per month; 10 spend 10 to 12 hours per month; and a few, perhaps five users, spend 20 or more hours per month looking for product information in these catalogs. It is also indicated that, although 21 of the 70 users of vendor product information have never tried the VSMF files, 2 individuals use the VSMF files, on the average, more than four hours per month; 10, three or four hours per month; and 12, one or two hours per month. Another 25 individuals average less than one hour per month usage.

Personnel in Specifications and Estimating, Structural, and Architectural Sections make the least use of the VSMF files, except for Paving and Grading Section, where most of the individuals have never tried to use the files. (Note: VSMF files were purposely not installed in the Paving and Grading Section, since it was determined that 90 percent of needs there are met by two catalogs.)

Seventy-five percent of the users usually have to take the catalogs back to their desks to work; very few are usually able to look up the information and place the catalog back on the shelf immediately. In their use of the VSMF files, one-half of the users usually need a printout copy of the information from the reader-printer, one-quarter usually only need the information displayed on the reader or viewer, and one-quarter usually need printout copy and displayed information about equally.

Three out of five users of vendor product information utilize the hard copy catalogs mainly for quick look up purposes, that is, to obtain a simple fact, such as a specific performance parameter on a known piece of equipment. On the other hand, one out of five users utilize the catalogs mainly for more complex purposes, for product comparison, and searches. The remaining one out of five users utilize the catalogs about equally for quick look up and for searches. Conversely, among those individuals who had used the VSMF files during the six months preceding the survey, three out of five utilized them mainly for searches, a few utilized them mainly for quick look up purposes, and the remainder about equally for both kinds of purposes.

Regardless of the particular source used, overall indications are that, when the users need to find something out concerning vendor products, about 60 percent of the time it is a quick reference or comparatively simple look up problem; about 40 percent of the time, the problem is more complex, involving searches, comparisons of performance characteristics, and the like. Individuals in Electrical and Mechanical Sections, followed by individuals in Structural and Architectural Sections, are most frequently faced with the more complex problems that require searches, product comparisons, etc.

From 32 of the 51 respondents, we elicited detailed "case history" information on the last occasion when they needed and sought out vendor product data. On the basis of their tabulated responses (Section XI, Tables 33 through 45), we estimate that in about five out of ten instances, the individuals are able to locate the information they need in the first source they try; but in an equal number of instances, the individuals are unsuccessful or are not satisfied with what they find. We also estimate that in about five out of ten instances, 15 minutes or less is spent in trying to locate needed information in the first source turned to; in about three out of ten cases, up to one-half hour is spent; and in two out of ten cases, one, two, or more hours are spent.

When individuals have to try a second source for the product information they need, we estimate that about half spend 15 minutes or less in trying to locate the needed information and half spend up to one hour. Two-thirds locate the needed information, but one-third are dissatisfied and must try a third source. When it is necessary to go beyond the second source to a third source, indications are that the time spent in searching this third source increases to 30 minutes in every two out of five instances, to one hour in every two out of five instances, and up to four hours in every one out of five instances.

Finally, it was indicated by the survey that some 36 or 37 individuals also keep personal collections of vendors' catalogs to help fulfill their requirements for product information; 18 or 19 keep about 10 catalogs or less and 18 or 19 keep 15 catalogs or more. Maintenance of personal collections is most prevalent in Electrical Section.

Military and Federal Specifications

The survey results indicate that 68 individuals in the Sections included in this study use Military and Federal Specifications in connection with their work. Among these 68 individuals, 38 most frequently obtain needed specifications from the Specifications Unit, 23 most frequently obtain them from collections in their own Sections, a few from their own personal files, and 3 or 4 most frequently use the VSMF files.

Only perhaps three or four people have to use these specifications, on the average, once or twice daily and about 15 use them weekly. Twenty use them one to three times a month and 30 average less than once a month. Most frequent usage is in the Architectural Section.

Some 40 of the users spend an average of less than one hour per month trying to locate needed Military and Federal Specifications in the hard copy collections; 20 average one hour per month; and 7 average two hours per month; but only one or two spend an average of eight hours per month. Although about 45 of the 68 users of these specifications have never used the VSMF system, three or four of the 68 apparently use the system an average of two hours or more per month; 6 or 7, an average of one hour per month; and 13 or 14, an average of less than one hour per month.

About 70 percent of those who use these specifications usually have to take the specifications back to their desk for their work; 25 percent usually need simply to look up the specifications; and the remaining 5 percent need to look up the specifications about half of the time and to take copies back to their desks the other half of the time. Among those who have used the VSMF system, about one-third are usually satisfied with the reader or viewer display, one-third need a printout copy; and some obtain printout copies because the display is not clear enough for them.

Overall, in almost half of the instances of use of these specifications, it appears that the purpose of use is simply for checking the contents; in the remaining cases, the specifications are needed in connection with a design project, a job specification, or similar purpose.

Thirty-six of the 68 users of these specifications provided information concerning the last occasion when they had need to locate specific Military and Federal Specifications. In almost 90 percent of the cases, they first tried the hard copy collections and, in a little over 10 percent of the cases, they first went to the VSMF system. About half spent five minutes or less locating or trying to locate the needed specification, using the first source tried; one-quarter spent 10 to 15 minutes; and the remainder spent 20 minutes to an hour. Thirty-one individuals obtained the information they needed; five did not or were not satisfied. All of the latter five then turned to the VSMF files and all obtained the information they needed. Three of the five spent about five minutes obtaining the information from the VSMF system; one spent about 20 minutes; and one spent 30 minutes. By implication, it is clear that those who tried the VSMF system as their first source also obtained the information they were weeking.

OCE Guide Specifications

It is estimated that about 70 individuals in the Sections covered by the survey use OCE Guide Specifications in connection with their work. Some 42 of these individuals most frequently obtain needed specifications from Criteria Section; 23, from their own Section's files; and a few usually use their own personal collections of these specifications.

Indications are that 27 or so of these 70 individuals use OCE Guide Specifications, on the average, less than once a month; 15 average one or two times a month; 10, four to eight times a month; and 14, from 12 to 20 times a month (the latter indicates an average use of once daily).

Under 30 of the 70 users spend an average of less than one hour per month trying to locate needed specifications in the hard copy collections; 25 or so average one or two hours per month; and a few average four hours or more per month. It appears that only three or four of the 70 users have tried the VSMF system to date for OCE Guide Specifications.

SECTION V: SYSTEM PERFORMANCE IN RELATION TO USERS' REQUIREMENTS

VSMF Systems

Among the 27 respondents who actually made use of the VSMF vendor products file during the six months preceding the survey, 30 percent could remember no instances when they found the information on file incomplete or too limited for their purposes. However, the remaining 70 percent did find that information was limited or incomplete in several product and equipment categories. These categories are listed in Section XI, Table 11.

Over 60 percent of the 27 users encountered out-of-date product information in the VSMF file, but the remaining 40 percent did not encounter any such situations.

Significantly, almost 40 percent of the active users are still reporting unfamiliarity with the indexes to the product file or other difficulties in knowing how to go about using the indexes; this despite their having received orientation in the use of the VSMF system.

Almost 20 percent criticize the system because they have to go through too many cartridges to find the product information needed for their particular purposes. With regard to the microfilm reader-printer, almost 15 percent complain of poor equipment maintenance and another 15 percent complain because the film must be passed mechanically through the reader instead of having the desired frames brought to view automatically.

Problems in getting access to the system, because someone else has the equipment engaged, are comparatively rare.

Among those individuals who are not active users of the VSMF vendor products system, their predominant criticisms of the system are: that it is quicker, for their purposes, to use the hard copy catalogs; that they don't think the indexing is adequate; that the price information they need is lacking; that more details on products are available in the hard copy catalogs; and that the microfilm does not provide color and texture which are of critical importance to their work.

Only one-third of the individuals who use Military and Federal Specifications in connection with their work actually utilized the VSMF files for these specifications. However, the actual users have found the VSMF files complete and up-to-date ("more up-to-date than anything else we have"). It is worth noting that about two out of every three individuals who have actually used these files still feel that they are not yet sufficiently familiar with the system.

It is also worth noting that about one out of every eight potential users of the VSMF Military and Federal Specifications files did not know that these files had been installed and were available for their use. Similarly, one out of every four potential users was unaware that the VSMF OCE Guide Specifications files were available for their use.

Very few employees (only about three or four) have actually made use of the VSMF OCE Guide Specifications file. The major reason given for non-use was that clear hard copies of these specifications are needed for marking up and that a microfilm printout is not satisfactory for this purpose. However, there were indications that the respondents did not understand this question; discussions with District employees indicate that a more likely reason for non-use is that the microfilm file is updated only on a six-month basis and is not current enough for use.

Hard Copy Systems

Among those individuals who had made use of the hard copy vendor catalogs during the six months preceding the survey, 40 percent found the catalogs adequate for their purposes, but the remaining 60 percent encountered situations when the information available was incomplete or too limited. The major area of complaint was in specialty or infrequently used items. Similarly, about 40 percent found the catalogs satisfactorily up-to-date for their purposes, but about 60 percent found that the catalogs were not satisfactorily up-to-date.

One out of every five users had problems in getting access to needed catalogs because they were being used by other persons. A few individuals complain of the time it takes to obtain a needed catalog that is maintained by another Section. However, a far more prevalent and more serious complaint among the users is that

they don't know when the information in the catalogs is up-to-date. Additionally, as indicated in the preceding paragraph, catalogs are not generally available covering items of low volume or infrequent use. Other system problems pointed out by the users are: that needed price information is incomplete and that each vendor's catalog is indexed differently, so the employees have to learn how to use each index separately.

With regard to Military and Federal Specifications, about one out of every three users has encountered a situation when a particular specifications needed was not held in hard copy; one out of every four users has encountered an out-of-date specification in the collection. The latter does not imply that the District's hard copy Military and Federal Specifications are in any sense badly maintained; rather it means that the users occasionally happen to find an out-of-date specification in the collection.

The District's system for maintenance of hard copy OCE Guide Specifications enjoys high repute and widespread satisfaction among the employees; no major problems were brought to light in the survey.

SECTION VI: ACCEPTABILITY OF SYSTEMS TO USERS

More than half of the employees included in this study are over 45 years old and more than half have been employed by the Savannah District for over 10 years. Behind them are many years experience in using hard copy collections of vendor catalogs in connection with their work and they have been long-time users of the District's systems for maintaining hard copy specifications. They have learned how to work with the existing hard copy catalog and specifications systems, despite problems and imperfections which are well known to them. In fact, it is probably safe to surmise that their experiences with weaknesses of the old systems have been major factors contributing to the evolution of personal collections of catalogs and extra-official collections of specifications sprinkled throughout the Sections. Barring sheer perversion, surely most of these private collections were started as end-run tactics, to counter problems with the official systems, and have been maintained because they are more convenient to use, are quicker to use, are of a known degree of reliability, and so forth. Be this as it may, these private collections must be regarded as parts, albeit sub rosa, of the existing hard copy systems, since they are used to supplement, complement, or otherwise shore up the workings of the official systems.

The VSMF microfilm systems, on the other hand, have been installed in the District for only a little more than two years and may still be regarded as relatively unfamiliar tools or resources. On top of this, only three or four individuals in the survey universe of 85 have had previous experience with microfilm systems of any sort. For these reasons and because the familiar hard copy collections exist side by side with the microfilm systems, it is perhaps surprising that, of all of the employees who use vendor product information, only 30 percent have never tried the VSMF files.

By looking at the prevailing practices of those employees who use vendor product information, it appears that two major usage patterns are emerging: hard copy catalogs are used predominantly for quick look up or ready reference purposes (e.g., to check the performance parameters of a major supplier's product; to check a drawing or other schematic; etc.); whereas the VSMF file is used for more complex problems (e.g., for product comparison; for finding out which manufacturers make a product with specific characteristics; etc).

In addition, the employees are finding the VSMF file useful for looking up specialty products and items of infrequent use; whereas, they find the VSMF system troublesome and time-consuming to use when they need to check a supplier's entire product line. In short, there is acceptability of the microfilm vendor catalog system for some purposes, but for other purposes, the hard copy catalogs are understandably preferred or even necessary. In this connection, we also remind of some individuals' (notably, the architects') needs for examining colors and textures of products and materials, which are not met by microfilm systems, and other individuals' needs for examining detailed drawings, schematics, and other kinds of illustrations, which the users have frequently found unsatisfactorily clear in printouts from microfilm reader-printers. Without pricing information, vendor catalog systems are also of little use to employees charged with preparing project cost estimates.

Despite evidence of acceptance of the VSMF system, for certain purposes where the files have been found useful, there are also signs of downright animosity toward microfilm vendor catalog systems. This was mainly expressed in explicit off-the-record remarks made by numerous respondents to both of the interviewers who administered the survey questionnaire. Essentially all antagonism was directed toward the idea that microfilm vendor catalog systems could conceivably be used to replace hard copy catalogs entirely, instead of being used as complements to the hard copy catalogs.

Attitudes of reluctance to accept or apathy toward the VSMF vendor catalog system are perhaps most clearly observed in the responses of non-users. Despite the fact that they have never even tried to use these files since their installation, the non-users have formed opinions, variously, that hard copy catalogs are quicker to use, that indexing is inadequate, and that the information is not complete enough for their purposes.

With more validity, the active users, speaking from their own experience, have been put off by reader-printer equipment failures and poor maintenance, less than desirable quality in microfilm printouts, the tedium of passing the microfilm reels mechanically, and inadequate or lack of information on certain

categories of products.* All of these factors work against the users' wholehearted embrace of the microfilm system.

Another important factor that must be considered in discussing the District employees' acceptance or non-acceptance of the microfilm systems is system orientation. Straightforward indoctrination in the weaknesses as well as the strengths of the microfilm files and the purposes for which they are best-suited and least-suited for use, explanations of how the indexes are organized and procedures and strategies for using them efficiently for different purposes, plus individual training in the handling of the equipment should enhance use and acceptance of the systems.

Eighty percent of the survey respondents have received some kind of instruction in the VSMF systems, mostly at briefing sessions conducted by the supplier's sales representatives, but a few via contacts with colleagues. Still, one out of three active users (a probably conservative ratio, admit to not understanding how to use the indexes to the VSMF vendor catalog file. Almost two out of three active users state that they are not yet fully familiar with the VSMF Military and Federal Specifications system and 10 percent of all persons covered by the survey did not know that the system was installed and available for their use. Among those individuals who have not made use of the VSMF OCE Guide Specifications, one out of four claimed that they were unaware of the system's availability and about one out of eight admitted that they did not know how to use the equipment.

One final major factor that should be mentioned at this point, particularly in view of the findings just discussed above, is the relationship between acceptance and use of the VSMF systems and the places where the systems are located. The major installation, the 16mm reader-printer with all accompanying vendor catalog and specifications files, is located in the open, directly on a heavy traffic aisle. Persons using the system must sit, with inconvenience, partly in this aisle. More subtly, they are in full view of passersby and their colleagues. Among the significant numbers of individuals who are as yet inexperienced or

* In this connection, District employees identified several hundred catalogs of specific vendors that they wished to have added to the microfilm files. At the time, the VSMF supplier was discontinuing the Plant Engineering File and replacing it with the Building Products File. Owing to microfilming production schedules, the VSMF supplier was not able to incorporate the catalogs requested by the District in the first issue of the Building Products File, which probably had considerable impact on District users' views of the system's utility.

unfamiliar with the files, indexes, and equipment, it is not at all difficult to imagine the hesitation of some men to fumble about publicly as they try to figure out how to use the files and indexes and how to operate the equipment. Conceivably, for some users, lack of demonstrable expertise in using the system might be tantamount to a public display of ignorance or incompetence.

Many of the active users of the systems have also recommended relocation of the reader-printer, for reasons of privacy and for space reasons, a topic which is discussed more fully in the next section of this report.

SECTION VII: PHYSICAL LOCATIONS OF SYSTEMS

Although space for shelving the collections of hard copy vendor catalogs is very limited, 95 percent of the users are satisfied with the present locations and most users believe the catalogs are located as conveniently as possible.

The majority of the employees use the catalogs for look up or quick reference purposes and usage is very frequent (once, twice, or more times daily, on the average, for about half of the users). Mainly, they take the catalogs to their own desks for use and, on about half of the occasions, 15 minutes or less are required for the users to find the information they need. Therefore, as might be expected, the users overwhelmingly would not like the catalogs to be maintained in the District Library, where they would be on a different floor and far less handy for frequent quick reference purposes.

In other environments, where the catalogs might be used less frequently or where the catalogs might be used mostly for lengthy searches instead of for quick reference, individuals might feel less strongly about having the catalogs located centrally in an organizational library, particularly if the library were to be situated in a spot very near to the heaviest users.

In the places where the portable 8mm satellite viewers are installed, there is not enough space to move the equipment around easily. This situation was pointed out by several respondents, but is of particular concern in Mechanical and Electrical Sections where the satellites enjoy heaviest use.

The 16mm reader-printer and 16mm microfilm files, as has already been mentioned, are situated on an aisle. Half of the individuals who are already active users of the system are dissatisfied with this location because of space, traffic, and other problems; one out of four of them also recommended a separate room or cubicle for more privacy.

SECTION VIII: SUMMARY COMPARISON OF VSMF SYSTEMS AND HARD COPY SYSTEMS

Throughout the earlier sections of this report, we have presented our study findings on major aspects of both the VSMF microfilm systems and the hard copy collections of vendor catalogs and specifications in the Savannah District. On a topic-by-topic basis, we first described, physically and operationally, the microfilm systems and the hard copy collections, their annual costs, the District employees' usage of and requirements for specifications and vendor product information, performance of the VSMF systems and the hard copy systems in relation to the employees' requirements and usage patterns, users' acceptance of the systems, and finally, factors bearing on the physical locations of the systems.

In this section of the report, we recapitulate some of our major findings in presenting an overall summary comparison of the District's VSMF installations and hard copy catalog and specifications systems.

With regard to system costs, the annual labor cost estimates for maintaining the hard copy collections ($2,000 for catalogs and $4,500 for specifications) were only about 40 percent of the annual rental costs for the VSMF configurations installed in the District ($15,501). However, present catalog maintenance effort is at a minimal level and more than 15 percent of the hard copy catalogs (those in Electrical Section) are no longer being kept up-to-date at all. Should the District resume maintenance of these neglected catalogs and also institute systematic procedures to ensure that updating information is gathered methodically from all vendors represented in their collections and properly inserted in the catalogs, the labor costs for maintenance would increase significantly.

There are 1,800 to 2,000 hard copy catlogs held in the District's collections at the present time. These may be regarded as the vendor catalogs of most importance to the users, since the Sections weeded out unwanted or lesser important catalogs not long ago. However, there is some evidence that many of the remaining catalogs are little used; for example, one Section holds many hundreds of catalogs, but it was stated that less than 20 are used with any great frequency.

The VSMF Building Products File contains catalog information from upwards of 3,600 vendors. As mentioned earlier in this report, District employees identified several hundred vendors of importance to them whose catalogs were not in the predecessor VSMF Plant Engineering File. Presumably, the VSMF supplier will be able to incorporate these catalogs requested by the District in a forthcoming updating of the successor VSMF Building Products File.

The VSMF Building Products File is updated every six months. System subscribers, free of charge, may request the inclusion of catalogs from specific vendors not already represented in the system. The VSMF supplier also has standard procedures for (a) soliciting updating information from vendors already in the system and for (b) eliminating vendors' product information from the system when information becomes outdated and the vendors concerned fail to supply current catalogs. With the newly instituted VSMF Building Products File, these procedures may not yet be fully operating, since the District employees have found out-of-date information in the file.

Problems arising from out-of-date catalog information and from not having wanted catalogs on file are equally prevalent with regard to the hard copy collections. Moreover, no standard procedures have been devised to ensure that the vendors represented send updating information on a regular and controlled basis. (A major users' complaint is that they cannot tell when catalogs are up-to-date or not.) Insertion of new information, page replacements, etc. is not well-systematized and uniform in all of the Sections maintaining hard copy collections.

Each Section shelves catalogs according to its own scheme of organization; these schemes may not be "best" or even "optimal" systems but, at least, the users are familiar with the arrangements. The VSMF Building Products File is organized on a so-called "side by side" basis (as opposed to a "vendor by vendor" or "catalog by catalog" basis); this presents data on similar products from several vendors in a side by side array that facilitates certain kinds of uses, such as searches for products according to performance parameters and comparison of competing products. On the other hand, examination of a single manufacturer's entire product line or a portion of his product line is obviously easier with the hard copy catalog - if the catalog happens to be available in the collection. And it is easier, of course, to reach for a hard copy catalog to check details relating to a specific product of a known supplier. The advantages of hard copy catalogs in being

able to show color, to indicate, to one extent or another, texture, and in being able to present a clearer illustration, detailed drawing, or schematic than is possible via microfilm cannot be gainsaid. Finally, hard copy catalogs (but not all of them) contain cost information, which is lacking in the VSMF Building Products File.

In its official collections, the District holds and maintains only about 3,000 hard copy Military and Federal Specifications. The categories included are assemblies, electrical, instruments, mechanical, and procedures. Historical specifications are not maintained. Several individuals and Sections hold unofficial collections of specifications; this study did not determine the size of these collections, their specific content, or to what extent they are kept up-to-date.

The VSMF Military and Federal Specifications file contains not only assemblies, electrical, instruments, mechanical, and procedures sections, but also general and historical sections. All told, more than 70,000 entries are on file, supplemented by "Hot Specs" (most recent changes and additions) issued every two weeks, and formally updated every two months.

Based on actual experience, one out of four active users have encountered out-of-date specifications in the hard copy collections and, for more than one out of three active users, there have been occasions when needed specifications were not held in the collections. On the other hand, those individuals who have used the VSMF file reported finding no out-of-date conditions and no instances when a specification sought was not in the file.

Half of the time, the users need Military and Federal Specifications merely for look up or checking purposes and the other half of the time for incorporation of specifications into a design or job specification. Such incorporation is almost always done simply by reference; clean, hard copies of Military and Federal Specifications are comparatively rarely of crucial importance to the users.

With regard to OCE Guide Specifications, however, the situation is quite the reverse. In line with existing Savannah District procedures, the users, most of the time, require clean, hard copies that can be quickly marked up to indicate pertinent sections and then, following a cut and paste operation that saves retyping and other duplicative effort, the specification,

tailored for a specific requirement, is duplicated in the desired number of copies. The quality of the hard copy printouts from the microfilm reader-printer has not been found adequate for this purpose.

The District holds some 455 OCE Guide Specifications of importance to them; historical files are not maintained. Although very few individuals have made use of the VSMF file of these specifications to date, some persons foresee the VSMF system as being useful for obtaining historical information, when this is occasionally needed, and for obtaining a copy, quickly, of a seldom-used specification not held in the District's hard copy collection.

SECTION IX: REQUIREMENTS OF EMPLOYEES IN OUTLYING FIELD OFFICES

Use of Vendor Catalog Information

Eight of the nine individuals interviewed at Construction Field Offices (Fort Bragg and Fort Gordon) make use of information on manufacturers' and suppliers' products, materials and equipment in connection with their work. Their two major sources for this kind of information are the hard copy catalogs kept at the field sites and direct contact with vendors. The VSMF system is not installed at any field site, therefore, none had ever used this system and most had never heard anything about the system.

During the six months preceding the survey, two of the respondents had to find information on vendors' products, on the average, two or three times a month, but four had to find such information once or twice daily, on the average. The remainder had not used this kind of information for some time. One respondent at Fort Gordon indicated that he spends almost one-third of his time tracking down information on vendors' products and another at Fort Bragg spends up to eight hours per month; but, for the most part, these respondents spend only about one to four hours per month seeking such information.

Almost always, the respondents need to check details, performance characteristics, and the like for a particular piece of equipment or an item supplied by a specific vendor; rarely, if ever, do they have a need for product searches, comparisons of competing products and other such services that the VSMF system is well-suited to facilitate.

Their major problems are that they sometimes don't have on file the catalog they need or they don't receive catalog revisions from the suppliers; manufacturers and suppliers are reluctant to furnish them catalogs because they are not sales customers.

Use of Military and Federal Specifications

Eight of the nine respondents have need to make use of or refer to Military and Federal Specifications in connection with

their work. Most of the time, they obtain the specifications they need in or through the Resident Engineer's office, in the field, but occasionally they request them specially from the Specifications Unit in Savannah.

Half of the respondents use or need to refer to Military and Federal Specifications about four times per month (once weekly); the other half use them 20 to 40 times per month (once or twice daily). Usually they spend one to four hours during an average month looking for or trying to locate needed specifications. The exception is when a new project is just starting; then, the respondents or their staffs may devote several days to finding the pertinent Military and Federal Specifications for the job.

The respondents did not cite any significant problem they have encountered in trying to obtain needed specifications, except the time it takes to obtain them when they are occasionally not at hand.

Use of OCE Guide Specifications

Only five of the nine respondents indicated that they have need to refer to or otherwise use OCE Guide Specifications in connection with their work. When they need these specifications, they either find them in their respective field offices or they telephone Savannah to have the desired specifications sent to them.

The respondents use OCE Guide Specifications very infrequently, perhaps about once or twice a month. When they do need them, they have to spend very little of their time in locating them - less than an hour per month. They cited no significant problems encountered in trying to get hold of these specifications when they need them.

SECTION X: CONCLUSIONS AND RECOMMENDATIONS

General

That microfilm systems might eventually be used to replace, largely or entirely, organizations' hard copy files and collections of materials of various kinds is a theory widely held. It is also enthusiastically advanced by the microfilm industry, suppliers of microfilm systems, and others who have been making great efforts, particularly during the past decade, to promote the state-of-the-art in microfilm technology, systems, and service. For numerous kinds of applications, reasoned cases have been made to demonstrate the technical and, often more emphatically, the economic feasibility of replacing hard copy files and collections of materials with microfilm, microfiche, or other microform systems.

In the present study, we have gone to the actual users of vendor product information and of specifications, to inquire into their needs and customary practices, their purposes for using vendor product information and specifications, their use of microfilm and hard copy collections that are both available to them, their problems in trying to make use of both kinds of systems, their attitudes toward the systems, and other topics of investigation. From these investigations, the users have shown us that, in the Savannah District and for the employees' purposes there, neither the hard copy systems nor the microfilm configurations installed are entirely satisfactory; both kinds of systems present problems in relation to users' requirements for complete and reliable, up-to-date and easily accessible, and, in the form presented, useable information. Moreover, aside from actual requirements, neither kind of system is totally responsive to the individual preferences of the user body.

On the other hand, the users have shown us that the two kinds of systems, while not satisfactorily interchangeable in the Savannah District, are useful in different ways and for different kinds of purposes - that the systems can be beneficially used to supplement one another. Those individuals who are active users of both kinds of systems have perceived this and utilize them, sensibly, in complementary fashions. This is most emphatically the case with regard to vendor product information, which provides technical and operational justification for retaining both microfilm and hard copy catalog collections.

With regard to OCE Guide Specifications, existing procedures and purposes for using these specifications in the District make retention of the hard copy system mandatory. The microfilm file, although not much used to date, can provide useful backup for occasions when historical information is needed or when an obscure (for District purposes) specification is not held in hard copy and is needed quickly.

Military and Federal Specifications present the only observed area where the hard copy specifications now held (approximately 3,000) might feasibly be replaced by the microfilm file (covering approximately 70,000 entries, including historical specifications).

Within the framework of these basic conclusions, we present our more specific conclusions and recommendations in the following paragraphs.

Microfilm Vendor Catalog System

The 8mm satellite viewers, with accompanying 8mm Building Product Files, are least used in Specifications and Estimating, Architectural, and Structural Sections and retention of the three portable configurations there seems unjustifiable. The satellite viewers are used more heavily in Mechanical and Electrical Sections and retention of these two configurations is recommended. The portability of the satellite systems is a definite plus feature, since most of the time the users in these Sections have to work with vendor product information at their desks - or at least they find it more convenient or preferable to do so. Crowded spaces make it troublesome to move these viewers about, but this is a situation which apparently cannot be remedied at the moment.

As has already been indicated, the 16mm reader-printer with accompanying 16mm Building Products File has technical and operational justifications for retention, based on its use to date by almost 70 percent of the employees who need this kind of information to one degree or another. The present location of this equipment is decidedly crowded and inconvenient, which militates against usage. Moreover, its users are in a fishbowl; even the active users have complained of this. In untold other situations, our

experience and the experience of others has shown that many individuals are highly reluctant to try new, unfamiliar equipment under the watchful eyes of colleagues. Therefore, it is strongly recommended that this main configuration be moved away from its present location, on a traffic aisle, to a small room or an enclosed cubicle with more privacy, where the users will be encouraged to learn more, on their own, about how the system can be beneficially used.

In line with this, indoctrination in the use of a new system may be highly inadequate if the training is given by an individual who knows well the operations of the new system but has perhaps little understanding of the specific user environment - the users, their characteristics and requirements, and the ways, means, and purposes for which the system is well-suited or not so well-suited to serve them.

Acceptance and use of the microfilm system could be increased by having one or more District employees conduct the training sessions. These employees would be individuals who are not only knowledgeable and experienced with regard to the microfilm systems, but also knowledgeable with regard to the users and their environments. Training groups should be small - four or five individuals - so that each trainee can have a comfortable opportunity to try out the system.

To make the most of the system, it is also recommended that the District designate one employee as the central coordinator for the microfilm system installations. This individual primarily would perform interface functions among the users in the various sections, the microfilm systems, and the system supplier. Users would notify the central coordinator of out-of-date file conditions and other discrepancies and would also submit requests for additional catalogs to be added to the file. The central coordinator would keep records of all such notifications and requests for file additions (particularly since several sections, at different times, might submit the same information) and, on a regular batch basis, would transmit the notifications and requests to the systems supplier for appropriate action.

Thereafter, upon the receipt of the next file updates from the system supplier, the central coordinator would use his records to confirm actions taken by the supplier and follow up on any differences noted. Through this kind of

contact and interaction with the supplier, the microfilm system should become increasingly more effective and responsive to the needs of the District users.

Hard Copy Catalog System

In a Corps of Engineers-wide survey conducted two years ago, in 1968, a grand total of some 124,000 vendor catalogs were "held" by all Divisions. Of this total, some 66,000, or slightly more than 50 percent of the catalogs held, were reported as being maintained. The average amount of time spent in maintaining each catalog figured out to about 40 minutes per year. Utilizing the average wage of $3.00 per hour for catalog maintenance (the wage used in the survey), salary costs for maintenance were about $2.00 per catalog in 1968.

Two years later, in the Savannah District, we find 1,800 to 2,000 catalogs held and an estimated 600 manhours per year invested in their maintenance. At the District's present average salary for catalog maintenance, $3.31 per hour, the total annual labor cost is $2,000 for this work. By comparing these figures with the earlier Corps-wide averages for 1968, there is a superficial implication that the District's 1,800 to 2,000 catalogs average about 20 minutes per year per catalog for maintenance (one-half the 1968 Corps-wide average), at an average annual labor cost of about $1.00-plus per catalog (again, roughly one-half the Corps-wide average of two years ago).

Another explanation would be, however, that only about one-half of the catalogs are actually being maintained; but a perhaps more realistic explanation is that a considerable proportion of the catalogs "held" are not "maintained" at all* and the remainder do not get the kind of attention they need in order for the system to serve the users' needs reliably and effectively. We are supported in this explanation by the users' persistent complaints that catalogs are out-of-date and that they cannot tell when a given catalog is up-to-date or not.

*From this study, we already know that at least 15 percent of the catalogs, those in Electrical Section, are no longer maintained owing to lack of manpower.

Our recommendations in this area are that the District take actions along the following lines:

1. Poll the users of hard copy catalogs, requiring each user to list the 10 or 20 catalogs that are most important to him personally for his work.

2. Combine the results of the poll and prepare a listing of the catalogs in priority order, according to the number of times each catalog was nominated as "most important."

3. Using as a minimum the 1968 average of 40 minutes maintenance time per catalog (or even a more generous estimate of one hour per catalog), determine the total number of "most important" catalogs that the District has the manpower actually to maintain. (If the present 600 hours invested per year is the maximum, then theoretically, the District could maintain 600 to 900 catalogs per year.)

4. Select the specific catalogs to be maintained, using the priority listing compiled under 2., above; physically separate these catalogs from all others; prepare and disseminate to all users alphabetical listings of the catalogs that will be officially maintained - those catalogs that the users can rely on as being actively kept up-to-date. The listings should also indicate the locations of the catalogs.

5. Develop standard procedures (perhaps a form letter) for requesting and obtaining updating information (or complete new catalogs) from the vendors represented on a regularly-scheduled basis. (Active pursuit of the updating material is required in some form, as opposed to passively waiting for venders' materials - whenever they happen to send some in.)

6. Attach a standard updating control sheet to the inside cover of each catalog that is being officially maintained, so that each updating action and the latest date of each action can be recorded thereon. Users may also find this helpful if doubts arise as to the currentness of information in a particular catalog.

7. Assign specific employees to the maintenance of the catalogs and the execution of the standard maintenance and updating procedures. Inform all employees of the names of the individuals responsible for different parts of the collection.

8. Rid the collection of those catalogs not officially maintained. As time passes, the District can request that these catalogs be incorporated in the microfilm system, if it develops that the users have an occasional need for them.

9. Periodically (perhaps annually) re-poll the users to detect changes in priorities of catalogs that are important; add new catalogs - as many as can be effectively maintained - and drop old catalogs that become of lesser interest.

It is considered that the work involved in the routine maintaining and updating the catalogs can be performed effectively at the secretarial level, with a minimum of supervision and occasional advice and guidance provided by professional personnel.

Steps such as those outlined above will help overcome some of the major problems currently being encountered by the users, without appreciable increase in costs to the District; will free up some of the valuable space where the catalogs are shelved; and will make it possible for the hard copy system to perform more reliably for the users and more effectively as a complement to the microfilm system.

Services for Outlying Field Offices

Installation of microfilm systems in the District's outlying field offices does not appear warranted on the basis of our findings, but additional supporting services emanating from the District Headquarters Building in Savannah are recommended. The following actions are recommended:

1. Through orientation sessions, inform employees in all outlying field offices that the microfilm systems have been installed in the District Office and that the systems include files of vendor product information and

of specifications that can be useful to them. Also inform these employees that they can be served by these systems, by contacting specifically designated individuals in the District Office, who will search out data they might need and relate it to them by telephone or send them hard copy microfilm printouts, if desired.

2. When the hard copy catalog procedures (previously described) have been instituted, send lists of the catalogs officially maintained to all field offices, and provide the names of specific employees in the District Office for them to contact whenever the catalogs might be used on their behalf to provide them with needed information.

Catalogs and Specifications in Relation to the Library

Information pertaining to vendor's products, Military and Federal Specifications, and OCE Guide Specifications are important types of information required in the Savannah District and, as such, should be considered component parts of the total informational program in the District. Since a "model technical library" is being established by the District, under the Army TISA program, certain questions thus arise with regard to the library and its relationships to and responsibilities for maintaining and providing services in connection with vendors' catalogs and specifications and standards.

In some settings, governmental as well as industrial, vendor's catalogs, specifications and standards, or both are located in the organizations' libraries and are maintained by library staff members. Despite possible advantages that might result from relocating the hard copy vendor catalogs and microfilm systems to the District Library where, for maintenance and service purposes, these sources could be integrated with the total technical information program, such a move and reassignment of responsibility is strongly not recommended in the Savannah District.

The major reason for making this recommendation is that the library is located at a site which is not convenient to those personnel who have the heaviest and most frequent needs to make use of the hard copy catalogs and the microfilm files in connection with their work. Relocation of these sources to the library would cost the users more time in locating and obtaining needed information and would be expected to discourage, even more strongly, the use of the microfilm systems. Additionally, we might fully expect an

increase in "end-run" tactics, whereby users would build up increasingly larger personal collections of materials for the sake of their own convenience.

Other factors which militate against relocation of these materials and files to the library in the Savannah District are the size of the library staff and the physical dimensions of the library faculty itself, neither of which are considered large enough to cope with the amount of materials involved and the requirements for maintenance and updating.

Applicability of Results to Other Army Organizations

The plan and design of this study and the investigative mechanisms employed were focussed specifically on the Savannah District, Corps of Engineers, and the conclusions and recommendations set forth in this report are made with a singular view toward the situation and circumstances that exist there. We have given prime consideration to the mission and responsibilities of the District itself, the kinds and numbers of professional and technical personnel who are employed in meeting these responsibilities, the natures of their differing work assignments, their physical locations, etc. - all factors which, taken together, make the Savannah District unique.

Nonetheless, other organizational components of the Army, particularly in the Corps of Engineers, may well see their own situation similar in enough respects to find the results meaningful and applicable to their organizations and justify adoption of the recommendations made. Above all, the investigative approach - the survey of actual and presumed users - has provided concrete foundations on which to base judgments and decisions regarding alternative courses of action available and is considered a recommendable procedure, regardless of the nature and size of the Army organizational component concerned with problems relating to vendor product information, specifications, and standards.

SECTION XI INTERVIEW SURVEY RESULTS

This section presents detailed tabulations of the responses received to questions asked in the interview schedule administered to the 60 Savannah District employees. Many of these questions were open-ended to allow for free response on the part of the interviewees. Insofar as possible, the actual words used by the interviewees have been retained with only minor editing, so that highly similar responses could be grouped together in the tabulations.

In the tabular headings, F(requency) means the actual number of interviewees who gave a particular response; in some cases, the total number of responses exceeds the total number of individuals interviewed, indicating that some interviewees gave multiple responses. The percentages recorded in the tabulations express the relationship of the F(requency) of particular responses to all (100%) responses received for a given question. Where totals for percentages exceed or fall short of 100, this has been a result of rounding.

As pointed out in the Introduction to this report, the primary focus of the survey was on the Design Branch, located in the District Headquarters Building in Savannah, and the secondary purpose was to attempt to determine if the installation of VSMF systems in outlying field offices would be desirable. Therefore, we present complete tabulations, below, of responses received from personnel interviewed in the District Office in Savannah. However, since only nine individuals were interviewed at the two sites outside Savannah (Fort Gordon, Georgia and Fort Bragg, North Carolina), their responses to pertinent questions in the interview schedule are not presented in tables but are summarized, for the sake of brevity, in Section IX of this report (Requirements of Employees in Outlying Field Offices).

Descriptive Data on Respondents

The first series of questions in the interview schedule was designed to elicit certain background information concerning the individuals in the sample that might eventually prove useful in evaluating and interpreting the responses to other questions. This background information, characterizing the Design Branch personnel, is shown in Tables 1, 2, and 3. About one out of

every six individuals has worked for the Savannah District for 5 years or less; about one-third for 6 to 10 years; and over one-half for more than 10 years. Approximately 60 percent of the individuals are GS-12's, over 10 percent are GS-13's or above, and almost 30 percent are GS-11's or below. Roughly one-fourth of the individuals are under 35 years of age or younger; one-fourth are 36 to 45 years old; and the remaining one-half are over 45.

Table 1. Number of Years Employed by Savannah District

	F	%
5 years or less	8	16
6 - 10 years	16	31
11 - 20 years	24	47
21 years or more	3	6
TOTALS	51	100

Table 2. Present GS Ratings

	F	%
GS-11 or below	15	29
GS-12	30	59
GS-13 or above	6	11
TOTALS	51	99

Table 3. Age of Respondents

	F	%
27 - 30 years old	6	11
31 - 35 years old	6	11
36 - 45 years old	13	25
46 - 50 years old	12	24
51 years or more	14	27
TOTALS	51	98

General Use of Information on Vendors' Products, Equipment, Materials, and Supplies

As indicated in Table 4, over 80 percent of the interviewees use information on vendors' products, equipment, materials, and supplies in connection with their work in the Savannah District.

Table 4. Use of Information on Vendors' Products

	F	%
Do use this kind of information	42	82
Do not use this kind of information	9	18
TOTALS	51	100

The most frequently used categories of vendors' catalogs, as cited by the respondents, are listed in Table 5.

Table 5. Most Frequently Used Categories of Vendors' Catalogs

	F
Electrical and electronic equipment; lighting and lighting fixtures	13
General: construction materials, building materials, structural materials, architectural materials	12
Metals and metal products	11
Pumps, pipes, valves	10
Air conditioning, heating equipment	8
Mechanical components	6
Doors, windows, frames, glass	5
Power transmission equipment	4
Concrete, masonry products; asphalt	4
Hydraulic components	4
Power plants, turbines	3
Cranes and hoists	3
Heavy electrical equipment	2
Water treatment equipment	2
Motors	2
Finishes	2
Ceramics	1
Plants and shrubs	1

As shown in Table 6, almost two-thirds of the respondents rely most frequently on the catalogs and other forms of literature furnished by vendors for information on products, equipment, and materials; 10 percent most frequently contact vendors directly, either by telephone or by letter.

Table 6. Most Frequently Used Source of Information on Vendors' Products

	F	%
(Do not use this kind of information)	(9)	(18)
Vendor-furnished catalogs and literature	32	63
Direct contact with vendor	5	10
Past job specifications	3	6
Misc. responses (i.e., "staff obtains information for me")	2	4
TOTALS	51	101

Use of VSMF System for Vendor Catalog Information

Since the installation of the VSMF system, with vendor catalog files, in the Savannah District approximately one year prior to the survey, almost 60 percent of the respondents have used or tried to find information they needed on vendors' products at least one time, as shown in Table 7.

Table 7. Respondents Who Have or Have Not Used the VSMF Vendor Catalog Files

	F	%
(Do not use this kind of information)	(9)	(18)
Have used or tried to use the files one or more times	29	57
Have never tried to use these files	13	25
TOTALS	51	100

The 25 percent of the respondents who have never tried to use the VSMF files for information on vendors' products stated that they had not done so for the reasons listed in Table 8.

Table 8. Reasons for Non-Use of VSMF Files for Vendors' Product Information

	F	%
(Do not use this kind of information)	(9)	(18)
(Have used these files)	(29)	(57)
Hard copy catalogs are quicker	2	4
Doesn't provide color and texture	2	4
Lacks pricing information	2	4
Index inadequate	2	4
More information in hard copy catalogs	2	4
No reason in particular	2	4
My need for vendor information long preceded their installation of this equipment	1	2
TOTALS	51	101

More than half (27) of the respondents had actually used the VSMF vendor catalog files during the six months preceding the survey. Frequency of usage during this period is shown in Table 9. This table shows that about one out of three respondents (16) used the files three times or less per month, but one out of five respondents (11), four or more times per month.

Table 9. Frequency of Use of VSMF Vendor Catalog Files During Past Six Months

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Less than once a month	7	14
1 - 3 times a month	9	18
4 - 7 times a month	6	12
8 - 13 times a month	5	10
TOTALS	51	101

The predominant use of the VSMF vendor catalog files is for performing searches rather than for ready reference or quick look up of a specific item or fact. As shown in Table 12, use of the VSMF system for the latter purpose appears comparatively insignificant.

Table 12. Use of VSMF Files for Quick Reference and for Searches

	F	%
(Do not use this kinds of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Use the files mainly for quick look up or reference	4	8
Use these files mainly for searches	16	31
About 50-50	7	14
TOTALS	51	100

One-third of the respondents (17), but almost two-thirds of the 27 respondents who had actually used the VSMF vendor catalog files during the past six months, encountered information in the files that was not up-to-date (Table 13).

Table 13. Instances When VSMF Vendor Catalog Files Were Out-of-Date

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Have found instances when information was not up-to-date	17	33
Have not encountered any out-of-date conditions	10	20
TOTALS	51	100

From Table 14, it can be seen that the majority of users of the VSMF vendor catalog files usually employ the microfilm reader-printer (as opposed to the satellite viewers) in order to obtain printouts to take back to their desks.

Table 14. Use of Hard Copy Printout from VSMF Vendor Catalog Files

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Usually need a printout copy	14	27
Usually satisfied with display of the information	6	12
About 50-50	7	14
TOTALS	51	100

Twenty-five percent of the respondents (12 persons, or about 45 percent of the actual system users) expressed dissatisfaction with the equipment's location. Their predominant concern was to obtain more privacy for the central reader-printer and to get the reader-printer and files away from the present heavy traffic aisle in the Design Branch (Tables 15 and 16).

Table 15. Degree of Satisfaction with Locations of VSMF Equipment and Files

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Satisfied with locations	15	29
Not satisfied with locations	12	24
TOTALS	51	100

One-quarter of the respondents spent, on the average, less than one hour per month in using the VSMF vendor catalog files during the six months preceding the survey. During the same period, another one-quarter spent from one to four hours per month using these files, as shown in Table 10.

Table 10. Time Spent in Using VSMF Vendor Catalog Files During Past Six Months

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Less than 1 hour per month	13	25
1 - 2 hours per month	7	14
3 - 4 hours per month	6	12
More than 4 hours per month	1	2
TOTALS	51	100

The respondents mentioned several occasions (listed in Table 11) in which they found certain categories of VSMF catalog information to be limited or incomplete.

Table 11. Categories of VSMF Vendor Catalog Information Found to Be Limited or Incomplete

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
No instances encountered when information was limited or incomplete	8	16
Finishing materials	3	6
Paints and coatings	4	8
Instrumentation; VSMF has mostly laboratory equipment	2	4
Gypsum wallboard	1	
Electrical equipment	3	6
Heavy equipment	1	2
Doors	2	4
Pipe couplings	2	4
Fire doors and vaults	1	2
TOTALS	51	101

Table 16. Recommendations and Comments on Location of VSMF Equipment

	#
Need a separate room for more privacy	6
The reader-printer is badly located in a traffic aisle	5
Not enough space to move the satellite equipment around	4
Equipment should be on a table in the middle of the Section	1
Central station with VSMF operator is needed	1

At present, problems in getting access to the system, because the equipment and files are already in use, seem insignificant. More serious concerns are the respondents' expressed unfamiliarity with the indexes and how to use them; their complaints about the file arrangement of the catalogs in the microfilm and the need to pass the film mechanically through the readers instead of having the desired frames brought to view automatically; and problems with poor equipment maintenance (Tables 17 and 18).

Table 17. Problems in Getting Access to the VSMF Files and Equipment

	F	%
(Do not use this kind of information)	(9)	(18)
(Have never used these files)	(13)	(25)
(Have not used these files in past six months)	(2)	(4)
Files are occasionally in use when I need them	2	4
No problems	25	49
TOTALS	51	100

Table 18. Problems Encountered in Use of the VSMF Files, Indexes, and Equipment

	F
Trouble with using or knowing how to use the indexing	10
A problem is having to go to a number of cartridges to find wanted items; too many cartridges to look through	5
Equipment should be automatic selection to bring up the desired frame	4
Equipment maintenance is poor	4

Only two respondents had had previous experience in using a microfilm system and in both cases, that experience was in using microfiche, as indicated in Table 19.

Table 19. Respondents' Experience with Systems Similar to VSMF Vendor Catalog Files

	F	%
(Do not use this kind of information)	(9)	(18)
No previous experience with using a microfilm system	40	78
Have had previous experience with a related system (microfiche)	2	4
TOTALS	51	100

Use of Hard Copy Vendors' Catalogs

Slightly more than eight out of every ten of the Design Branch respondents use vendors' catalogs in hard copy form in connection with their work in the Savannah District. Almost 70 percent (seven out of ten) had used these catalogs during the six months preceding the survey. For about half of these latter individuals, usage ranged from less than once a month to about three times a week. Usage among the other half ranged

from once to more than twice daily. Approximately half of these individuals spent 2 hours or less per month in using the hard copy catalogs; one-fourth spent 3 to 6 hours per month; and another fourth spent 10 to 20 or more hours per month. (See Tables 20, 21, and 22.)

Table 20. Respondents' Use of Hard Copy Vendors' Catalogs During Past Six Months

	F	%
(Do not use this kind of information)	(9)	(18)
Have not used hard copy catalogs in past six months	7	14
Have used hard copy catalogs in past six months	35	69
TOTALS	51	101

Table 21. Frequency of Use of Hard Copy Catalogs During Past Six Months

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Less than once a month	6	12
1 - 3 times a month	5	10
4 - 13 times a month	6	12
20 - 40 times a month (once or twice a day)	7	14
More than twice daily	11	22
TOTALS	51	102

Table 22. Time Spent in Using Hard Copy Catalogs During Past Six Months

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Less than 1 hour per month	8	16
1 - 2 hours per month	10	20
3 - 4 hours per month	4	8
5 - 6 hours per month	4	8
10 - 12 hours per month	6	12
20 or more hours per month	3	6
TOTALS	51	102

Three out of every five individuals who made use of the hard copy catalog collections during the six months preceding the survey have encountered instances when coverage of needed information was incomplete or unsatisfactory and when the information available in the catalogs was out-of-date, as shown in Tables 23 and 24.

Table 23. Areas Where Hard Copy Catalogs Were Found to Be Incomplete or Unsatisfactory

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
No instances encountered where catalog information was limited or incomplete	14	27
Specialty or infrequently used items	8	16
Electrical products and equipment	3	6
Heating and air conditioning equipment	2	4
Heavy equipment	2	4
Finishing materials	2	4
Concrete pipe and products	2	4
Refuse containers and equipment	1	2
Lighting	1	2
TOTALS	51	101

Table 24. Instances Where Hard Copy Catalogs Have Been Found Out-of-Date

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Catalogs kept up-to-date satisfactorily	15	29
Have encountered instances when catalogs were not satisfactorily up-to-date	20	39
TOTALS	51	100

As shown in Table 25, the majority of the respondents use the hard copy catalogs for quick reference or look up purposes - not for information searches - and they usually need to take the catalogs back to their desks to use them, as opposed to using them in proximity to where the catalogs are shelved (Table 26).

Table 25. Use of Hard Copy Catalogs for Quick Reference and for Searches

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Use the catalogs mainly for quick look up	21	41
Use the catalogs mainly for searches	7	14
About 50-50	7	14
TOTALS	51	101

Table 26. Where the Respondents Usually Use the Catalogs

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Usually need to take catalog back to my desk	26	51
Usually look up information on the spot	4	8
About 50-50, at my desk or at the shelves where the catalogs are located	4	8
My staff gets the information for me	1	2
TOTALS	51	101

There is general satisfaction with the present shelf locations of the catalogs (Table 27). Even though shelf space is limited in some cases, the users find the catalogs conveniently at hand and emphatically would not like them removed to the library for centralized maintenance (Table 28).

Table 27. Satisfaction with Locations of Hard Copy Catalogs

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Satisfied with locations of catalogs	33	65
Not satisfied with locations of catalogs	2	4
TOTALS	51	101

Table 28. Recommendations and Comments on Locations of Hard Copy Catalogs

	F
Catalogs are as convenient as they can be; would not like to have them moved to library	18
Space and arrangement is limited	5
No specific recommendations or comments	12

The users have some problems in getting access to needed catalogs - when other persons are using them or when they have to take the time to go to another Section for a wanted item (Table 29). But more serious user problems are encountered because catalogs are sometimes not available in any of the Sections, particularly catalogs dealing with infrequently used items and because the catalogs are either not up-to-date or the user is not certain whether the catalogs are up-to-date. The respondents also comment adversely on the indexing systems used in the catalogs; these systems vary from catalog to catalog and are sometimes highly inadequate or are otherwise difficult to understand and use (Table 30).

Table 29. Problems in Getting Access to Hard Copy Catalogs

	F	%
(Do not use this kind of information)	(9)	(18)
(Have not used catalogs in past six months)	(7)	(14)
Other persons are sometimes using the catalogs I need	7	14
Takes time to get a catalog that is kept in another Section	3	6
No specific problems	25	49
TOTALS	51	101

Table 30. Problems Encountered in Using or Trying to Make Use of Catalogs

	F
Information not up-to-date or I don't know if it is up-to-date	13
Don't have catalogs covering infrequently used or low volume items	11
Catalogs not available	9
Indexing systems hard to use; other indexing problems	6
Cost data incomplete	4
Miscellaneous	4

Slightly more than half of the respondents who use vendors' catalogs in connection with their work have personal collections at their desks (Table 31). Half of these collections are comparatively minor in size - no more than 10 catalogs; but the other personal collections are more sizeable, containing from 15 to 30 or more catalogs (Table 32).

Table 31. Personal Files or Collections of Catalogs

	F	%
(Do not use this kind of information)	(9)	(18)
Do not keep a personal collection of catalogs	20	39
Do keep a personal collection of catalogs	22	43
TOTALS	51	100

Table 32. Size of Personal Catalog Collections

	F	%
(Do not use this kind of information)	(9)	(18)
(Do not keep a personal collection)	(20)	(39)
Less than 5 catalogs	5	10
5 - 10 catalogs	6	12
15 - 20 catalogs	6	12
30 or more catalogs	2	4
Not specific	3	6
TOTALS	51	101

Most Recent Use of Vendor Catalog Information

In an attempt to gain insights into the respondents' customary practices with regard to obtaining and making use of information on vendors' products, equipment, materials, and supplies, each respondent was asked to recall the most recent occasion when he had a need to look for or try to obtain such information in connection with his work. Thirty-two of the respondents (three-quarters of those who do use this kind of information) were able to recall such an occasion. Analyses showed that in three out of five cases, the information sought was a simple fact, implying a quick look up or quick reference problem. In the remaining two out of five cases, a more extensive search problem was posed (Table 33).

Table 33. Most Recent Occasion When Vendor Product Information Was Sought

	F	%
(Do not use this kind of information)	(9)	(18)
Can't recall an occasion	10	20
Quick reference question	19	37
Search question	13	25
TOTALS	51	100

Three out of five respondents (20 individuals) first tried the hard copy catalogs, while one out of five (7 individuals) tried the VSMF system, three respondents telephoned the manufacturers directly, and two resorted to old project drawings (Table 34). Their reasons for going to these various sources first were primarily that the sources were convenient or that they were already familiar with the initial sources chosen. Five respondents tried the VSMF system initially because they wanted to try out the system (Table 35).

Table 34. First Source Tried for Vendor Information

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
Hard copy catalogs	20	39
VSMF system	7	14
Telephoned manufacturer	3	6
Old project drawings	2	4
TOTALS	51	101

Table 35. Reasons for Going to the First Source Initially

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
Most convenient source	9	18
Most familiar source; the usual source	8	16
Quickest source to use	3	6
Knew the information was there	4	8
Wanted to try VSMF files	5	10
No other alternative	2	4
Most reliable	1	2
TOTALS	51	102

In four out of five cases, the respondents spent one-half hour or less trying to get the needed information from the first source used; the remainder spent one, two, or more hours (Table 36). About half of the respondents were successful in getting the information they needed from the first source, but the remainder were unsatisfied (Table 37).

Table 36. Time Spent in Trying to Get Information from First Source

	F	%
(Do not use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
15 minutes or less	16	31
20 - 30 minutes	10	21
60 - 120 minutes	4	8
More than 120 minutes	2	4
TOTALS	51	101

Table 37. Adequacy of Information Obtained from First Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
Obtained all of the information I needed	17	33
Detailed data was not given	2	4
Inadequate coverage of the product information needed	13	25
TOTALS	51	100

Table 38 lists the second sources tried by 15 of the respondents, with five trying the hard copy catalogs, four trying the VSMF files, four contacting the manufacturers or suppliers, and two resorting to Sweets' Catalog. Familiarity with the source was the principal reason given for the selection of the second source; however, three respondents did aim to use the VSMF system to verify information they had obtained from their first source (Table 39).

Table 38. Second Source Tried for Vendor Information

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
Manufacturer's catalogs	5	10
VSMF system	4	8
Contacted suppliers/dealer	4	8
Sweets' catalog	2	4
TOTALS	51	101

Table 39. Reasons for Going to Second Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
Familiar source	8	16
Verify with information in VSMF system	3	6
Reputable supplier	2	4
Satisfy supervisor	2	4
TOTALS	51	101

Eight of the 15 individuals spent 15 minutes or less in using the second source they selected; the remaining seven spent 20 minutes to an hour (Table 40). Ten of the individuals obtained the information they needed from the second source tried, but five (one-third) were unsatisfied (Table 41).

Table 40. Time Spent in Trying to Get Information from Second Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
15 minutes or less	8	16
20 - 30 minutes	5	10
60 minutes	2	4
TOTALS	51	101

Table 41. Adequacy of Information Obtained from Second Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
Obtained the information needed	10	20
Inadequate coverage of product information needed	4	8
Lacked sufficient detail	1	2
TOTALS	51	101

The five unsatisfied individuals tried a third source: three tried the VSMF system and two contacted suppliers directly (Table 42), but all because they did not know of any other source to try (Table 43).

Table 42. Third Source Tried for Vendor Information

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
(Obtained information from second source)	(10)	(20)
VSMF system	3	6
Contact with suppliers	2	4
TOTALS	51	101

Table 43. Reasons for Going to Third Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
(Obtained information from second source)	(10)	(20)
Didn't know of any other source	5	10
TOTALS	51	101

Of these five individuals, two spent one-half hour, two spent one hour, and one spent four hours in trying to get the information they needed from the VSMF system or from suppliers (Table 44). Two still were unable to get all of the information they wanted from this third attempt (Table 45).

Table 44. Time Spent in Trying to Get Information from Third Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
(Obtained information from second source)	(10)	(20)
30 minutes	2	4
60 minutes	2	4
240 minutes	1	2
TOTALS	51	101

Table 45. Adequacy of Information Obtained from Third Source

	F	%
(Don't use this kind of information)	(9)	(18)
(Can't recall recent instance)	(10)	(20)
(Obtained information from first source)	(17)	(33)
(Obtained information from second source)	(10)	(20)
Obtained information from third source	2	4
Item not manufactured	1	2
Not enough detail	1	2
No additional information available	1	2
TOTALS	51	101

Use of Military and Federal Specifications

Eighty percent of the Design Branch respondents have need to use Military and Federal Specifications in connection with their work; the remaining 20 percent indicated that they never use these specifications (Table 46). Most frequently, the majority of the users obtain the specifications they need from the Specifications Unit, but about one-third of the users obtain needed specifications within their own Sections (Table 47).

Table 46. Use of Military and Federal Specifications

	F	%
Never have need for Military and Federal Specifications	10	20
Have need for Military and Federal Specifications in connection with my work	41	80
TOTALS	51	100

Table 47. Most Frequently Used Source of Military and Federal Specifications

	F	%
(Never have need for Military and Federal Specifications	(10)	(20)
Specifications Unit	23	45
Within own Section	14	27
Personal file	2	4
VSMF files	2	4
TOTALS	51	100

Use of VSMF System for Military and Federal Specifications

One-third of the respondents who need Military and Federal Specifications in connection with their work have used or tried

to use the VSMF system at least once since the installation of the system in the Savannah District (Table 48). Among those who need these specifications, but have never tried the VSMF system, 13 individuals (about one-third of the total number of actual users) feel that the "old way" is adequate and have thus had no incentive to try the VSMF system. A few, five persons, were unaware that these VSMF specifications files were available for their use (Table 49).

Table 48. Use of VSMF System for Military and Federal Specifications

	F	%
(Never need these specifications)	(10)	(20)
Have used or tried to use these files one or more times	14	27
Have never tried to use these files	27	53
TOTALS	51	100

Table 49. Reasons for Non-Use of VSMF System for Military and Federal Specifications

	F	%
(Never need these specifications)	(10)	(20)
(Have used these files one or more times)	(14)	(27)
The old way is adequate	13	25
Did not know files were available	5	10
Rarely have need for these specifications	5	10
Files just recently installed	2	4
VSMF files are limited in area of heavy equipment specifications	1	2
System is a bottleneck and poorly indexed	1	2
TOTALS	51	100

Among those individuals who do use the VSMF Military and Federal Specifications file, frequency of use, for the most part,

is less than once a month and the amount of time spent by most of the individuals in using these VSMF files is less than one hour per month (Tables 50 and 51).

Table 50. Frequency of Use of VSMF System for Military and Federal Specifications During Past Six Months

	F	%
(Never need these specifications)	(10)	(20)
(Have never used these files)	(27)	(53)
Less than once a month	8	16
1 time per month	3	6
2 - 3 times per month	2	4
8 times per month	1	2
TOTALS	51	101

Table 51. Time Spent in Using VSMF Military and Federal Specifications Files During Past Six Months

	F	%
(Never need these specifications)	(10)	(20)
(Have never used these files)	(27)	(53)
Less than 1 hour per month	8	16
1 hour per month	4	8
2 hours or more per month	2	4
TOTALS	51	101

Apparently, the respondents did not find the Military and Federal Specifications in the VSMF files to be out-of-date or incomplete (Tables 52 and 53).

Table 52. Completeness of VSMF Military and Federal Specifications

	F	%
(Never use these specifications)	(10)	(20)
(Have never used these files)	(27)	(53)
Have found these files complete	12	24
Don't remember	2	4
TOTALS	51	101

Table 53. Instances When VSMF Military and Federal Specifications Were Found Out-of-Date

	F	%
(Never use these specifications)	(10)	(20)
(Have never used these files)	(27)	(53)
Haven't found any out-of-date	11	22
More up-to-date than anything else we have	1	2
Don't remember	2	4
TOTALS	51	101

Roughly about half of the users usually obtain a hard copy printout of the specifications they need from the VSMF files, while the remaining users are satisfied simply with the display of the specifications (Table 54).

Table 54. Use of Hard Copy Printout from VSMF Military and Federal Specifications Files

	F	%
(Never use these specifications)	(10)	(20)
(Have never used these files	(27)	(53)
Usually satisfied with the display of the information	5	10
Usually need a printout copy	5	10
Need a printout copy because display is not clear enough	1	2
About 50-50	3	6
TOTALS	51	101

The major problem expressed by the users was their lack of familiarity, as yet, with the VSMF Military and Federal Specifications system, as indicated in Table 55.

Table 55. Problems in Use of VSMF Military and Federal Specifications System

	F	%
(Never use these specifications)	(10)	(20)
(Have never used these files)	(27)	(53)
No specific problems	4	8
Takes longer to find specification than when I use hard copy	1	2
Not sufficiently familiar with the system yet	9	18
TOTALS	51	101

Use of Hard Copy Files of Military and Federal Specifications

Seven out of eight users had made use of the hard copy files of Military and Federal Specifications during the six months preceding the survey (Table 56). The files or collections of specifications used most of the time were those located in the Specifications Unit or in the individual's own Section (Table 57).

Table 56. Use of Hard Copy Files of Military and Federal Specifications During Past Six Months

	F	%
(Never use these specifications)	(10)	(20)
Have not used the hard copy specification files during past six months	5	10
Have used the hard copy specification files during past six months	36	71
TOTALS	51	101

Table 57. Locations of Hard Copy Collections of Military and Federal Specifications Respondents Use Most of the Time

	F	%
(Never use these specifications)	(10)	(20)
(Have not used the hard copy specifications during past six months)	(5)	(10)
Use those located in the Specifications Unit most of the time	19	37
Use own Section's collection most of the time	14	27
Use my own personal collection most of the time	3	6
TOTALS	51	100

Among the 36 individuals who had actually used the hard copy specifications during the six months preceding the survey, approximately one-third used them, on the average, less than once a month and approximately one-third used them one to three times a month. Only two individuals averaged daily or twice daily usage (Table 58). The amount of time that the users spent, in the average month, in trying to locate needed Military and Federal Specifications is shown in Table 59. Most averaged one hour or less per month.

Table 58. Frequency of the Use of Hard Copy Military and Federal Specifications During Past Six Months

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Less than once a month	13	25
1 time per month	6	12
2 - 3 times per month	6	12
4 times per month	9	18
20 - 40 times per month	2	4
TOTALS	51	101

Table 59. Time Spent in Trying to Find Military and Federal Specifications in Hard Copy Collections During Past Six Months

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Less than 1 hour per month	20	39
1 hour per month	11	22
2 hours per month	4	8
8 hours per month	1	2
TOTALS	51	101

Most users have found the hard copy Military and Federal Specifications files complete enough for their needs; but one-third encountered occasions when wanted specifications were not in stock (Table 60). One-quarter of the users have encountered instances when needed specifications were out-of-date (Table 61).

Table 60. Instances When Hard Copy Military and Federal Specifications Have Been Found Incomplete

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Have found files complete enough for my needs	23	45
Occasionally find one not in stock	13	25
TOTALS	51	100

Table 61. Instances When Hard Copy Military and Federal Specifications Have Been Found Out-of-Date

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Have found them satisfacorily up-to-date; no problems	27	53
Have encountered out-of-date specifications	9	18
TOTALS	51	101

One-quarter of the users' needs for information from Military and Federal Specifications is usually satisfied by a simple look up of the specification, whereas the majority usually need a copy of the specification to work with (Table 62).

Table 62. Where the Respondents Usually Use the Hard Copy Military and Federal Specifications

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Usually have to take the specification back to my desk	25	49
Usually just look up the specification	9	18
About 50-50	2	4
TOTALS	51	101

Most Recent Use of Military and Federal Specifications

Thirty-four of the users recalled the most recent occasion when they had need for a particular Military or Federal Specification. The kinds of specifications that these individuals needed are

summarized in Table 63. In half the cases, the users needed the specifications simply for checking purposes; but in the other half of the cases, the specifications were needed for incorporation into a design project or a job specification (Table 64).

Table 63. Categories of Military and Federal Specifications Needed on Most Recent Occasion for Use

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Finishing materials	12	24
Mechanical equipment	8	16
Electrical equipment	6	12
Structural equipment	6	12
Miscellaneous	2	4
Can't recall	2	4
TOTALS	51	102

Table 64. Purposes for Which Military and Federal Specifications Were Needed

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Referred to specifications to check contractor's conformance	10	20
Needed specification for a design project	8	16
Preparing a job specification	8	16
Check a guide specification reference	7	14
Miscellaneous	3	6
TOTALS	51	102

Only four individuals tried to use the VSMF reader-printer located in the Design Branch as their initial source for the specification needed (Tables 65 and 66).

Table 65. First Sources Tried for Military and Federal Specifications

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Hard copy specifications	32	63
VSMF files	4	8
TOTALS	51	101

Table 66. Location of First Source Tried

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Criteria Section	14	27
Own Section's files	11	22
Personal files	6	12
VSMF reader-printer in Design Branch	4	8
Other	1	2
TOTALS	51	101

One-half of the individuals spent 5 minutes or less locating the specifications they needed; one-quarter spent 10-15 minutes; and the remainder spent from 20 minutes to an hour (Table 67).

Table 67. Time Spent in Trying to Find Military and Federal Specifications from First Source

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
5 minutes or less	17	33
10 - 15 minutes	9	18
20 - 30 minutes	7	14
60 minutes	3	6
TOTALS	51	101

The respondents' stated reasons for going to the first source initially are summarized in Table 68. Primarily, their reasons were that this was the "usual procedure," that the first source was "convenient," or that the first source was the "best source." Two wished to try out the VSMF system.

Table 68. Reasons for Going to the First Source Initially

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Usual procedure	18	35
Convenient	9	18
Best source	6	12
Try out the VSMF system	2	4
Only source available	1	2
TOTALS	51	101

Five out of six respondents obtained the specifications or the information they wanted from the first source; a few found only some of the information needed; and one found an out-of-date specification (Table 69). The latter five all tried the VSMF files next (Table 70), where they found the information they wanted.

Table 69. Adequacy of Information Obtained from First Source

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
Obtained all of the information needed	31	61
Obtained some of the information needed	4	8
Obtained none of the information needed (outdated)	1	2
TOTALS	51	101

Table 70. Second Sources Tried for Military and Federal Specifications

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
(Obtained information from first source)	(31)	(61)
VSMF files	5	10
TOTALS	51	101

Three of the five individuals referred to above spent 5 minutes in obtaining the specification they needed from the VSMF system, one spent 20 minutes, and one spent 30 minutes (Table 71).

Table 71. Time Spent in Getting Specification from Second Source (VSMF Files)

	F	%
(Never use these specifications)	(10)	(20)
(Have not used these specifications in past six months)	(5)	(10)
(Obtained information from first source)	(31)	(61)
5 minutes	3	6
20 minutes	1	2
30 minutes	1	2
TOTALS	51	101

Use of OCE Guide Specifications

Eight out of ten respondents stated that they use OCE Guide Specifications in connection with their work in the Savannah District (Table 72). The OCE Guide Specifications that the majority of the respondents use most of the time are located in the Criteria Section, but one-third of the actual users indicated that they usually find the specifications they need in their own Section's files or collections (Table 73).

Table 72. Use of OCE Guide Specifications in Savannah District Design Branch

	F	%
Do not use OCE Guide Specifications in connection with my work	9	18
Do use OCE Guide Specifications in connection with my work	42	82
TOTALS	51	100

Table 73. Locations Where Respondents Most Frequently Go to Obtain Needed OCE Guide Specifications

	F	%
(Do not use OCE Guide Specifications)	(9)	(18)
Criteria Section	25	49
Own Section's files	14	27
My own personal file	3	6
TOTALS	51	100

Use of VSMF System for OCE Guide Specifications

Only two respondents stated that they had used the VSMF system for OCE Guide Specifications (Table 74). However, it is pointed out that these VSMF files had been installed in the Savannah District only a very short time before the start of this survey.

Table 74. Use of VSMF System for OCE Guide Specifications

	F	%
(Do not use these specifications)	(9)	(18)
Have never used VSMF system for these specifications	40	78
Have used the VSMF system for these specifications	2	4
TOTALS	51	100

Significantly, more than one-quarter of the respondents who use OCE Guide Specifications were unaware that VSMF files containing these specifications had been installed in the Design Branch (Table 75). One-third of the users stated that, for their work, they need hard copies of these specifications for mark-up purposes, indicating that printouts from the VSMF microfilm files would be unsatisfactory.

Table 75. Reasons for Non-Use of VSMF System for OCE Guide Specifications

	F	%
(Do not use these specifications)	(9)	(18)
(Have used VSMF system for these specifications)	(2)	(4)
Need hard copy to mark up	14	27
Unaware of availability	11	22
Haven't needed to use OCE Guide Specifications since the installation of these VSMF files (two months preceding the survey)	7	14
No particular reason	5	10
Unfamiliar with equipment	3	6
TOTALS	51	101

Use of OCE Guide Specifications in Hard Copy

Almost nine out of ten individuals who make use of OCE Guide Specifications in connection with their work had used these specifications during the six months preceding the survey (Table 76). The frequency with which they used these specifications during an average month is summarized in Table 77. For more than half of these individuals, usage averaged two times or less per month. Similarly, about half of these individuals spend one hour or less trying to locate needed OCE Guide Specifications during an average month (Table 78).

Table 76. Respondents Using OCE Guide Specifications in Hard Copy During Past Six Months

	F	%
(Do not use these specifications)	(9)	(18)
Have used OCE Guide Specifications in past six months	37	73
Have not used these specifications in past six months	5	10
TOTALS	51	101

Table 77. Frequency of Use of OCE Guide Specifications During Past Six Months

	F	%
(Do not use these specifications)	(9)	(18)
(Have not used these specifications in past six months)	(5)	(10)
Less than once a month	11	22
1 - 2 times a month	9	18
4 - 8 times a month	6	12
12 - 20 times a month	8	16
Don't know	3	6
TOTALS	51	102

Table 78. Time Spent in Finding OCE Guide Specifications During Past Six Months

	F	%
(Do not use these specifications)	(9)	(18)
(Have not used these specifications in past six months)	(5)	(10)
Less than 1 hour a month	12	24
1 hour a month	7	14
2 hours a month	11	22
4 or more hours a month	4	8
Don't know	3	6
TOTALS	51	102

Very few of the respondents' needs can be satisfied by a simple look up of a wanted OCE Guide Specification; the great majority of users state that they usually have to have a hard copy of the specifications with which to work (Table 79).

Table 79. Where the Respondents Usually Use the OCE Guide Specifications

	F	%
(Do not use these specifications)	(9)	(18)
(Have not used these specifications in past six months)	(5)	(10)
Usually have to have a copy to take back to my desk	32	63
Usually just look up the information I need	3	6
About 50-50	2	4
TOTALS	51	101

Instruction in Use of VSMF System

Eighty percent of the respondents had received some instruction in the VSMF system and how to use it. Most received this instruction at briefings held by VSMF sales representatives. (See Tables 80 and 81.)

Table 80. Respondents Who Have Received Some Kind of Instruction in VSMF System

	F	%
Have received instruction	41	80
Have not received instruction	10	20
TOTALS	51	100

Table 81. Nature of Instruction Received in VSMF System

	F	%
(No instruction received)	(10)	(20)
Briefing by VSMF representatives	38	75
Informed briefing by colleagues	3	6
TOTALS	51	101

SECTION XII: DESCRIPTION AND COMPARISON OF THREE COMMERCIAL MICROFILM SYSTEMS

In this final section of the report, we present the results of study Phase II, an investigation of three commercially available systems that deal with vendor product information and specifications on microfilm. These three systems are as follows:

Visual Search Microfilm File (VSMF), available from Information Handling Services, Inc., Division of Indian Head, Inc.

Showcase Microfilm Library (SML), available from the Showcase Corporation

Automated Information Management (AIM), available from Specialized Business Services, Inc.

We first give factual descriptions of the three systems - their salient physical, technical, and operational characteristics, and their costs - and their similarities and dissimilarities are compared and contrasted. Thereafter, the systems are examined in terms of their responsiveness to specific Savannah District requirements, as established during Phase I of the study.

In an overall sense, the systems, regarded as totalities, are not really "comparable," for each system has features or has services to offer that are, if not unique, at least not common to the other two systems. This complicates the task at hand, but even moreso the task of determining which system might be best- or optimally-suited to a given situation or set of informational requirements. Nevertheless, for present purposes, there are certain fundamental system aspects that can be used as points for meaningful comparisons. Therefore, in the descriptive information furnished under the topical headings that follow, we focus our attention first on those areas where common grounds for comparison can be found and thereafter describe the unique or special features of each system in turn.

System Equipment

All three of the commerical services, VSMF, SML, and AIM, offer 16mm microfilm installations; uniquely, VSM also offers 8mm installations.

The subscriber to any VSMF 16mm microfile service may rent from VSMF, as desired by the client, the Filmac 400 C reader-printer (3M Company) or the Recordak Model PES reader-printer (Recordak Corporation). Subscribers to 8mm service may rent a portable, desktop-size viewer, the VSMF Satellite II. SML services offers to its system subscribers, for rent only, the Filmac 400 C

reader-printer. AIM also rents to its subscribers the Filmac 400 C reader-printer, but with a unique feature installed, the "Libraphone." The "Libraphone", to be discussed more fully later in this report, is an integral part of the AIM systems; briefly, it permits the subscriber to make direct telephone inquiries to an AIM information center in Rochester, New York, via leased wire. Optionally, the "Libraphone" may be installed on the subscribers existing microfilm apparatus.

The three services include in their rental prices storage racks for filing and quick access to the microfilm cartridges.

Space Requirements

Roughly, the VSMF, SML, and AIM systems occupy the same amount of space. In our first phase investigation of the users of the VSMF system in the Savannah District, it was found of paramount importance that the installation be located away from aisles and heavy foot traffic areas, but more preferably, in a small room or cubicle where the users can have the privacy they want in using the system. Under these conditions, a small cubicle of approximately 50 square feet will permit installation of any of the 16mm systems, with space enough for a small table placed there for users' convenience.

Operation of Equipment

As indicated earlier in this Section, a subscriber to any of the three services, VSMF, SML, or AIM, has several options with regard to microfilm reader or reader-printer equipment. He may use the equipment he has on hand, if any. He may rent equipment from the microfilm service to which he subscribes. Or he may obtain any other compatible equipment he desires according to his requirements and the resources he has available. With a very wide range of microfilm reader and reader-printer equipments now commercially available and the range being extended and improved year after year, point-by-point comparisons among these many equipments are thus beyond

the scope of this report. However, our findings during the first phase of this study reemphasize several important factors that are frequently overlooked, but should be considered by organizations which are faced with making comparisons and selecting equipment for microfile installations.

First, it may be said that all microfilm reader and reader-printer equipment in general use today is categorically "easy to operate;" mainly it is a matter of degree of ease. Our findings and the findings from other investigations indicate that, from the user standpoint, many individuals who have not been appropriately indoctrinated and familiarized with the operation of newly-installed equipment will shy away from the equipment and find it less than easy to operate - probably more accurately translated as "they are not at ease with the equipment." Regardless of the kind of equipment selected, the organization should plan on an appropriate program of equipment instruction and familiarization that will promote widespread and effective use of the system.

Second, it may be said that all microfilm reader and reader-printer equipment is categorically "speedy to operate" - passage of a reel of microfilm, even in the least automated reader, is measured in seconds, not minutes, and production of printout hard copies from all reader-printers in general use takes but a few seconds. Nonetheless, our findings in the Savannah District confirm the findings of other studies that aggravation and impatience are by no means uncommon among users - at having to pass a reel of microfilm mechanically, searching for the needed frames, and at the time it takes to do so. From this it can obviously be inferred that the more automatic the equipment and the faster the user may advance a microfilm reel to the precise frame he needs, the more satisfied the user will be and the easier it will be to encourage use of the system.

Third, the reliability of the equipment, its trouble-free history, and the ready availability of maintenance service when breakdowns occur are essential factors in the comparison and selection of equipment. The frustration of the user who depends on the system but cannot, even temporarily, get at the microfilmed information he needs is not hard to imagine. If it happens too frequently, we find, by analogy to other situations, that the user seeks other sources and media and avoids the microfilm installation.

Vendor Product Information

The VSMF microfilm service covering vendor product information is titled the Building Products File/Spec-Data II system; the comparable SML system is titled the Showcase Microfilm Library for the Construction Industry (SML-C) and the AIM system is titled the Automated Information Management Microfilm Vendor Catalog System II (AIM System II).

The VSMF Building Products File/Spec-Data II system contains catalog data from approximately 3,600 manufacturers. The system components, available in 16mm and 8mm configurations, are a catalog section, an index by the manufacturers included in the file, an index by brand names, and an index by product characteristics. The latter index, called the Product Selector, presents computer-generated data on the key characteristics of competitive or similar products, arranged in side-by-side order for comparison purposes.

In organization, this VSMF system employs the Construction Specifications Institute 16-Division Uniform Format for Construction Specifications. Subscribing organizations have several options available to them: subscription to all 16 Divisions, Divisions 1 - 9 only, Divisions 10 - 14 only, Divisions 1 - 14, or Divisions 15 - 16 only. The Product Selector may be ordered separately, if the other system components are not required.*

The SML-C system contains catalog data from roughly 4,000 vendors. The organization of the system also conforms to the 16-Division Uniform Format, with information filmed in product sequence for side-by-side comparison of competitive or similar products. Available in a 16mm configuration only, the index is arranged in four separate sections containing a cross-referenced Uniform System Division listing, product breakdown, trade names, and manufacturers listing.

A subscriber may obtain all 16 Divisions of the Uniform System or may subscribe to each Division singly, according to his needs. Division 1 (General Requirements) contains Corps of Engineer Guide Specifications and "selected" other specifications and standards. In all respects, the concentration of emphasis of the SML-C system is specifically on

* This VSMF system also offers for organizations concerned with process engineering, but at additional charge, a Process Engineering Supplement, containing catalogs from some 3,000 vendors, indexed by manufacturer and product. This Supplement is not subscribed to by the Savannah District.

the construction and architectural fields.

The AIM System II contains catalog information from some 8,000 vendors, with less emphasis at the moment on its coverage of the construction and architectural fields, although this area is being strengthened. Differing from the other two systems covered in this report, the AIM System II is organized on a catalog-by-catalog basis; information is not filmed in product sequence for side-by-side comparisons. Indexing is by brand name, manufacturer, and product type; the supplier, in his indexing system, is building toward a series of microthesauri, each specially developed and tailored to the needs of a specific field or environment.

All three of the systems being compared are updated on a regularly-scheduled basis. The VSMF Building Products File/ Spec-Data II system is updated every six months. Updating data for the SML-C system is issued quarterly, with total refilming performed annually. In the AIM System II, catalog updating is sent out every week and the cumulative indexes are prepared and issued monthly.

Subscribers may request, completely free of charge, that additional catalogs be entered into the systems - by special forms supplied to subscribers, in the case of the VSMF and SML-C systems; by telephone in the case of the AIM System II. The AIM System II Libraphone feature (unlimited-use leased wire telephone link to an information center in Rochester, New York) is encouraged for this purpose. When requesting that a catalog be added, the AIM System II subscriber can also ask the information center to have the hard copy catalog or pertinent portions of the catalog sent to him immediately for his interim use, as part of the service.

All three system suppliers are motivated and geared to obtaining up-to-date information from vendors and they attempt to detect and remedy situations when incomplete information is furnished. Purely promotional information on products is screened from the inputs.

Specifications and Standards

Each of the three suppliers being discussed in this report offer microfilm services in Military and Federal Specifications and Standards and in OCE Guide Specifications.

The VSMF Military and Federal Specifications File and VSMF OCE Guide Specifications File are available in both 16 mm and 8mm configurations. The OCE Guide Specifications File is programmed for semiannual updating, the Military and Federal Specifications File is updated every two months; however, "Hot Specs" are sent to subscribers every 15 days. These are the most recent changes and additions to the file, which are then merged into the first available regular addendum to the file.

As mentioned earlier in this Section, the SML-C system contains "selected" specifications and standards, including OCE Guide Specifications; however, a separate 16mm microfilm subscription service is available: the Showcase Microfilm Library of Military Specifications and Standards for Construction (SML-MSC). The SML-MSC system is updated every six months; in coverage, the specifications and standards pertain to construction only.

The AIM System II makes available two services, each of which can be subscribed to separately: AIM System II Microfilm Military Specification System and AIM System II Microfilm Military Standards System. Standards are updated every two months; specifications are updated every week, with cumulative indexes produced each month. Included in the subscription price is a weekly printed bulletin of the previous week's new and revised documents. Additionally, the service includes unlimited use of the Libraphone direct telephone link with the information center in Rochester, New York, whenever needed (e.g., to obtain a copy of an obsolete specification not on the microfilm file).

Unique or Special Aspects of the Systems

Under various of the foregoing topics in this Section of the report, we have already alluded to several unique or special features of the three commercial services being described. In the following paragraphs out intent is to highlight and provide added detail concerning the more significant of these features and also to mention other pertinent aspects of the systems that we have not yet discussed.

VSMF Building Products File/Spec-Data II System

By far the most outstanding component of this VSMF system - and unique among the three systems described - is the Product Selector. Computer-stored information - essential characteristics and parameters - pertaining to products are printed out and microfilmed in "Product Selector Grids." The Grids present the key data for all similar or competitive products in the file in a side-by-side arrangement that facilitates comparison of products and, within the limits of the vendors represented in the system, identifies all manufacturers or suppliers of the products. The user need not go to the catalog section of the system until he has determined which suppliers' products meet his basic requirements. It is also emphasized that, in utilizing this VSMF system, a user need only know one parameter or characteristic of the product in which he is interested. When he has found the product in the file all other key characteristics and the specifications for the product are listed there for him.

Another noteworthy and unique factor concerning this VSMF system is its availability not only in 16mm configurations but also in 8mm configurations. Where portability is an overriding consideration, organizations may subscribe to almost all components in 8mm files alone, as "Personal Data Stations," or as auxiliary systems for the basic 16mm stationary "Data Centers." VSMF 8mm Satellite II viewers (without print capability) may be rented or purchased from the supplier.

The VSMF Building Products File/Spec-Data II system is updated every six months, whereas the other systems are updated quarterly (SML-C) or even more frequently (AIM System II). Net growth of the VSMF file for the foreseeable future is expected to be about 600 vendors per update cycle or about 1,200 vendors per year, with 3,600 vendors already included as noted, since implementation of the Building Products File early in 1970.

SML-C System

A special characteristic of the SML-C service is its almost exclusive concentration on collecting, organizing,

and presenting vendor product information for the use of the construction industry. In this, it is unlike the other two commerical systems; the scope of products covered is narrower, even though it does include data of use to individuals other than architects and engineers in the construction field. With this narrower scope of products covered, it may be expected that coverage of the construction products that are included will be more extensive.

The specially-developed thesaurus included in the five-part index to the files is apparently a valuable asset to the users for performing searches of the files. The system of cross-referencing among index terms appears highly developed and comprehensive and specially tailored to the construction industry.

The SML-C system, as noted previously, is updated every three months, which is more frequently than the VSMF system but less frequently than the AIM system. With some 4,000 manufacturers of products for the building industry already represented in the system, net growth is forecast at about 400 new vendors per year for the immediate future.

AIM System II

The Libraphone component of the AIM System II, already mentioned earlier in this Section, is a unique and noteworthy feature. The telephone is installed on the subscriber's existing microfilm reader-printer equipment or on reader-equipment rented or purchased from the AIM supplier. As noted, the installation of this system gives the subscriber unlimited direct voice link, via leased wire, with Specialized Business Services', the supplier's information center in Rochester, New York; this center is manned by trained information specialists who stand ready to provide a number of different services, such as the examples listed below:

1. Advice and assistance to any of the subscriber's personnel in how to look up specific information in the data files; or the information specialist will find the wanted data and, if it is in the system, will provide the user with the directions necessary to locate it.

2. If wanted data is not in the system, the information specialist will check to see if it is already

in-process for the next update cycle and, if so, will find the information needed, relay the information, and mail a copy of the catalog data, if desired by the client.

3. Subscribers are encouraged to use the Libraphone to request the addition of new catalogs to the system; a user may also ask to have an entire hard copy catalog mailed to him - the information specialists will telephone the manufacturer and request that it be sent directly to the user.

To date the organizations subscribing to this system utilize the service an average of 6.6 times daily, according to the supplier.

At this writing, the supplier has just augmented the Libraphone-information specialist service link with a Computer-Assisted Product Search (CAPS) capability. The information specialist at the supplier's information center takes the product search request verbally over the Libraphone, punches the inquiry into a data terminal, on-line to the computer-stored data bank, and, from a cathode ray tube (CRT) display of the search results, reads back to the user the exact cartridge and odometer location of all information on the product in question.

The AIM System II, with some 8,000 vendors - primarily industrial suppliers - represented in the system, is expected to have a net growth of about 1,500 new vendors per year during the next few years, with more emphasis being placed on building products suppliers than has heretofore been the case. As noted, AIM System II is updated more frequently than the other two commercial systems discussed here. Catalog data is updated weekly, but the cumulative indexes are produced bimonthly. To overcome this discrepancy in the update cycles of the two components, the subscriber makes use of his Libraphone service to check most recent information in the system with the supplier's information center in Rochester.

Subscription Costs for the Three Systems

Comparison of subscription costs among the three systems under discussion is considerably complicated by the fact that each supplier offers certain basic services, but in addition,

a significant number of options and variations on options. To avoid likely confusions, we compare, first, a basic microfilm service from each of the three suppliers that will provide the subscriber with both vendor product information and specifications and standards, all in 16mm configurations. In the comparisons below, the cost for rental or purchase of reader or reader-printer equipment is omitted, since this is subject to the desires of the subscribers and a number of other variables, as noted earlier in this report.

VSMF	No. of Units	Annual Rate
Building Products File (16mm)	1	$4,147
Military and Federal Specifications (16mm)*	1	3,015
Total Annual Subscription:		$7,162

SML	No. of Units	Annual Rate
SML-C (Vendor Catalogs, 16mm)	1	$2,160
SML-MSC (Military and Federal Specifications, 16mm)	1	1,890
Total Annual Subscription:		$4,050

AIM	No. of Units	Annual Rate
AIM System II (Vendor Catalogs, 16mm)	1	$3,249
AIM System II (Military and Federal Specifications, 16mm)	1	2,408
AIM System II (Military and Federal Standards, 16mm)	1	427
Total Annual Subscription:		$6,084

The foregoing information shows that, for the basic 16mm installations, the VSMF installation subscription rate is the highest; the rate of the AIM installation is 85% of the VSMF rate; and the rate of the SML installation is about 60% of that of the VSMF rate.

* OCE Guide Specifications are free of charge.

The existing microfilm installations in the Savannah District are supplied by VSMF. They include a stationary VSMF 16mm Data Center, with 16mm Building Products File and Military and Federal Specifications, plus five satellite 8mm Personal Data Centers with Building Products Files only. The first phase of this investigation in the Savannah District indicated that the number of satellite Centers could reasonably be reduced from five to two. Therefore, in our next comparison which follows here, we show first what would be the Savannah District's annual costs (excluding reader-printer equipment) for a VSMF 16mm stationary Data Center and two VSMF 8mm satellite Centers. Thereunder, we show the annual subscription costs (again, excluding reader-printer equipment) for the most nearly comparable SML and AIM services.*

VSMF

Data Center	No. of Units	Annual Rate
Building Products File (16mm)	1	$4,147
Military and Federal Specifications (16mm)	1	3,015
Satellite Centers (2)		
Building Products File (8mm)	2	4,234
Total Annual Subscription:		$11,396

* The reader is reminded that neither SML nor AIM supply 8mm systems, therefore the satellite Centers from these two suppliers are shown as 16mm systems in our cost comparisons with the VSMF system.

SML

Data Center	No. of Units	Annual Rate
SML-C (Vendor Catalogs, 16mm)	1	$ 2,160
SML-MSC (Military and Federal Specifications, 16mm)	1	1,890
Satellite Centers (2)		
SML-C (Vendor Catalogs, 16mm)	2	4,320
Total Annual Subscription:		$ 8,370

AIM

Data Center	No. of Units	Annual Rate
AIM System II (Vendor Catalogs, 16mm)	1	$ 3,249
AIM System II (Military and Federal Specifications, 16mm)	1	2,408
AIM System II (Military and Federal Standards, 16mm)	1	427
Satellite Centers (2)		
AIM System II (Vendor Catalogs, 16mm; Auxiliary System without Libraphone link)	2	4,210
Total Annual Subscription:		$10,294

For the installations shown above, the annual subscription rate is highest for the VSMF services, followed by the AIM services (about 90% of the cost of the VSMF services), and then, by the SML services (about 75% of the cost of the VSMF services).

Responsiveness to Savannah District Requirements

All three of the commercial microfilm systems under discussion in this report contain valuable engineering data and offer informational services highly beneficial to architects, design engineers, specifying engineers, and related professions. Additionally, all three of the services are continually striving, through improvements and new system features, to make their systems more responsive to users' actual needs. In fact, changes were introduced or were in planning stages throughout the time that this report was being prepared.

At any given point in their development, to evaluate these three systems and rank them according to the relative superiority of each is meaningless if done in vacuo. Rather, each system must be examined and considered in light of what is known about the environment in which the system is to function - more specifically, the environment of the system users and their needs.

In the present case, we are concerned with the three competitive services and their relative suitability for fulfilling users' requirements specifically in the Savannah District, Corps of Engineers. Based on the results of the survey of the users there, carried out during the first phase of this study, it is concluded that the VSMF system, the one presently installed in the District, is the service best-suited to the needs of those users.

The fundamental reason for reaching this conclusion is the vital matter of scope of coverage. The VSMF files, in scope, are more all-inclusive than the other two systems; beyond this, catalog information from about 350 additional suppliers is in the process of being included in the system at the specific request of Savannah District users. The SML system focuses more narrowly on catalog data (and specifications and standards) for the construction industry - this is, in fact, a special feature of the SML system. Conversely, the AIM system is at present very light in its coverage of construction and building products information. In a manner of speaking, the SML and AIM systems, in scope of coverage, may be considered opposites, with neither matching the VSMF scope at present.

As mentioned earlier in this report, the AIM system has plans for strengthening its service in architecture, construction, and allied fields. When that has been accomplished the Savannah District may then find that the AIM installation is technically as well as economically more advantageous and better suited to District needs, particularly in view of the forward-looking services that AIM offers through its Libraryhome feature and its rapid response computer search capabilities.