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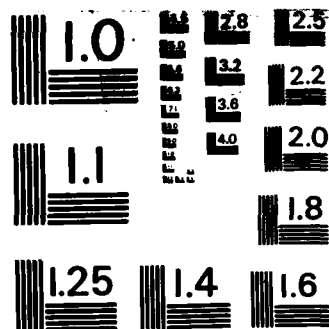
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FINAL REPORT ON  
A LOGISTICS SOURCE MATERIAL SYSTEM  
THE AIR FORCE LOGISTICS MANAGEMENT CENTER

THE  
GEORGE  
WASHINGTON  
UNIVERSITY

by

W. E. Caves  
W. H. Marlow  
Shelemyahu Zacks

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A LOGISTICS SOURCE MATERIAL SYSTEM  
FOR THE AIR FORCE LOGISTICS MANAGEMENT CENTER

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W. E. Caves  
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Program in Logistics  
GWU/IMSE/Serial T-476/83  
30 August 1983

THE GEORGE WASHINGTON UNIVERSITY  
School of Engineering and Applied Science  
Washington, DC 20052

Institute for Management Science and Engineering

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Research Supported  
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Subcontract SCEEE/AFLMC/80-13  
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  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  (continued)		

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20. Abstract (Cont'd)

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.

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Abstract  
of  
Program in Logistics  
GWU/IMSE/Serial T-476/83  
30 August 1983

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.



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Air Force Contract F01600-80-D0299

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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).

08/12/83

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OLDSIE STUDIES TAPE LD INDEX

5203 LD 550300	TRAINING: NAVSUP'S APPROACH.	NAVY SUPPLY CORPS NEWSLETTER, SUPPLY SYSTEMS COMMAND
5204 LD 55030E	SEAHAWK LIGHTS THE WAY FOR LAMPS MARK III.	NAVY SUPPLY CORPS NEWSLETTER, SUPPLY SYSTEMS COMMAND
4978 LD 55038A	NAVAL TACTICS.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4978 LD 55038B	SUBMARINES IN SOVIET ASV DOCTRINE AND TACTICS.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4980 LD 55039C	DID IT REALLY MATTER?	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4981 LD 55039D	NAVAL OPTION FOR THE CARIBBEAN: THE U.S. COAST GUARD.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4982 LD 55039E	CLAUSEWITZ AND STRATEGY TODAY.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4983 LD 55039F	WHEN DETERRENCE FAILS: THE NASTY LITTLE WAR FOR THE ...	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4984 LD 55039G	WOODROW WILSON AND INTERNATIONAL STATECRAFT: A .....	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
4985 LD 55039H	PRESERVING NUCLEAR PEACE.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE.
2591 LD 55040A	GOVERNMENT PROPERTY IN THE POSSESSION OF CONTRACTORS.	AIR FORCE AUDIT AGENCY, NORTON AFB, CA 92409
3007 LD 55041A	EFFECT OF TEST UNCERTAINTY ON THE PERFORMANCE.	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
917 LD 55044A	ESTIMATING AIRCREW FATIGUE: A TECHNIQUE WITH .....	AEROSPACE MEDICAL DIVISION, AIR FORCE SYSTEMS
2630 LD 55049A	THE ROTATION/ASSIGNMENT SYSTEM OF IMBALANCED AIR .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
5308 LD 55050A	PROGRAM MANAGEMENT.	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5310 LD 55050B	INDEPENDENT RESEARCH AND DEVELOPMENT: GATEWAY TO .....	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5311 LD 55050C	ACQUIRING SYSTEMS AT ECONOMIC PRODUCTION RATES.	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5312 LD 55050D	SECOND SOURCING: A WAY TO ENHANCE PRODUCTION .....	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5313 LD 55050E	UNIFIED SYSTEM EFFECTIVENESS ANALYSIS AND CONTROL: .....	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5314 LD 55050F	BRAINSIDEDNESS: WHAT WE DO KNOW CAN HELP US.	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5315 LD 55050G	WHAT PRICE DEFENSE? PROFIT AND PROFITABILITY IN .....	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
5316 LD 55050H	INITIATIVES FOR BUILDING ADAPTABILITY AND .....	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS
2592 LD 55061A	MAINTENANCE ALTERNATIVES FOR AUTOMATIC DATA .....	AIR FORCE AUDIT AGENCY, NORTON AFB, CA 92409
2631 LD 55063A	STATISTICAL TECHNIQUES FOR DETERMINING OFFICER .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
2632 LD 55064A	FACTORS INFLUENCING ARMY ACCESSIONS.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
2633 LD 55068A	MODELS OF AN INTEGRATED DESIGN DATA BASE IN SUPPORT .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
2634 LD 55066A	DYNAMIC CHARACTERISTICS OF AERIAL REFUELING SYSTEMS.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
2635 LD 55067A	THE SIMULATION OF A PASSIVE SOLAR ENERGY SYSTEM.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
2636 LD 55068A	A SECURE COMPUTER NETWORK.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
3861 LD 55070A	MISCELLANEOUS LOGISTICS SUBJECTS.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
3862 LD 55070B	EQUIPPING THE TOTAL FORCE - THE TAEDP.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
3863 LD 55070C	FIXING FORWARD IN EUROPE.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
3864 LD 55070D	LAMP-LIGHTING THE WAY TO LOGISTICS AUTOMATION.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
3865 LD 55070E	BATTLE AREA LOGISTICS IN THE FUTURE.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
3866 LD 55070F	CBS-X-THE ARMY'S EYE ON MAJOR ITEMS.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
3867 LD 55070G	TRAINING TIPS FOR COMBAT SERVICE SUPPORT.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT
5526 LD 55074A	MISCELLANEOUS TRANSPORTATION TOPICS.	TRANSLOG, MILITARY TRAFFIC MANAGEMENT COMMAND, .....
591 LD 55075A	F-16 TECHNOLOGY MODERNIZATION PROGRAM. SEMIAUTOMATIC ...	GENERAL DYNAMICS/FORT WORTH, FORT WORTH, TX 76101
592 LD 55075B	F-16 TECHNOLOGY MODERNIZATION PROGRAM. COST TRACKING ...	GENERAL DYNAMICS/FORT WORTH, FORT WORTH, TX 76101
593 LD 55075C	F-16 TECHNOLOGY MODERNIZATION PROGRAM. SHOP PRIORITY ...	GENERAL DYNAMICS/FORT WORTH, FORT WORTH, TX 76101

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 sequencing of the tape--primary is agency and secondary is LD number--was 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.

09/12/83

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## ONE PERCENT SAMPLE FROM DLSIE STUDIES TAPE

DOCUMENT NUMBER	*** LD 49971B	00901001
DATE	0A0 1980	00901001
TITLE	010 STRUCTURAL FLIGHT LOADS SIMULATION CAPABILITY. V. 2 - STRUCTURAL ANALYSIS COMPUTER PROGRAM USERIS MANUAL.	00901001
AUTHOR	020 T. S. BRUNER, M. P. BOUCHARD, M. J. HECHT AND F. K. BOGNER.	00901002
REPORT-NUMBER	030 TR-80-3118	00901001
TYPE-OF-REPORT	040 CONTRACT STUDY	00901001
PERFORMER	050 UNIVERSITY OF DAYTON, RESEARCH INSTITUTE, DAYTON, OH 45409	00901001
D-PERF-CONTRACT-N	058 F33615-76-C-3135	00901001
SPONSOR	060 AIR FORCE FLIGHT DYNAMICS LABORATORY, AIR FORCE SYSTEMS COMMAND, WRIGHT-PATTERSON AIR FORCE BASE, OH 45433	00901001
PAGES	070 346	00901002
CLASSIFICATION	080 UNCLASSIFIED	00901001
D-AD-NUMBER	082 A096 594	00901001
D-RELEASE-LIMIT	094 UNLIMITED	00901001
D-AVAILABLE-FROM	096 DLSIE	00901001
D-SUBJECT	102 OPERATIONS	00901001
	MATERIEL	00901002
D-FUNCTION	104 SIMULATION	00901001
	EVALUATION	00901002
D-DESCRIPTORS	106 FLIGHT SIMULATORS	00901001
	STRUCTURAL MEMBERS	00901002
	AIRCRAFT COMPONENTS	00901003
	SIMULATIONS	00901004
	AIRCRAFT	00901005
	DAMAGE ASSESSMENT	00901006
	SURVIVABILITY	00901007
	VULNERABILITY	00901008
ABSTRACT	110 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 STIMULATION OF STRUCTURAL FLIGHT LOADING OF WINGS AND WING COMPONENTS.	00901001
		00901002
		00901003
		00901004
		00901005
		00901006
		00901007
		00901008
D-CONCLUSIONS	112 SEE FINAL REPORT (LD 49971B).	00901001
D-RECOMMENDATIONS	114 SEE FINAL REPORT (LD 49971B).	00901001
D-IMPLEMENT-ACTNS	116 SEE FINAL REPORT (LD 49971B).	00901001
D-PRODUCT	900 STUDY ABSTRACT	00901001
D-AGENCY	910 DEPARTMENT OF THE AIR FORCE	00901001
D-SEARCH-NUMBER	920 83-01202	00901001
D-STATUS	940 COMPLETED	00901001
D-UPDATE-DATE	970 APR 83	00901001

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093630

DLSIE MODELS TAPE LD INDEX

312 LD 50010MA	COST FUNCTION FOR MILITARY AIRFRAMES.	CLEMONSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES, .....
313 LD 50012MA	COST FUNCTION FOR AN AIRFRAME PRODUCTION PROGRAM.	CLEMONSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES, .....
367 LD 50014MA	SLOT ALLOCATION MODEL FOR HIGH-DENSITY AIRPORTS.	NOAH (J. WATSON) ASSOCIATES, INC., ALEXANDRIA, VA 22313
118 LD 50015MA	METHOD FOR COMPUTATION OF STRUCTURAL FAILURE	AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS .....
37 LD 50017MA	PERFORMANCE ANALYSIS OF THE PRODUCT IMPROVED VULCAN	DARCOM MATERIEL SYSTEMS ANALYSIS ACTIVITY, ABERDEEN .....
109 LD 50255MA	HUMAN OPERATOR GUNNER MODEL FOR TRACER-DIRECTED	SYSTEMS RESEARCH LABORATORIES, INC., DAYTON, OH 45440
280 LD 50395MA	EMPIRICAL INVESTIGATION OF THE EFFECTS OF INVENTORY	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
281 LD 50396MA	MULTIPLE MODEL FORECASTING AS AN ALTERNATIVE TO THE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
282 LD 50465MA	LOGISTICS COMPOSITE MODEL --- INVESTIGATION INTO A	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
283 LD 50466MA	REPARABLE ASSETS SYSTEM POLICY ANALYSIS MODEL ---	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
284 LD 50468MA	PRESCRIPTIVE MODEL FOR RESOURCE ALLOCATION AT THE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
285 LD 50470MA	SOURCE SELECTION DECISION PROCESS IN AERONAUTICAL	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
286 LD 50472MA	ANALYSIS OF A PROPOSED MATERIAL HANDLING SYSTEM	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
250 LD 50479MA	STRATEGIC AIRLIFT: U.S. TO EUROPE.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
251 LD 50490MA	OPTIMIZATION OF STRATEGIC AIRLIFT IN-FLIGHT REFUELING.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
287 LD 50511MA	WEAPON SYSTEM SPARES SUPPORT MODEL.	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
252 LD 50513MA	DECISION ANALYSIS SUPPORT SYSTEM --- ENHANCED	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
194 LD 50718MA	LIFE CYCLE COSTING OF SIMULATED VS ACTUAL EQUIPMENT	HUMAN RESOURCES LABORATORY, AIR FORCE SYSTEMS .....
195 LD 50718MB	SIMULATOR LOGISTICS SUPPORT COST MODEL --- ACTUAL VS	HUMAN RESOURCES LABORATORY, AIR FORCE SYSTEMS .....
305 LD 50750MA	PHOENIX: AN AIR BASE SIMULATION USER MANUAL.	JOINT STUDIES GROUP, TAC, NELLIS AIR FORCE BASE, NV .....
74 LD 50933MA	MODEL FOR ESTIMATING AIRCRAFT COST OF OWNERSHIP ---	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA, .....
75 LD 50978MA	METHOD FOR ESTIMATING THE COST OF AIRCRAFT	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA, .....
288 LD 51060MA	DEVELOPMENT OF A MULTIPLE LINEAR REGRESSION MODEL TO	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
289 LD 51061MA	AFIT RUNOFF MODEL --- SIMULATION OF RUNOFF FROM AN	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
356 LD 51067MA	ENVIRONMENTAL CONTROL ANALYSIS SYSTEM --- F-14A	THE BOEING COMPANY, SEATTLE, WASH. 98124
66 LD 51112MA	HELICOPTER SURVIVABILITY ASSESSMENT MODEL: VOL I -	SCIENCE APPLICATIONS, INC., 4615 HAWKINS N.E., .....
67 LD 51112MB	HELICOPTER SURVIVABILITY ASSESSMENT MODEL: VOL II -	SCIENCE APPLICATIONS, INC., 4615 HAWKINS N.E., .....
290 LD 51114MA	FIRST TO FIGHT: A BATTLE SIMULATION AT THE SQUAD	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
337 LD 51198MA	GENERALIZED ESCAPE SYSTEM SIMULATION COMPUTER	NAVAL AIR DEVELOPMENT CENTER, JOHNSVILLE, .....
55 LD 51365MA	EVALUATION OF AIR DEFENSE EFFECTIVENESS MODEL --- A	US ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND, .....
291 LD 51458MA	HEATING PLANT OPERATING COST MODEL --- ECONOMIC	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
191 LD 51490MA	OPTIMAL STAGING AND SCHEDULING IN AIRLIFT OPERATIONS.	AEROSPACE MEDICAL DIVISION, AIR FORCE SYSTEMS .....
314 LD 51491MA	LEARNING AND COSTS IN AIRFRAME PRODUCTION: PART I.	CLEMONSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES, .....
315 LD 51492MA	LEARNING AND THE COST OF PRODUCTION	CLEMONSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES, .....
316 LD 51499MA	SPECIFICATION AND ESTIMATION OF DYNAMIC COST	CLEMONSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES, .....
292 LD 51500MA	SIMULATION OF THE BASE CIVIL ENGINEERING WORK	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
213 LD 51674MA	FAILURE-FREE RELIABILITY TESTS.	UNITED STATES AIR FORCE ACADEMY, CO 80840
119 LD 51675MA	DIGITAL SIMULATION PROGRAM DESCRIBING THE MOTION OF	AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS .....
321 LD 51770MA	AIRCRAFT AND CREW SCHEDULING DURING AIRLIFT OPERATIONS.	UNIVERSITY OF TEXAS, CENTER FOR CYBERNETIC STUDIES, .....
120 LD 51774MA	VULNERABILITY ESTIMATORS FOR CONCEPTUAL AIRCRAFT (U)	AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS .....

09/12/83

PROGRAM IN LOGISTICS  
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105219

## TEN PERCENT SAMPLE FROM DLSIE MODELS TAPE

DOCUMENT NUMBER	*** LD 46241MF	00011001
DATE	040 1981	00011001
TITLE	010 SORTIE-GENERATION MODEL SYSTEM; VOL VI - SPARES SUBSYSTEM.	00011001
REPORT-NUMBER	030 ML102	00011001
PERFORMER	050 LOGISTICS MANAGEMENT INSTITUTE, 4701 SANGAMORE RD., P. O. BOX 9489, WASHINGTON, DC 20016	00011001 00011002
D-PERF-CONTACT	052 J B ABELL, F M SLAY	00011001
D-PERFORMER-PHONE	054 AV 287-2779	00011001
SPONSOR	060 ASSISTANT SECRETARY OF DEFENSE (MANPOWER, RESERVE AFFAIRS AND LOGISTICS), WASHINGTON, DC 20301	00011001 00011002
CLASSIFICATION	080 UNCLASSIFIED	00011001
D-RELEASE-LIMIT	094 UNLIMITED	00011001
D-AVAILABLE-FROM	096 DLSIE	00011001
D-SUBJECT	102 MATERIEL	00011001
D-FUNCTION	104 MAINTAINING ALLOCATING RESOURCES	00011001 00011002
D-DESCRIPTORS	106 MATERIEL READINESS READINESS SUPPORT COSTS MANPOWER MAINTENANCE PERSONNEL WEAPON SYSTEMS REPAIR PARTS	00011001 00011002 00011003 00011004 00011005 00011006 00011007
ABSTRACT	110 THIS VOLUME IS THE LAST OF THE SIX VOLUMES THAT DESCRIBE THE SORTIE-GENERATION MODEL (SGM) SYSTEM. IT DESCRIBES THE PROCESS OF CONSTRUCTING A SPARES DATA BASE FOR INPUT TO THE SGM. AN OVERVIEW OF THE ENTIRE SGM SYSTEM IS CONTAINED IN VOLUME ONE, THE EXECUTIVE SUMMARY (LD NO. 46241MA).	00011001 00011002 00011003 00011004 00011005
D-MODEL-RECOMMEND	117 SEE LD NO. 46241MA.	00011001
D-MODEL-INPUT	118 SEE LD NO. 46241MA.	00011001
D-MODEL-OUTPUT	119 SEE LD NO. 46241MA.	00011001
D-MODEL-ACRONYM	800 SGM	00011001
D-M-ACCESSION-DAT	816 FEB 82	00011001
D-M-CATEGORY	818 SIMULATION	00011001
D-M-USE-CATEGORY	822 ANALYSIS AND DIAGNOSIS	00011001
D-M-APPLIC-TECHN	826 DIGITAL COMPUTER	00011001
D-M-SOLUTION-TECH	828 OR (MISC)	00011001
D-M-COMPUTER-TYPE	830 HONEYWELL 6-635	00011001
D-M-LANGUAGE-USED	832 FORTRAN	00011001
D-M-MIN-STORAGE	834 20K WORDS	00011001
D-M-RUN-TIME	836 8 CPU MIN	00011001
D-M-LINES-OF-CODE	838 15000	00011001
D-M-PRODUCT	900 MODEL ABSTRACT	00011001
D-AGENCY	910 DEPARTMENT OF DEFENSE	00011001
D-SEARCH-NUMBER	920 83-00123	00011001
D-STATUS	940 COMPLETED	00011001
D-START-DATE	950 OCT 79	00011001
D-LAST-UPDATED	970 FEB 82	00011001

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.

PROGRAM IN LOGISTICS  
INSTITUTE FOR MANAGEMENT SCIENCE AND ENGINEERING  
THE GEORGE WASHINGTON UNIVERSITY

105536

09/07/83

COMMON ENTRIES IN STUDIES AND MODELS FILES

2782SLD 47679A	A COMPARATIVE ANALYSIS OF TWO COST PERFORMANCE .....	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
277WLD 47679MA	COMPARATIVE ANALYSIS OF TWO COST PERFORMANCE .....	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
3219SLD 48241A	Q-GERT APPROACH TO AIRCRAFT COST/READINESS ANALYSIS, ...	NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 93940
331WLD 48241MA	QUEUING GRAPHICAL EVALUATION AND REVIEW TECHNIQUE -- ..	NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 93940
39SLD 48376A	ESTIMATING USAF AIRCRAFT RECOVERABLE SPARES INVESTMENT.	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA, .....
16WLD 48376MA	ESTIMATING USAF AIRCRAFT RECOVERABLE SPARES INVESTMENT.	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA, .....
2835SLD 48469A	AN APPROACH TO WORKLOAD ASSIGNMENT AND SCHEDULING OF ...	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
278WLD 48469MA	APPROACH TO WORKLOAD ASSIGNMENT AND SCHEDULING OF .....	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
2843SLD 48576A	AN INVESTIGATION OF THE EFFECT OF PRODUCTION RATE .....	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
279WLD 48576MA	PRODUCTION RATE MODEL - - - INVESTIGATION OF THE .....	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
4801SLD 49111A	LOGISTICS MODELS.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4802SLD 49111B	A LINEAR PROGRAMMING MODEL FOR DESIGN OF .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4803SLD 49111C	PREVENTIVE MAINTENANCE AND REPLACEMENT UNDER .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4804SLD 49111D	OPTIMAL MAINTENANCE MODELS FOR SYSTEMS SUBJECT TO .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4805SLD 49111E	BOUNDS FOR STRENGTH-STRESS INTERFERENCE VIA .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4806SLD 49111F	BOUNDS AND ELIMINATION IN GENERALIZED MARKOV DECISIONS.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4807SLD 49111G	SURROGATE DUALITY IN A BRANCH-AND-BOUND PROCEDURE.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4808SLD 49111H	EXTREME SOLUTIONS OF THE TWO MACHINE FLOW-SHOP PROBLEM.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4809SLD 49111J	A THEORETICAL AND COMPUTATIONAL COMPARISON OF .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4810SLD 49111K	STOCHASTIC MODELS FOR SPREAD OF MOTIVATING INFORMATION.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4811SLD 49111L	MAXIMAL NASH SUBSETS FOR BIMATRIX GAMES.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4812SLD 49111N	A CHARACTERIZATION OF THE VALUE OF ZERO-SUM .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4813SLD 49111P	MANPOWER MODELING IN COST EFFECTIVENESS OF USAF .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
4814SLD 49111Q	AN EMPIRICAL EVALUATION OF FURTHER APPROXIMATIONS TO ...	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
363WLD 49111ND	OPTIMAL MAINTENANCE MODELS FOR SYSTEMS SUBJECT TO .....	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL .....
486SLD 49228A	NOISEMAP--THE USAF'S COMPUTER PROGRAM FOR PREDICTING ...	AEROSPACE MEDICAL RESEARCH LABORATORY, AEROSPACE .....
109WLD 49228MA	NOISEMAP - THE USAF'S COMPUTER PROGRAM FOR .....	AEROSPACE MEDICAL RESEARCH LABORATORY, AEROSPACE .....
3387SLD 49402B	RELATIVE IMPACT ON LEVEL OF REPAIR ALTERNATIVES ON .....	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
3389SLD 49402BA	PLAN FOR REVIEW AND ANALYSIS OF THE F-18 MAINTENANCE ...	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
3389SLD 49402BD	F-18 MAINTENANCE SUPPORT PLAN CONCEPTS RELATIVE TO .....	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
355WLD 49402MB	LEVEL OF REPAIR ANALYSIS --- RELATIVE IMPACT ON .....	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
1963SLD 49465A	SUPPLY PERFORMANCE INDICATORS.	UNITED STATES AIR FORCE ACADEMY, CO 80840
218WLD 49465MA	SUPPLY PERFORMANCE INDICATORS.	UNITED STATES AIR FORCE ACADEMY, CO 80840
2620SLD 49518A	A SYSTEMS DYNAMICS MODEL FOR ASSESSING THE .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
247WLD 49518MA	SYSTEM DYNAMICS MODEL FOR ASSESSING THE .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
2621SLD 49519A	COMPUTER SIMULATION OF SOLAR AIR HEATING SYSTEMS .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
248WLD 49519MA	COMPUTER SIMULATION OF SOLAR AIR HEATING SYSTEMS .....	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
45LD 49821A	THE TASCFORM-AIR MODEL. A TECHNIQUE FOR ASSESSING .....	THE ANALYTIC SCIENCES CORPORATION, SIX JACOB WAY, .....
1WLD 49821MA	TASCFORM-AIR MODEL-- A TECHNIQUE FOR ASSESSING .....	THE ANALYTIC SCIENCES CORPORATION, SIX JACOB WAY, .....

Figure 5

PAGE 003

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.

PROGRAM IN LOGISTICS  
 INSTITUTE FOR MANAGEMENT SCIENCE AND ENGINEERING  
 THE GEORGE WASHINGTON UNIVERSITY

T-476

09/13/83					PAGE 99
	DOCUMENT-NUMBER	*** GMU 00303			02084001
	DATE	040 1983			02084002
	TITLE	010 An Analysis of Air Force EOO Data with an Application to Reorder Point Calculation			02084003
	AUTHOR	020 C. R. Mitchell R. A. Rappold W. B. Faulkner			02084004
	REPORT-NUMBER	030 VOL. 29, PP. 440-446			02084005
	PERFORMER	050 Management Science			02084006
					02084007
					02084008
					02084009
	DOCUMENT-NUMBER	*** GMU 00304			02085001
	DATE	040 1979			02085002
	TITLE	010 Determination of Shipboard Repair Parts Level			02085003
	AUTHOR	020 Samuel D. Judge Palmer Luetjen			02085004
	REPORT-NUMBER	030 APRIL, PP.37-43			02085005
	PERFORMER	050 Naval Engineers Journal			02085006
					02085007
	DOCUMENT-NUMBER	*** GMU 00305			02086001
	DATE	040 1978			02086002
	TITLE	010 Spares Provisioning for Repairable Items: Cyclic Queues in Light Traffic			02086003
	AUTHOR	020 Donald Gross John F. Ince			02086004
	REPORT-NUMBER	030 VOL. 10, PP. 307-314			02086005
	PERFORMER	050 AIEE Transactions			02086006
					02086007
					02086008

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

- [1] ABELL, J. W. et al (1981). Sortie-generation model system. Vols. I-VI, Logistics Management Institute, Washington, DC (LD 46241MA, LD 46241MB, LD 46241MC, LD 46241MD, LD 46241ME, LD 46241MF, respectively).
- [2] BARZILY, Z., W. E. CAVES, W. H. MARLOW, A. RAO and S. ZACKS (1981a). Final report on the AFLMC Bibliography. Technical Paper Serial T-455.
- [3] BARZILY, Z., W. E. CAVES, W. H. MARLOW, A. RAO and S. ZACKS (1981b). The AFLMC Bibliography. Technical Paper Serial T-456 (LD 52168A).
- [4] CAVES, W. E. (1983a). The DLSIE computer programs. Technical Memorandum Serial TM-72630.
- [5] CAVES, W. E. (1983b). Data entry system source files. Technical Memorandum Serial TM-72631.
- [6] CAVES, W. E. and W. H. MARLOW (1983a). The DLSIE studies tape. Technical Paper Serial T-478.
- [7] CAVES, W. E. and W. H. MARLOW (1983b). The DLSIE models tape. Technical Paper Serial T-479.
- [8] CAVES, W. E. and W. H. MARLOW (1983c). A listing of 111 custom inserts. Technical Memorandum Serial TM-72632.
- [9] IBM CORPORATION (1981). Terminal User's Guide SB21-2783-1. Storage and Information Retrieval System/Conversational Monitor System (STAIRS/CMS). Field Developed Program Number 5785-CAH.
- [10] MARLOW, W. H. and S. ZACKS (1983). Some criteria for model analysis in a handbook of models and source data. Technical Paper Serial T-477.

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