FINAL REPORT ON
A LOGISTICS SOURCE MATERIAL SYSTEM
THE AIR FORCE LOGISTICS MANAGEMENT CENTER

by

W. E. Caves
W. H. Marlow
Sheleyahu Zacks

STUDENTS FACULTY STUDY RESEARCH DEVELOPMENT FUTURE CAREER CREATIVITY COMMUNITY LEADERSHIP TECHNOLOGY FRONTIER DESIGN ENGINEERING APPLICATIONS GEORGE WASHINGTON UNIVERSITY

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Program in Logistics
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Washington, DC 20052

Institute for Management Science and Engineering

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The Logistics Source Materials System is used by the Air Force Logistics Management Center to collect, categorize, store, retrieve, and manage logistics source materials. It is based on the IBM Storage and Information Retrieval System installed on an IBM 4331 computer. The present report describes two data bases constructed from computer tape files produced by the Defense Logistics Studies Information Exchange, Fort Lee, VA, and a
20. Abstract (Cont'd)

A data entry program DATENT which was written to facilitate manual entries. An approach to a possible "Handbook of Models and Source Data" is also presented.
The Logistics Source Materials System is used by the Air Force Logistics Management Center to collect, categorize, store, retrieve, and manage logistics source materials. It is based on the IBM Storage and Information Retrieval System installed on an IBM 4331 computer. The present report describes two data bases constructed from computer tape files produced by the Defense Logistics Studies Information Exchange, Fort Lee, VA, and a data entry program DATENT which was written to facilitate manual entries. An approach to a possible "Handbook of Models and Source Data" is also presented.
1. Summary

The Logistics Source Materials System (LSMS) is used by the Air Force Logistics Management Center (AFLMC) to collect, categorize, store, retrieve, and manage logistics source materials. In the present report, attention is confined to descriptions and specifications covering governmental and non-governmental research projects and studies, their associated models and data bases, and similar materials for Air Force logistics and logistics management. Examples of the latter are published and unpublished articles, books, conference proceedings, histories, proposals, and government regulations.

The LSMS is based on the IBM Storage and Information Retrieval System (STAIRS) installed on the IBM 4331 computer at the AFLMC. As described in [9], STAIRS is a multi-user system for the storage and retrieval of documents. Organized data bases may contain formatted and non-formatted data and inquiries proceed through step-by-step dialogues using convenient commands such as BROWSE, SEARCH, SELECT, SORT, PRINT, and so on. STAIRS can be used together with many other systems and programs so that the major operational concern in extending the LSMS is for efficient loading of data into STAIRS.
Sections 2 and 3 of the present report describe two data bases constructed from computer tape files produced by the Defense Logistics Studies Information Exchange (DLSIE), Fort Lee, VA, namely, the DLSIE studies tape [6] and the DLSIE models tape [7]. These were used (see [4]) to produce data bases which are major prototypes for the LSMS in the sense that they are large files of data which have been transformed into formats acceptable as input for STAIRS.

Section 4 describes a data entry program DATENT (see [5] and [8]) which was written to facilitate manual entry of logistics source materials into STAIRS. Use of such a program is convenient for entering a wide variety of documents into the STAIRS system.

Section 5 outlines an approach to a possible "Handbook of Models and Source Data" which is presented in [10]. Such a handbook would extend the "AFLMC Bibliography" (see [2] and [3]) and other sources of logistics models such as the preeminent DLSIE models data base used for Section 3. The series of six reports in [1] is used as the example in [10] to illustrate the approach to such a handbook.

The following recommendations are made in Section 6.

(1) The DLSIE studies and models tapes should be loaded into STAIRS and analyzed as two data bases of the LSMS.

(2) The DATENT program should be implemented at the AFLMC to assist manual input of data to the LSMS.

(3) The AFLMC should establish requirements for machine readable STAIRS inputs from its major sources of data.

(4) A "Handbook of Models and Source Data," as illustrated by [10], should not be implemented for any sizable number of logistics models; it would be too expensive and it could not be expected to improve on the practice of using the DLSIE data bases, and others, to identify sources which could then be pursued as appropriate to obtain detailed information.

(5) The AFLMC Bibliography [3] should continue to be maintained as a separate data base in the LSMS.
2. The DLSIE studies tape

As described in Reference [6], DLSIE produced a magnetic tape file version of a custom bibliography, namely, the "DLSIE studies tape," as a one-time accommodation to assist the Program in Logistics in completing the present subcontract with the AFLMC. Production was achieved by altering standard computer programs used by DLSIE whereby all "write to printer" commands were replaced by "write to tape." Reference [4] treats the de-editing of the tape and the generation of input for STAIRS. The present section describes products obtained from this tape.

The custom bibliography was produced by DLSIE on 1 August 1983 with resulting output of a magnetic tape file rather than a standard computer printout. All such bibliographies are collections of study abstracts, each one of which summarizes a single document by means of a one- or two-page computer printout. In the present case, the search criteria were the following.

Only completed documents with publication dates in 1978 or later

All documents sponsored or performed by the U.S. Air Force

All aircraft-related documents by all sponsors and all performers

All documents entered from periodical publishers (for all sponsors, all performers, and all topics)

A total of 5,774 documents satisfied these criteria. The machine-readable version was recorded on a reel of 9-track 1600 BPI tape. The printed version would have consisted of over 6,000 pages—about 2 1/2 standard cartons of paper—and it was not printed. Instead, a 145-page "DLSIE studies tape LD index," where one line appears for each document in the custom bibliography, and a 51-page "One percent sample from the DLSIE studies tape," were printed and included as appendixes to [6].

Figure 1 consists of a sample page from the index. The first entry in each line is the four-digit document number which records the serial location of the document on the tape. Second is the logistics document (LD) number which DLSIE assigns and uses to prepare custom bibliographies and to furnish microfiche copies of documents it distributes. The initial segment of the title appears third on each line and it is followed by the initial segment of the name of the performing organization (or name of the periodical publication).
3303 LD 59030D  TRAINING: NAVSUP'S APPROACH.
3304 LD 59030E  SEAHAWK LIGHTS THE WAY FOR LAMPS MARK III.
4978 LD 59038A  NAVAL TACTICS.
4979 LD 59038B  SUBMARINES IN SOVIET ASW DOCTRINE AND TACTICS.
4980 LD 59039C  DID IT REALLY MATTER?
4981 LD 59039D  NAVAL OPTION FOR THE CARIBBEAN: THE U.S. COAST GUARD.
4982 LD 59039E  CLAUSEWITZ AND STRATEGY TODAY.
4983 LD 59039F  WHEN DETERRENCE FAILS: THE NASTY LITTLE WAR FOR THE
4984 LD 59039G  WOODROW WILSON AND INTERNATIONAL STATECRAFT: A
4985 LD 59039H  PRESERVING NUCLEAR PEACE.
2591 LD 55040A  GOVERNMENT PROPERTY IN THE POSSESSION OF CONTRACTORS.
3007 LD 55041A  EFFECT OF TEST RESULT UNCERTAINTY ON THE PERFORMANCE
917 LD 55044A  ESTIMATING AIRCRAFT FATIGUE: A TECHNIQUE WITH
2630 LD 55048A  THE ROTATION/ASSIGNMENT SYSTEM OF IMBALANCED AIR
5309 LD 55050A  PROGRAM MANAGEMENT.
5310 LD 55050B  INDEPENDENT RESEARCH AND DEVELOPMENT: GATEWAY TO
5311 LD 55050C  ACQUIRING SYSTEMS AT ECONOMIC PRODUCTION RATES.
5312 LD 55050D  SECOND SOURCING: A WAY TO ENHANCE PRODUCTION
5313 LD 55050E  UNIFIED SYSTEM EFFECTIVENESS ANALYSIS AND CONTROL;
5314 LD 55050F  BRAINSIDEDNESS: WHAT WE DO KNOW CAN HELP US.
5315 LD 55050G  WHAT PRICE DEFENSE? PROFIT AND PROFITABILITY IN
5316 LD 55050H  INITIATIVES FOR BUILDING ADAPTABILITY AND
2592 LD 55061A  MAINTENANCE ALTERNATIVES FOR AUTOMATED DATA
2631 LD 55063A  STATISTICAL TECHNIQUES FOR DETERMINING OFFICER
2632 LD 55064A  FACTORS INFLUENCING ARMY ACQUISITIONS.
2633 LD 55065A  MODELS OF AN INTEGRATED DESIGN DATA BASE IN SUPPORT
2634 LD 55066A  DYNAMIC CHARACTERISTICS OF AERIAL REFUELLING SYSTEMS.
2635 LD 55067A  THE SIMULATION OF A PASSIVE SOLAR ENERGY SYSTEM.
2636 LD 55068A  A SECURE COMPUTER NETWORK.
3861 LD 55070A  MISCELLANEOUS LOGISTICS SUBJECTS.
3862 LD 55070B  EQUIPPING THE TOTAL FORCE - THE TAEDP.
3863 LD 55070C  FIXING FORWARD IN EUROPE.
3864 LD 55070D  LAMP-LIGHTING THE WAY TO LOGISTICS AUTOMATION.
3865 LD 55070E  BATTLE AREA LOGISTICS IN THE FUTURE.
3866 LD 55070F  CBI-X-THE ARMY'S EYE ON MAJOR ITEMS.
3867 LD 55070G  TRAINING TIPS FOR COMBAT SERVICE SUPPORT.
5926 LD 55074A  MISCELLANEOUS TRANSPORTATION TOPICS.
5927 LD 55075A  F-16 TECHNOLOGY MODERNIZATION PROGRAM. SEMIAUTOMATIC
5928 LD 55075B  F-16 TECHNOLOGY MODERNIZATION PROGRAM. COST TRACKING
5929 LD 55075C  F-16 TECHNOLOGY MODERNIZATION PROGRAM. SHOP PRIORITY.

Figure 1

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Figure 2 consists of a page from the one percent sample. All data for 58 documents appear in [6] accompanied by STAIRS identifiers. The entire sample consists of every 100th document where the sequencing of the tape—primary is agency and secondary is LD number, as used by DLSIE—was retained. The final columns in Figure 2 contain the serial document numbers for the tape and the line numbers within STAIRS paragraph codes. Generally there is one document per printed page as illustrated by Figure 2 but some documents require more than one page and others fit two per page. Even in the present compactly printed two-sided form, the complete bibliography of 5,774 documents would be about 11 inches thick.

3. The DLSIE models tape

As described in [7], a custom catalog of models was produced by DLSIE on 1 August 1983 with resulting output of a magnetic tape file, namely, the "DLSIE models tape," rather than a standard computer printout. All such catalogs are collections of model abstracts, each one of which summarizes a model by means of a one or two page computer printout. The search criteria were counterparts of those for the studies tape, namely, the following.

Only completed models with publication dates in 1978 or later

All models sponsored or performed by the U.S. Air Force

All aircraft-related models by all sponsors and all performers

All models entered from periodical publishers (for all sponsors, all performers, and all topics)

A total of 383 models satisfied these criteria and the machine-readable version of the catalog was recorded on a reel of 1600 BPI tape. The printed version would have consisted of about 400 pages and it was not printed. Instead, a 10-page "DLSIE models tape LD index," and a 39-page "Ten percent sample from DLSIE models tape," were printed and included as appendixes in [7].

Figure 3 consists of a sample page from the index and Figure 4 consists of a page from the printed sample. In a manner similar to that for the studies, the present sample consists of every 10th model where the -equencir of the tape—primary is agency and secondary is LD numt —wa retained. Generally there is one model per page but some models require more than one page. In its present compactly printed two-sided form, The entire custom catalog would be about 2 1/2 inches thick.
THIS DOCUMENT, VOLUME II OF THE MAIN STUDY, (LD 49971A), DESCRIBES THE USE OF THE COMPUTER PROGRAMS FOR THE VARIOUS COMPUTER PROGRAMS DEVELOPED TO FULFILL THE CONTRACT OBJECTIVES. IT SERVES AS A USER'S GUIDE FOR THE UTILIZATION OF SEVERAL INTERDEPENDENT COMPUTER PROGRAMS WHICH WERE DESIGNED TO PROVIDE THE SURVIVABILITY/VULNERABILITY ENGINEER WITH A TOOL FOR THE UTILIZATION OF FINITE ELEMENT MODELS IN THE SIMULATION OF STRUCTURAL FLIGHT LOADING OF WINGS AND WING COMPONENTS.
<table>
<thead>
<tr>
<th>LD</th>
<th>TAPE</th>
<th>TITLE</th>
<th>DEPARTMENT/INSTITUTION</th>
</tr>
</thead>
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<td>312</td>
<td>50010MA</td>
<td>COST FUNCTION FOR MILITARY AIRFRAMES.</td>
<td>CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES</td>
</tr>
<tr>
<td>313</td>
<td>50012MA</td>
<td>COST FUNCTION FOR AN AIRFRAME PRODUCTION PROGRAM.</td>
<td>CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES</td>
</tr>
<tr>
<td>317</td>
<td>50014MA</td>
<td>SLOT ALLOCATION MODEL FOR HIGH-DENSITY AIRPORTS.</td>
<td>NOAH (J. WATSON) ASSOCIATES, INC., ALEXANDRIA, VA 22313</td>
</tr>
<tr>
<td>118</td>
<td>50015MA</td>
<td>METHOD FOR COMPUTATION OF STRUCTURAL FAILURE</td>
<td>AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS</td>
</tr>
<tr>
<td>37</td>
<td>50017MA</td>
<td>REPAIRABLE ASSET SYSTEM POLICY ANALYSIS MODEL -</td>
<td>DARCOM MATERIAL SYSTEMS ANALYSIS ACTIVITY, ABERDEEN</td>
</tr>
<tr>
<td>108</td>
<td>50255MA</td>
<td>HUMAN OPERATOR GUNNER MODEL FOR TRACER-DIRECTED</td>
<td>SYSTEMS RESEARCH LABORATORIES, INC., DAYTON, OH 45440</td>
</tr>
<tr>
<td>280</td>
<td>50395MA</td>
<td>ENGINEERING DESIGN PROCESS IN AERONAUTICAL</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
</tr>
<tr>
<td>281</td>
<td>50423MA</td>
<td>MULTIPLE MODEL FORECASTING AS AN ALTERNATIVE TO THE</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
</tr>
<tr>
<td>282</td>
<td>50465MA</td>
<td>LOGISTICS COMPOSITE MODEL --- INVESTIGATION INTO A</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
</tr>
<tr>
<td>283</td>
<td>50466MA</td>
<td>REPAIRABLE ASSET SYSTEM POLICY ANALYSIS MODEL --</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
</tr>
<tr>
<td>284</td>
<td>50468MA</td>
<td>PRESCRIPTIVE MODEL FOR RESOURCE ALLOCATION AT THE</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
</tr>
<tr>
<td>285</td>
<td>50470MA</td>
<td>SOURCE SELECTION DECISION PROCESS IN AERONAUTICAL</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
</tr>
<tr>
<td>286</td>
<td>50472MA</td>
<td>ANALYSIS OF A PROPOSED MATERIAL HANDLING SYSTEM</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
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<td>250</td>
<td>50479MA</td>
<td>STRATEGIC AIRLIFT: U.S. TO EUROPE.</td>
<td>SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF</td>
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<td>251</td>
<td>50490MA</td>
<td>OPTIMIZATION OF STRATEGIC AIRLIFT IN-FLIGHT REFUELING</td>
<td>SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF</td>
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<td>287</td>
<td>50511MA</td>
<td>WEAPON SYSTEM SPARES SUPPORT MODEL.</td>
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<td>252</td>
<td>50513MA</td>
<td>DECISION ANALYSIS SUPPORT SYSTEM --- ENHANCED</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
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<tr>
<td>194</td>
<td>50718MA</td>
<td>DEVELOPMENT OF A MULTIPLE LINEAR REGRESSION MODEL TO</td>
<td>HUMAN RESOURCES LABORATORY, AIR FORCE SYSTEMS</td>
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<td>195</td>
<td>50718MB</td>
<td>SIMULATOR LOGISTICS SUPPORT COST MODEL --- ACTUAL VS</td>
<td>HUMAN RESOURCES LABORATORY, AIR FORCE SYSTEMS</td>
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<tr>
<td>305</td>
<td>50750MA</td>
<td>PHOENIX: AN AIR BASE SIMULATION USER MANUAL.</td>
<td>JOINT STUDIES GROUP, TAC. WELLS AIR FORCE BASE, NV</td>
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<td>74</td>
<td>50933MA</td>
<td>MODEL FOR ESTIMATING AIRCRAFT COST OF OWNERSHIP ---</td>
<td>THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA</td>
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<td>75</td>
<td>50978MA</td>
<td>METHOD FOR ESTIMATING THE COST OF AIRCRAFT.</td>
<td>THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA</td>
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<td>288</td>
<td>51064MA</td>
<td>DEVELOPMENT OF A MULTIPLE LINEAR REGRESSION MODEL TO</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
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<td>289</td>
<td>51061MA</td>
<td>AFFIT RUNOFF MODEL --- SIMULATION OF RUNOFF FROM AN</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
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<td>356</td>
<td>51067MA</td>
<td>ENVIRONMENTAL CONTROL ANALYSIS SYSTEM --- F-14A</td>
<td>THE BOEING COMPANY, SEATTLE, WASH. 98124</td>
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<td>66</td>
<td>51112MA</td>
<td>HELICOPTER SURVIVABILITY ASSESSMENT MODEL: VOL I</td>
<td>SCIENCE APPLICATIONS, INC., 4615 HAWKINS N.E.</td>
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<tr>
<td>327</td>
<td>51119MA</td>
<td>GENERALIZED ESCAPE SYSTEM SIMULATION COMPUTER</td>
<td>SCIENCE APPLICATIONS, INC., 4615 HAWKINS N.E.</td>
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<td>55</td>
<td>51365MA</td>
<td>EVALUATION OF AIR DEFENSE EFFECTIVENESS MODEL --- A</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
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<td>291</td>
<td>51458MA</td>
<td>WEIGHTING PLANT OPERATING COST MODEL --- ECONOMIC</td>
<td>US ARMY AVIATION EFFECTIVENESS RESEARCH AND DEVELOPMENT CMD.</td>
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<td>110</td>
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<td>OPTIMAL STAGING AND SCHEDULING IN AIRLIFT OPERATIONS.</td>
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<td>114</td>
<td>51491MA</td>
<td>LEARNING AND COSTS IN AIRFRAME PRODUCTION: PART I</td>
<td>AEROSPACE MEDICAL DIVISION, AIR FORCE SYSTEMS</td>
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<td>115</td>
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<td>LEARNING AND THE COST OF PRODUCTION</td>
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<td>116</td>
<td>51493MA</td>
<td>SPECIFICATION AND ESTIMATION OF DYNAMIC COST</td>
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<td>292</td>
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<td>297</td>
<td>51874MA</td>
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<td>DIGITAL SIMULATION PROGRAM DESCRIBING THE MOTION OF</td>
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<td>321</td>
<td>51770MA</td>
<td>AIRCRAFT AND CREW SCHEDULING DURING AIRLIFT OPERATIONS</td>
<td>UNIVERSITY OF TEXAS, CENTER FOR CYBERNETIC STUDIES</td>
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<td>120</td>
<td>51774MA</td>
<td>VULNERABILITY ESTIMATORS FOR CONCEPTUAL AIRCRAFT (U).</td>
<td>AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS</td>
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</table>
Figure 4
Figure 5 is a page from the five-page listing from [7], "Common entries in studies and models files," which furnishes cross references for the present custom catalog and the custom bibliography. The two tapes were matched on the numeric portions of the LD numbers and then the LD numbers and initial segments of titles and names of performing organizations were listed in forms similar to those previously illustrated by Figures 1 and 3. With only minor exceptions—see the entries in Figure 5 for LD Numbers having numeric portions 49111—common entries identify "studies" whose "models" have also been entered by DLSIE.

4. The DATENT program

A data entry system was created as part of the present effort. The system is based upon a sequential access data file, a copy action update facility, and a STAIRS format conversion program. Operating instructions and source codes for the programs are listed in [5]. The program is "portable" in the sense that only two changes are required for installation, namely, a new (COBOL) Environment Section and a native "clear screen" routine.

The sequential access data file consists of fixed format 64-character records each containing the subject document number (5 digits), card type number (3 digits), card type sequence number (2 digits), a filler character, and the text data area (53 characters). The sequence of this file is strictly ascending on columns 1 thru 10 (document number, card type number, and card type sequence number). Also, each document is limited to a maximum of 100 records (a restriction imposed by the current update program).

The data entry update program, DATENT, is a control card driven document update facility implemented in American National Standard COBOL, X3.23-1974. This program will update documents by record insertion and or deletion, insert documents, and delete documents. This program is control card driven in that, for each allowed record type in a document, a control card defines both its record format and the operator prompt to be used for record display, insertion, and deletion. The program will also translate record type numbers, reordering records within a document to maintain the data file's sequence on columns 1 thru 10, and delete record types as requested by the control card stream.

The STAIRS format conversion program, STAIRS, converts the 64-character data entry system record format to the 80-character STAIRS record format. The STAIRS output file consists of 128-character records of which the first 80 characters of each record is a STAIRS record. The program converts card type numbers 001 and 005 to AFLMC STAIRS card codes *** and OAO, respectively. All other STAIRS card codes are copied directly from the data entry system format. This program is also implemented in American National Standard COBOL, X3.23-1974.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Institution</th>
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<td>2785LD 47679A</td>
<td>A COMPARATIVE ANALYSIS OF TWO COST PERFORMANCE</td>
<td>THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE</td>
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<td>277MLD 47679A</td>
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</tr>
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<td>32135LD 48241A</td>
<td>Q-GERT APPROACH TO AIRCRAFT COST/READINESS ANALYSIS</td>
<td>NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 83940</td>
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<tr>
<td>331MLD 48241MA</td>
<td>QUEUING GRAPHICAL EVALUATION AND REVIEW TECHNIQUE</td>
<td>NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 83940</td>
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<td>39SLD 48376A</td>
<td>ESTIMATING USAF AIRCRAFT RECOVERABLE SPARES INVESTMENT.</td>
<td>THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA</td>
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<td>THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA</td>
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<td>AN APPROACH TO WORKLOAD ASSIGNMENT AND SCHEDULING OF</td>
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<td>278MLD 48469MA</td>
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<td>AN INVESTIGATION OF THE EFFECT OF PRODUCTION RATE</td>
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<td>48015LD 49111A</td>
<td>LOGISTICS MODELS.</td>
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**Figure 5**
Figure 6 is a page from a listing of data for inserting 111 documents into STAIRS at the AFLMC. The complete listing is contained in [8]. These data were generated by the present data entry system for documents which are candidates for inclusion in the AFLMC Bibliography [3]. The actual entries came from DD Forms 1473, or abstracts from DLSIE, or from the individual documents themselves.

5. A handbook of models and source data

The present section outlines a particular set of criteria for analyzing logistics models, namely, the following.

1. Problem background
2. Objectives (primary, secondary, ...)
3. Pertinent variables
4. Measurements and indexes
5. Modeling (deterministic, stochastic, relationships, ...)
6. Analytical techniques
7. Validation or measures of effectiveness
8. Inventory of data files
9. Inventory of computer programs
10. Numerical examples
11. Applicability and intended users
12. Critical comments
13. References

This set is an expansion of the entries in the data banks at DLSIE, Fort Lee, VA, which are used to prepare the model abstracts in Section 3 above and the regularly published "Catalog of Logistics Models."

Reference [10] illustrates the type of analyses that might be included in a "Handbook of Models and Source Data" for a few models of major importance to a command such as the AFLMC. (And there would be no better place to search for candidate models than the publications of DLSIE.) The sortie-generation model of the Logistics Management Institute, as presented in [1], is the example used to illustrate this approach to model analysis.

See (4) in the next section for the summary recommendation concerning implementation of such a handbook.
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Figure 6
6. Recommendations

We make five general recommendations.

(1) The DLSIE studies and models tapes should be loaded into STAIRS and analyzed as two data bases of the LSMS.

(2) The DATENT program should be implemented at the AFLMC to assist manual input of data to the LSMS.

(3) The AFLMC should establish requirements for machine readable STAIRS inputs from its major sources of data.

(4) A "Handbook of Models and Source Data," as illustrated by [10], should not be implemented for any sizable number of logistics models; it would be too expensive and it could not be expected to improve on the practice of using the DLSIE data bases, and others, to identify sources which could then be pursued as appropriate to obtain detailed information.

(5) The AFLMC Bibliography [3] should continue to be maintained as a separate data base in the LSMS.
REFERENCES


