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IN-HOUSE INFORMATION SYSTEM (IHIS) STUDY/PROJECT REPORT.(U)  
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IN-HOUSE INFORMATION SYSTEM (IHIS)

October 1980

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STUDY/PROJECT REPORT .

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Lack of a systematic information policy in the Seattle District Army Corps of Engineers resulted in inefficient use of internal information and staff time. After the problem was analyzed by the District's library staff, an in-house computerized information storage and retrieval system was tested. A sample of in-house reports was indexed and input into the local Harris computer utilizing FAMULUS software. The final analysis of the sample determined that the FAMULUS software was insufficient to manipulate the large file. The study		

20. team recommended that the purchase of large file, bibliographic oriented software be made to allow a larger file size and more sophisticated searching capabilities.

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## IHIS PROJECT REPORT

### PREFACE

"Information conserves other resources through improved decisions."<sup>1</sup>

What is information worth? The right information can be the most important thing agency leaders can have. It can mean the difference between a good decision and a bad one. However, only rarely do agencies take the steps necessary to fully conserve this valuable resource.

<sup>1</sup> Dr. John Richardson, U.S. Department of Commerce, ACM 70 Conference 1970.

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## IHIS PROJECT REPORT

### PART I: IN-HOUSE INFORMATION SYSTEM STUDY

#### 1. CURRENT SITUATION

This study describes the information situation within the Seattle District Corps of Engineers as it existed from November 1978 to March 1980.

##### a. PRODUCTION

The Seattle District produces a variety of materials in the accomplishment of their mission. For this report, we have only studied materials relating to the Engineering function of the District. (See Appendix A: Materials Examined for IHIS Study.)

There is no single regulation governing the format, contents, and initial distribution, etc. of Corps generated reports. (See Appendix B: Some Regulations Governing Writing of Local Reports.)

No policy currently exists on a local or national level regarding indexing, storage and retrieval of these materials. Locally generated reports and data are handled in a haphazard manner and are often unretrievable shortly after their generation.

##### b. INDEXING

There is no single method of finding out what information materials exist in the District Office. Many people rely on hearsay or the memories of present long-time employees. Materials are scattered throughout the various branches and sections. There has been some effort to centralize reports, maps, and engineering drawings in Engineering Division, Service Branch, however, their collection is far from complete, and only goes back 10 years at most. Any information older than 10 years could be anywhere throughout the District; it could have been destroyed long ago, or it may never have existed. Many branches try to index or organize their materials in some manner. However, employees outside the branch/section are generally unaware that any system exists.

##### c. RETENTION/STORAGE

(1) Material location is not controlled. They are found throughout the branches and divisions of the Corps District. Engineering Division alone has over eight different formal locations for in-house materials. Many employees simply retain those items which they feel are essential to their work. With no central responsible employee or entity, material (some one-of-a-kind items) can be lost or misplaced permanently.

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(2) If the branch does provide file supervision, the employees decide which materials to keep, how long to keep them and when to transfer them to the Records Holding Area. In this case, material retention depends on the judgment of the present employee(s) in charge of the files and may change with these employees.

### d. RETRIEVAL

(1) Few branches provide enough file supervision to insure that materials are retained and not permanently borrowed. No listing exists to tell what material is available. If information is over 10 years old, it is usually irretrievable. Attitudes toward inter-office resource sharing are poor because there is no functioning system which will guarantee that the information will be available when needed.

(2) Important documents disappear regularly and searching is avoided at all costs.

## 2. CONSEQUENCES OF THE LACK OF INFORMATION POLICY.

As delineated above, the present situation is extremely costly and affects many aspects of the Corps' general efficiency.

a. Duplication of effort occurs throughout the District Office as managerial planning and clerical tasks concerning document maintenance functions are assumed by many different sections. Due to the lack of centralization, documents are indexed, stored and retrieved more often than necessary.

b. The manual search and retrieval methods required are time-consuming. With no centralized indexing system, it is difficult for the employees to know what type of resources are available or if they even exist. The different methods of material organization among branches requires knowledge of each indexing system to be searched effectively. Since background material on past projects is ineffectively organized, District employees lead long, frustrating searches. Wasted employee time means wasted Government money.

c. If the searches are too long and frustrating, the researcher may avoid any subsequent searching, especially if his/her efforts were fruitless. Even more costly than a time-consuming search, may be the duplication of work because documents reporting a similar project cannot be found.

d. Every time District employees cannot locate our own documents or cannot amass necessary data an unresponsive, inefficient attitude is transmitted to the public and to Corps' employees.



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e. Finally, lack of information results in a passive and reactive organization. Future trends or opportunities cannot be anticipated, if the employees haven't got the right information.

### 3. GOAL

Establishment of a coordinated information handling system to reduce Corps costs, improve employee productivity and public relations, and ultimately produce a more active and responsive organization.

4. RECOMMENDATIONS TO IMPROVE AND STANDARDIZE DOCUMENT HANDLING The procedures recommended in this report emphasize maximum utilization of existing systems and services, to provide the greatest impact at the least cost to the Corps.

Different types of information cannot be handled in the same manner. Full-text databases, bibliographic databases, computer graphics and statistical databases are possibilities which can be combined to handle the various types of information. Decisions made in this area must first take into account the type of information involved.

a. REPORTS require at least two control systems: (1) a bibliographic database to search to determine if information exists on a subject (an index to the collection) and (2) the text of the document retained in hard copy, microform, or machine-readable form.

#### (1) Bibliographic Database

A bibliographic database allows the searcher to retrieve relevant citations to reports on the subject or geographic area in which he/she is interested. The searcher can obtain a list of citations from the database through multiple access points (i.e., report number, title, location of report, project name or geographic area). Also, from this printout the searcher knows what was available and is able to choose from this list the materials he/she needed and then examine only those items. Such a database can be constructed in two ways: (1) by building a local bibliographic database, or (2) by submitting all locally produced documents to the Defense Technical Information Center (DTIC) for inclusion in their DROLS database system.

In the Seattle District, we have chosen the use of both methods. A local bibliographic database has been built for our retrospective reports. Our current and future reports will be sent to DTIC for inclusion in their database.

(2) Document Retention The text of the actual document can be retained in hard copy, microform or machine-readable form.

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### (a) Hard Copy.

A limited supply of hard copy documents can be kept locally until microforms are available. Since the District's own reports are most often needed locally, they should be retained locally.

### (b) Microfiche

When locally produced reports are sent to DTIC for inclusion in their database, the Districts, Division, and Headquarters can all keep copies of these reports in microfiche. The DTIC database can be used as an index and permanent repository for Corps of Engineers reports. Distribution of the reports can be limited under necessary circumstances.

### (c) On-Line Full-Text Database

The next step would be to have the full-text of the reports on-line. Because of the expanding use of Word Processing equipment within the Corps, it seems natural that some interface between Word Processing equipment and local or centralized computer systems could make these documents totally on-line, full-text retrievable in the near future. The reports now contained on the Word Processing equipment could be the beginning of the full-text database. Together, the databases would give the Corps control over and accessibility to its reports. If the reports are on-line full-text, one need only go from the bibliographic database to the full-text database for the report; the report would be as close as the nearest terminal. Software capable of manipulating a full-text database of this potential size would have to be acquired in order to do this. Many of the legal database systems have such software already.

## b. DATA

### (1) Cartographic Data

Locally generated maps and engineering drawings could be easily retained if they are converted to aperture card microformat. But in addition to this, forms of computer graphics should be investigated.

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The National Cartographic Information Center (NCIC), established by the U.S. Geological Survey, Department of the Interior, in July 1974, provides a national information service to make cartographic data of the United States easily accessible to the public and to various Federal, State, and local agencies. At present, more than 30 Federal agencies collect and prepare cartographic data. The cartographic data include maps and charts, aerial photography, geodetic control data, and map data in digital form. For further information, write to the National Cartographic Information Center, U.S. Geological Survey, 507 National Center, Reston, Virginia 22092, or call (703) 860-6045.

### (2) Hydrologic Data

The Geological Survey and the Environmental Protection Agency already collect and monitor water data. The Corps could input any additional data needed for its operations into these existing databanks or contract with the databank agency to do this. Since the systems already exist to handle this data, the Corps should emphasize development of software to effectively analyze the data from these systems.

#### (a) U.S. Geological Survey Databanks

##### (1) Water Data Storage and Retrieval System (WATSTORE)

The U.S. Geological Survey, through its Water Resources Division, investigates the occurrence, quantity, quality, distribution, and movement of the surface and underground waters that comprise the Nation's water resources. It is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the Geological Survey's prior program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. General inquiries about WATSTORE may be directed to: Chief Hydrologist, U.S. Geological Survey, 437 National Center, Reston, Virginia 22092.

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(2) National Water Data Exchange (NAWDEX) has been established to help users of water data to locate and acquire needed data. NAWDEX is not a large depository of water data. Rather, its objective is to provide the user with sufficient information to define what data are available, where these data may be obtained, in what form the data are available, and some of the major characteristics of the data. Requests for services or additional information related to the NAWDEX program may be directed to: National Water Data Exchange, U.S. Geological Survey, 421 National Center, Reston, Virginia 22092, Telephone: (703) 860-6031, (FTS) 928-6031.

### b. U.S. Environmental Protection Agency

STORET is a computerized data base utility maintained by EPA for the STORAGE and RETRIEVAL of parametric data relating to the quality of the waterways of the United States. For further information, contact STORET User Assistance, Washington, D.C. Telephone: (202) 426-7792 or (800) 424-9067.

c. CHROMS is the North Pacific Division (NPD) Corps of Engineers Hydrologic-Meteorological monitoring system. Hydrologic and Meteorological data from NPD Corps projects is collected, monitored and compiled on a continuing basis so that the Districts/Division can monitor activities at its projects. For further information, contact Richard McLaughlin, NPSEN-HH-WM, telephone (206) 764-3544 or FTS 399-3544.

### (3) ENGINEERING DATA

The Government-Industry Data Exchange Program (GIDEP) is a cooperative data exchange among Government and industry participants seeking to reduce or eliminate expenditures of time and money and improve system reliability by making maximum use of existing knowledge. The program provides a means to automatically exchange certain types of data essential in the research, design, development, production, and operational life cycle of systems and equipment.

Detailed participation requirements of additional information concerning the GIDEP data interchanges may be obtained by contacting the Officer-in-Charge, GIDEP Operations Center, Corona, California 91720, Telephone: (714) 736-4677; Autovon: 933-4677. The GIDEP database has recently become available on the Department of Energy's RECON System.

## 5. CONCLUSION

As one can see, there are a large number of existing Federal information systems which the Corps could use to centralize and broaden its access to its own and other Federal agency data.

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### PART II: IN-HOUSE BIBLIOGRAPHIC DATABASE - DEMONSTRATION PROJECT

From March to December 1980, an In-House bibliographic database of local District reports was created. This database can be searched on the initiation of projects to determine what has been done locally in a particular geographic area or on a particular project.

#### 1. SCOPE

This initial study was limited to reports from Engineering Division which support the Corps' engineering function. For a listing of the types of reports included see Appendix C: Document Type Codes.

The files in the Service Branch of the Engineering Division contained eighty-eight drawers of files of local reports most of them produced within the last 10 years. It was estimated at the beginning of the project that approximately 1300 such reports existed.

#### 2. HARDWARE AND SOFTWARE

a. HARRIS HARDWARE. Harris was chosen because it was available locally and inexpensive.

b. FAMULUS PROGRAM. After reviewing suitable software compatible with the Harris computer, the FAMULUS program was selected due to its low cost and flexibility. Other software studied included: NASA RECON/STIMS, BIBSYS, NIPS, CADMAT, LIRS ASRES-ASRDI, Battelle BASIS, Aspen Systems, Lockheed DIALOG, Cullinane DBMS, SYSTEM 2000, TOTAL and QL Information Retrieval System. These programs required either a large capital investment or could not be used on available computers.

The FAMULUS program was developed by the U.S. Forest Service in the late '60s as a documentation system for researchers. It allows records to be sorted on any combination of fields for hard copy printouts. The system can be searched interactively with user-assigned search terms, on any or all record fields with boolean operators. This capability enables retrieval of citations on any subject or geographic locations or by title, corporate source, etc. Records could be input on-line through the FAMENTER program, thereby eliminating any coding. For a further breakdown of FAMULUS capabilities, see Appendix D.

#### 3. RECORD FORMAT

A format was developed to provide identifying information for each report. Appendix E explains the formation of each data element. Since the computer only recognizes strings of characters, consistency in spacing, punctuation, spelling, and uniformity of indexing were stressed to increase the efficiency of the system.

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(RN) Report Number Field contains the unique number assigned by the database manager for each report following ANSI Standard Z39.23-1974. For example, CE/NPS/DES-77/0001 stands for Corps of Engineers/North Pacific Seattle District/ the Document Type Code - (two digits for the year)/(four digits for a consecutively assigned number for each year). The only exceptions to this were WES reports and House and Senate documents. In these cases, the WES report number or the House/Senate document number was used.

(LO) Location Field contains the mailstop and drawer number in which the document is filed. NPSEN-SV; DW88 is the Service Branch mailstop and drawer number 88.

The first two codes in the RN and LO Fields were constant. To save input time, this information was machine-assigned after the file was completed.

(TI) Title Field. The report name or location introduces this field. The type of report follows separated from the report name by "space colon space."

(DA) Date Field. The date appears in numbers, the first two signify the year, the second two, the month, and the last two, the day, i.e., YYMMDD.

(NT) Note Field. This field includes pagination and descriptive notes, telling whether maps, graphs, appendices, or a bibliography, is included.

(GE) Geographic Field. This field contains geographic names like cities, towns, rivers, project names, and zip code designations. The semicolon (;) is used as a delimiter. The plus sign (+) was added to the end of major descriptors to identify primary geographic areas or projects. Use of this symbol enhances the precision of search results. A Project/Geographic Authority List was developed during the input process.

(NO) Number Field. The USGS Basin numbers and county codes were machine generated from GE Field descriptors.

(DT) Document Type Field. The document type was also machine generated through a conversion index from the three-letter document code in the RN field. See Appendix C: Document Type Codes.

## 4. FILE BUILDING

The database manager scrutinized eighty-eight drawers of files in Service Branch of the Engineering Division. For each report, she recorded pagination and geographic and/or project names.

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The FAMENTER program facilitated loading the bibliographic information into the local Harris computer. The program displayed prompts for each field of a record, data was input and a Harris work file was created. The database manager subsequently stored, combined, and finally transferred the file into FAMULUS.

The Database Manager continually reviewed records for uniform entry, authority of descriptors and accuracy. The FAMULUS capability to generate an index of the Geographic field, allowed the manager to obtain an index periodically for on-going creation and clean-up of the authority list of place names and project names. A record of the Document Type Codes used in the RN Field and their corresponding designations was maintained throughout the project, which ultimately resulted in the Document Type Codes (Appendix C).

When input was complete, the database manager prepared a conversion index for the cleaned-up authority list for both the Geographic Field and the Document Type Codes of the final file. From the GE conversion index, she assigned county codes and basin codes to generate the NO field. In a similar manner, the DT (Document Type) Field was produced from the RN (Report Number) Field.

### 5. MAINTENANCE

New records are not added to the retrospective information file. Instead the bibliographic data from new reports is submitted to DTIC for inclusion in the Defense RDT&E on-line system (DROLS). (See Appendix F: DTIC local regulation.) The DTIC liaison in the District Library reviews and edits the DDI473's and sends the reports to DTIC.

Submitted reports are available for searching on the DROLS bibliographic database and the text of the report is available in microfiche and on paper copy.

### 6. SYSTEM EVALUATION

a. The local Harris 120 Computing System performed unreliably. Almost routinely, it went down during the input processing, permanently losing new data. After 2 weeks downtime, when the Harris underwent extensive repairs, the System's dependability increased substantially.

b. Famulus Software is limited by its batch system origins. The command language, geared for card input, is very cumbersome for online interactive usage. At least five consecutive commands are required in order to execute any operation. Errors occurring during the execution of commands cannot be corrected, and the multi-step command must be reentered in full.

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Editing is awkward with Harris and FAMULUS. There is no global editing feature in Harris. In FAMULUS, one has to produce a card deck of corrections to merge with the original file to do global editing. Once a line has been sent during the Harris input process, it is very difficult to make corrections. Harris has an eighty-one character line and if corrections are needed subsequent lines in the same field may also have to be changed.

As mentioned before, FAMULUS requires a long chain of commands in order to edit and another long chain of commands to make sure the editing has been done properly. The lesson is simple--never make a mistake!

An additional problem of the FAMULUS software is the file size limitation which was not discovered until we exceeded the program capacity of 750 records. If this limit cannot be overcome by in-house ADP personnel, the IHIS file will have to consist of several files instead of one combined file. To search all reports would require an independent search on each file which would be rather inconvenient.

Finally, another retrieval problem with the FAMULUS software is the automatic truncation in the search mode. This problem causes numerous false drops. For example, when searching DAM, it will retrieve DAMP, DAMAGE, DAMN,, etc.

### 7. RECOMMENDATION

Purchase software which will allow a larger file size, ease of editing, a more sophisticated searching capability, and more flexibility, in general.

Without access to suitable software, construction of any type of "user friendly" bibliographic database is almost impossible.



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## APPENDIX A: MATERIALS EXAMINED FOR IHIS STUDY

<u>SECTION</u>	<u>MATERIAL TYPE</u>	<u>APPROXIMATE NO.</u>	<u>BIBLIOGRAPHIC NO.</u>
Service Branch	Reports *	800-900	800-900
	Design Memos	400	400
	Charts	500	450-500
	Viewgraphs	1,600	1,200
	Other *	1,200	1,000
Map Records	Engineering Drawings	24,000	5,000-10,000
	Water Surface Profiles	3,000	3,000
Survey-Photo- grammetry	Photos *	4,400	4,000
	Topographic maps	450	450
Survey- Computation	Fieldbooks	3,250	3,250
	Profile points	11,000	2,800
H & H	Bridge data	2,000	2,000
	Cross sections	2,000	2,000
	Frequency curves	1,000	<u>1,000</u>
TOTAL			27,150-32,300

* <u>Reports:</u>	Advanced engineering & design reports	Other *:	Congressional Documents
	Beach erosion control studies		
	Comprehensive basin studies		
	Continuing authority studies	Public Information - hearings brochures	
	Environmental impact statements		
	Flood control studies		
	Flood insurance studies	Photos *: Aerial flood photos	
	Flood plain reports		
	Historical flood studies		
	Navigations studies	Control photos	
	Special studies		
	Miscellaneous		
		Reconnaissance photos	
			Surveillance photos

# THIS PROJECT REPORT

## APPENDIX B: SOME REGULATIONS GOVERNING WRITING OF LOCAL REPORTS

<u>Document Type</u>	<u>Authority</u>
Aquatic Plant Studies	ER 1130-2-412 28 May 76
Authorization Reports	ER 1105-2-903
Beach Erosion Control	EM 1110-2-3300
COE Annual Report	ER 335-2-5 ER 1105-2-302
Continuing Authorities Program	ER 1105-2-50 3 Nov 75
Coordination of Reports	NPSen SOP 1 10 Sep 76
Cultural Resources	ER 1105-2-460
Dam Safety Phase I Inspection Reports	EC 1110-2-188 30 Dec 77 App. E
Design Memorandums	EC 1110-2-193 20 Apr 79 App. A
District Engineer Review of Reports	NPSen SOP 2 10 Sep 76
Embankment Criteria & Performance Report	ER 1110-2-1901
Environmental Impact Statements	Draft ER 200-2-2
Feasibility Reports	Format ER 1105-2-403 (I) Content ER 1105-2-920 (?)
Forms & Reports Control (Ch 1-6)	ER 405-1-11
Guidelines for Assessment of Economic, Social and Environmental Effects of Civil Works Projects	ER 1105-2-105

# THIS PROJECT REPORT

## Document Type (con.)

## Authority (con.)

Hydropower Reports	EM 1110-2-1701
Major Rehabilitation	ER 1130-2-417
Manuals	ER 1130-2-304
Master Plans	ER 1130-2-410 & Changes
Planning Reports	ER 1105-2-401
Post Authorization Studies Phase II Draft	EC 1110-2-193
Post-Authorization Studies - Phase II	ER 1110-2-1150 20 Apr 79
Preparation of Post-Authorization Reports	NPSN SOP 4 5 Dec 79
Preparation and Coordination of Environmental Statements	ER 1105-2-507, 15 Apr 74, superseded by ER 200-2-1 dtd 27 Jun 79
Publication within OCE	OM 310-1-4
Recreation Reports	ER 1130-2-409
Special Flood Hazard Info Reports (Distribution)	EP 1165-2-302 EP 1165-2-303
Survey Investigation and Reports - General Procedures	EM 1120-2-101 Jun 1956

# THIS PROJECT REPORT

## APPENDIX C: DOCUMENT TYPE CODES

### REPORTS

APR	Appraisal Report	OPR	Operations Report
ARC	Archaeological Reconnaissance	PDV	Potential Development Report
ATR	Architectural Treatment Report	PIM	Potential Impact Report
BBL	Bibliography	PLS	Plan of Survey
BEC	Beach Erosion Control	PEX	Potential Expansion
BPI	Basic Project Information	PNR	Planning Report
CAU	Continuing Authority	PRE	Preliminary Examination Report
CBS	Comprehensive Basin Study	PRG	Progress Report
CIR	Community Impact Report	PST	Plan of Study
CKP	Checkpoint 1 Report	RCR	Reactivation Report
CNP	Construction Progress	REC	Recreation Report
CPT	Concept Study	RLR	Relocation Report
DMR	Damage Reduction	RSM	Reservoir Regulation Manual
DFP	Definite Project Report	RVR	Review of Report
DAN	Design Analysis	RRD	Run of River Development
DMO	Design Memorandum	SOI	Soil Investigation Report
DPR	Detailed Project Report	SPS	Special Study
DES	Draft EIS	SRR	Survey/Review Report
EIS	Environmental Impact Statement	STB	Structural Behavior
ENA	Environmental Assessment	THY	Tidal Hydraulics Report
EXC	Baseline Study/Existing Conditions Report	TIM	Time Study
FES	Feasibility Report	TRM	Termination Report
FRC	Field Reconnaissance	TYR	Treaty Report
FSW	Fish & Wildlife Report	WIS	Wild & Scenic River Study
FLC	Flood Control	WMS	Potential Wildlife Mitigation Site Evaluation
FLH	Flood Hazard	WQR	Water Quality Report
FIS	Flood Insurance Study	WRS	Water Resource Survey
FLP	Flood Plain	WTI	Wetlands Inventory
FND	Foundation Report		
GDM	General Design Memorandum		
GEO	Geology Report		
HFL	Historical Flood		
HMS	Hydraulic Model Study		
ICR	Incident Report		
IDX	Index		
INF	Information Bulletin		
JSR	Justification Report		
LIM	Limnology Study		
LWR	Land & Water Resource Study		
LTR	Letter Report		
MDD	Debris Disposal Method Study		
MTL	Materials Investigation		
NVS	Navigation Study		
OMM	Operations & Maintenance Manual		

## THIS PROJECT REPORT

### PUBLIC INFORMATION

ADS	Address
DCB	Data for Conference Briefing
MIN	Minutes
PRC	Proceedings
PBW	Public Workshop
PBH	Public Hearing
PBB	Public Brochure
PAM	Pamphlet

### ECONOMIC DATA

COS	Cost Estimate
ECA	Economic Analysis
ECD	Economic Development

### DESIGN/CONSTRUCTION

DAN	Design Analysis
DMO	Design Memorandum
FIR	Pilot Repair
PEX	Potential Expansion Report

### LEGISLATIVE

CON	Congressional Document
COH	Congressional Hearing
HDC	House Document
SCP	Senate Committee Print
SDC	Senate Document

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### APPENDIX D: FAMULUS SEARCH PROGRAM CAPABILITIES

#### FEATURE DESCRIPTION

---

##### a. User control and interaction:

- |  |     |
|--|-----|
| (1) Online instruction (e.g., user-initiated<br>HELP and EXPLAIN commands)                     | No  |
| (2) Online database descriptions and search field display                                      | No  |
| (3) Clear prompting for user input (so user knows when and what<br>choices are offered)        | No  |
| (4) Simplicity of entry format   | No  |
| (5) Error messages (with enough explanation for user to<br>understand and correct the problem) | Yes |

##### b. Search input and processing:

- |  |                        |
|--|------------------------|
| (1) Direct entry of Boolean logic and search terms in one<br>step          | Yes                    |
| (2) Availability of previous "sets" for further use in search<br>statement | Partial                |
| (3) Online display of dictionary   | Yes (Index<br>program) |
| (4) Nested logic (e.g., using parentheses)                                 | Yes                    |
| (5) Truncation   | Automatic              |
| (6) Direct searching of all relevant fields in the record                  | Yes                    |
| (7) User control of fields searched  | Yes                    |
| (8) Ability to search multiword terms                                      | GE field only          |
| (9) Direct search for single words within multiword terms                  | Yes                    |
| (10) Sequential searching of print file                                    | Yes                    |
| (11) System repeat of terms with no postings                               | No                     |
| (12) Online display of search history                                      | Yes                    |

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APPENDIX D: FAMULUS SEARCH PROGRAM CAPABILITIES (con.)

FEATURE DESCRIPTION (con.)

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c. Display and output of results:

(1) Predetermined print formats	Yes
(2) Online specification of print format	Yes
(3) Ability to print from any set created during the search	No
(4) Ability to print selected items from within a set	Yes
(5) Ranked output	No
(6) Sequential numbering of items in printout	No
(7) Labeling of fields in printout	Optional
(8) Offline printing	Yes

List of features taken from: Boyle, Stephen O. and Miller, A. Patricia, "Feature Comparison of an In-House Information Retrieval System with a Commercial Search Service" Journal of the American Society For Information Science, v. 31, #5, September 1980, Table 4.

## THIS PROJECT REPORT

APPENDIX E: RECORD FORMAT

FIELD ABBREVIATION	FIELD NAME	STANDARD
RN	Report number EXAMPLE: CE/NPS/DES-77/0001	ANSI Z39.23-1974 PB277 951 p. 38
LO	<u>Mailstop</u>  NPSEN-SV; DW88  <u>Machine assigned</u>	Seattle District Phone Book
TI	Title	PB277 951 p. 27-29
DA	Date	YYMMDD  781030
.GE	Project names  Geographical names Cities, towns, rivers, Ex: GRAYS HARBOR LIBBY MT	Project/Geographic Authority List  Uniform name with zip code for States other than WA
NO	Number <u>Machine assigned from</u> Geographic field Basin #; county codes River miles, etc. Longitude & latitude	
DT	Document type  <u>Machine assign</u> according to report number	PB277 951 p. 38 + our list



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APPENDIX F: DTIC LOCAL REGULATION

DEPARTMENT OF THE ARMY  
Seattle District, Corps of Engineers  
P.O. Box C-3755  
Seattle, Washington 98124

NPSOM 5-1-2

NPSAS-L

Office Memorandum  
No. 5-1-2

October 1980

Management  
SUBMITTING DISTRICT REPORTS TO THE  
DEFENSE TECHNICAL INFORMATION CENTER (DTIC)

1. Purpose. Establish policies and prescribe procedures for the Seattle District to submit local reports and contract reports to DTIC.

2. Reference. AR 70-31  
AR 70-45  
ER 1105-2-920  
MIL STD 847A  
ER 5-1-4, App. F  
DD 1473  
DARS 4.2111

3. Applicability. It applies to all Seattle District elements that direct, administer, perform or support research, development, test and evaluation in all RDT&E categories. Technical information needed for or resulting from engineering studies or scientific investigations related to military construction and civil works is included. Excluded are local circulars, pamphlets, manuals, office memorandums, etc., that are indexed in the NPSP 310-1-1 and design memorandums.

4. Procedures.

a. The Chief Librarian will be designated as liaison with the Defense Technical Information Center (DTIC) to coordinate submission of reports.

b. The Project Manager/Contractor will prepare DD Form 1473, Report Documentation Page, to be inserted as the first page of the report, in accordance with AR 70-31 and MIL STD 847A.

c. The Project Manager will assign a limitation statement in accordance with AR 70-31, and will indicate the distribution on DD Form 1493.

THIS PROJECT REPORT

d. At the time of publication, the Project Manager/Contractor will send three copies of reports with completed DD1473's to the District Library.

e. After initial distribution and a reasonable time for additional requests, extra copy stockpiles may be disposed of, since additional copies will be available from DTIC in microfiche and hard copy.

FOR THE DISTRICT ENGINEER:

1 Appendix

APP A Completed DD Form 1473  
(Sample)

DATE  
FILMED  
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