ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue
Argonne, Illinois 60439

USERDA COMPUTER PROGRAM SUMMARIES

Numbers 177 through 230

Argonne Code Center

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Revised

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18	CALCULATION OF CRYSTALLOGRAPHIC FUNCTIONS	RFD	360	F4	MA	U	C	15
19	MODEL-9, FALL AND DISPERSION OF PARTICLES	SLA	3600	F36	MA	U	R	15
20	HR5017, MULTIPLE REVOLUTION REENTRY	SLA	1108	F4	SNS	U	S	15
21	HR5017, MULTIPLE REVOLUTION REENTRY	SLA	3600	F4	SNS	U	S	15
22	HR5017, MULTIPLE REVOLUTION REENTRY	SLA	6600	F4	SNS	U	S	15
23	HR5017, MULTIPLE REVOLUTION REENTRY	SLA	7040	QUIK	SNS	U	S	15
24	MONOVA, 1-D WAVE PROPAGATION CALCULATION	SLA	6600	F4	MA	U	S	16
25	SWAP, STRESS WAVE ANALYSIS PROGRAM	SLA	6600	F4	MA	U	S	16
26	SATLOC, SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	3600	F36	MA	U	S	17
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32	HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	3600	F36	SNS	U	S	17
33	HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	6600	F4	SNS	U	S	17
34	HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	7040	QUIK	SNS	U	S	17
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38	CALIPRATION OF SURFACE PLATES	MMPR	360	F4	MA	U	T	18
39	FEAPS, LAPLACE EQUATION SIMULATION STUDY	SLA	6600	F4	MA	U	T	18
40	PRF, SPECTROPHOTOMETRIC REACTION KINETICS	RFD	360	F4	MA	U	U	19
41	PADE, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	210	F2	MA	U	U	19
42	GAS-2, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	360	F4	MA	U	U	19
43	GAS-GAS & GAS-SOLID REACTION DATA REDUCTION	RFD	360	F4	MA	U	U	19
44	DYNAMIC ANALYSIS OF GASES BY MASS SPECTROMETRY	RFD	400	F	MA	U	U	19
45	CHEMICAL DIFFUSIVITIES BY BOLTZMAN-MATANO	RFD	400	BASIC	MA	U	U	20
46	STICKING PROBABILITY OF GASES ON SOLID SURFACE	RFD	360	F4	MA	U	U	20
47	SLAC ELECTRON GUN DESIGN PROGRAM	SLAC	360	PL/1	R	U	V	20
48	TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	3600	F4	MA	U	M	20
49	TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	6600	F4	MA	U	M	20
50	TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600	F4	MA	U	M	20
51	TRUMP/XP2, THERMAL PROPERTY DATA COMPILATION	LLL	6600	F+HAL	MA	U	M	20
52	GE MEDICAL INSURANCE REIMBURSEMENT SYSTEM	GEPI	435	COBOL	MA	U	M	21
53	TRAMP, TAPE LIBRARY MANAGEMENT PROGRAM	ALOO	8283	COBOL	MA	U	M	21
54	ELEMENTAL MOMENT OF INERTIA CALCULATION	MHSM	360	F4	MA	U	T	21
55	MASS DETERMINATION BY TRANSPOSITION METHOD	MHSM	360	F4	MA	U	Q	21

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R 43	MPR PRODUCT RECORD FILE SYSTEM	MHSM	360	C+8AL	MA	U	M	22
R 44	UNIVERSAL DENSITY CONTROL PROGRAM	MHSM	360	F4	MA	U	Q	22
R 45	WHEATSTONE BRIDGE RESISTANCE CALIBRATION	MHSM	360	F4	MA	U	T	22
R 46	TCHRFAC, CHEMICAL REACTOR ANALYSIS PROGRAM	MHSM	360	F4	MA	U	U	22
R 47	TODDY2, 2-DIMENSIONAL WAVE PROPAGATION PROGRAM	SLA	3600	F36	MA	U	S	22
R 49	SEVER, SYMMETRIC MATRIX EIGENVALUES & VECTORS	SLA	6600	F4	MA	U	P	23
R 49	SANPIC, PARTICLE-IN-CELL PROGRAM	SLA	6600	F+COM	MA	U	H	23
R 50	AVINT, INTEGRATION OF TABULATED DATA	SLA	3600	F63	MA	U	P	23
R 50	AVINT, INTEGRATION OF TABULATED DATA	SLA	6600	F4	MA	U	P	23
R 51	ERR,ERRC,ERRQR & COMPLEMENTARY ERROR FUNCTION	SLA	6600	F4	MA	U	P	23
R 52	GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	PD10	F4	MA	D	P	24
R 52	GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	1108	F4	MA	D	P	24
R 52	GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	6600	F4	MA	D	P	24
R 53	RES, CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA	6600	F4	MA	D	P	24
R 54	ERRCHK,ERRGET,ERRSET, SYSTEM ERROR ROUTINES	SLA	6600	F+COM	MA	D	P	24

SUPPLEMENT 1

55	TDF-A, COMPUTING THERMODYNAMIC FUNCTIONS	LASL	6600	F+COM	MA	U	U	25
56	FINDMAP, COMPLEX GREEN'S FUNCTION SUBROUTINE	LASL	6600	F+COM	MA	U	P	25
57	INOX, X-RAY POWDER PATTERN INDEXING	LASL	6600	F4	MA	U	Q	25
59	LASL LENS DESIGN PROGRAM VERSION 2.2	LASL	6600	F+COM	MA	U	W	25
59	T401, LOAD FORTRAN FORMAT-FFIE INPUT DATA	LASL	6600	F4	MA	U	P	25
60	Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER	LASL	6600	F4	MA	U	P	25
61	ARITHMETIC SUBROUTINES CATEGORY A	LASL	6600	F4	MA	U	P	26
62	ELEMENTARY FUNCTION SUBROUTINES CATEGORY B	LASL	6600	COM	MA	U	P	26
63	SUBROUTINES FOR SPECIAL FUNCTIONS CATEGORY C	LASL	6600	F4	MA	U	P	26
64	D301, TRUNCATED RUNEMAN POISSON EQUATION SOLVR	LASL	6600	F	MA	U	P	26
65	SUBROUTINES FOR INTERPOLATION CATEGORY E1	LASL	6600	F4	MA	U	P	26
66	LEAST SQUARES & SMOOTHING ROUTINES CATEGORY E2	LASL	6600	F4	MA	U	P	26
67	VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1	LASL	6600	F4	MA	U	P	27
68	EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY F2	LASL	6600	F4	MA	U	P	27
69	SIMULTANEOUS LINEAR SYSTEMS CATEGORY F4	LASL	6600	F4	MA	U	P	27
70	SPECTRAL ANALYSIS OF TIME SERIES CATEGORY G6	LASL	6600	F4	MA	U	P	27
71	DATA HANDLING & SORTING SUBROUTINES CATEGORY M	LASL	6600	F4	MA	U	P	28
72	M103, ERROR TERMINATION MESSAGE W/COUNT CONTRL	LASL	6600	F4	MA	U	P	28
R 73	FILE CODE GENERATOR, 6-CHARACTER ALPHANUMERIC	BKCD	360	F4	MA	U	P	28
74	HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE	BKCD	360	F4	MA	U	P	28
R 75	GROUPS COMPARISON, QUALITY CONTROL PROGRAM	BKCD	360	F4	MA	U	P	28
76	GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC	BKCD	360	F4	MA	U	P	29
77	TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	360	F	RRD	U	C	29
77	TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	6600	F	RRD	U	C	29
77	TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	7600	F	RRD	U	C	29
79	PIOTA2, BIOME POPULATION INTERACTION MODELING	LASL	1108	F4	MA	U	Y	29
78	PIOTA2, BIOME POPULATION INTERACTION MODELING	LASL	6600	F4	MA	U	Y	29
79	SMAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	LASL	6600	F4	MA	U	H	29
80	SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	360	F4	MA	U	G	30
80	SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	6600	F4	MA	U	G	30
81	MEN, NEUTRON TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	B	30
82	MCG, GAMMA TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	J	30
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84	RKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	360	F4	MA	U	G	31
84	RKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	7600	F4	MA	U	G	31
85	CBMEXP, CO2 GAS LASER AMPLIFICATION STUDIES	LASL	7600	F4	MA	U	X	31
86	HANJON, ELECTRON ENERGY DISTRIBUTION CALC	LASL	7600	F4	MA	U	W	31
87	HIT, CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL	7600	F4	MA	U	X	31
88	CORCOUP, NILSSON CORCLIS COUPLING PROGRAM	LASL	6600	F4	MA	U	W	32
89	DEGAA, POLYNOMIAL SOLN OF SCHRODINGER EQUATION	LASL	7600	F4	MA	U	W	32
90	APIGAIL3, ANTIPODY PRODUCTION SIMULATION	LASL	6600	F4	MA	U	Y	32
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93	HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	7600	F4	MA	U	W	33
94	YAGUI, LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	7600	F4	MA	U	F	33
95	CONFOLD, UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL	6600	F4	MA	U	O	33
96	HAPPER, PREDICTING MANUFACTURING REQUIREMENTS	GEPI	GETS	BASIC	MA	P	M	33
97	PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	F4	MA	U	P	33
99	SLADE-D, FINITE ELEMENT DYNAMIC SHELL RESPONSE	SLA	6600	F4	MA	P	I	33
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R101	SETS, SFT EQUATION TRANSFORMATION SYSTEM	SLA	6600	FTN	MA	P	P	34
102	GEM, ANALYSIS OF NUCLFAR FUEL CYCLE ECONOMICS	UILL	360	F4		P	C	35
103	LEVFL, ATOMIC-ENERGY-LEVEL VALUES CALCULATION	LASL	6600	F4	MA	P	W	35
104	CALOP, WAVE NUMBERS DERIVED FROM LEVEL VALUES	LASL	6600	F4	MA	P	W	35
105	TY, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	F4	MA	U	W	35
106	GRONK, DOSE TO MAN FROM REACTOR GAS RELEASES	RNWL	1108	BASIC	RS	U	G	36
107	CRITR, INTERNAL INGESTION DOSE TO ORGANISMS	RNWL	1108	BASIC	RS	U	G	36
109	APROG, DOSE TO MAN FROM REACTOR LIQUID RELEASE	RNWL	1108	BASIC	RS	U	G	36
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112	PCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	7600	F4	MA	U	W	37
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130	MARC, MAN-REM DOSE FROM ATMOSPHERIC TRANSPORT	DP	360	F4	PMM	C	R	42
131	LODIPS, STREAM-RIVER POLLUTANT PREDICTION	DP	360	F4	PMM	D	R	42
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152	SWIFT, JOSHUA POINT-KINETICS SOLUTION MODULE	DP	360	F4	PMH	U	C	48
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191	BARB, TEXT-FORMATTING PROGRAM DOCUMENTING AID	BKY	6600	F+COM	R	U	P	56
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INTRODUCTION

Since 1960 the Argonne Code Center has served as a U. S. Atomic Energy Commission information center for computer programs developed and used primarily for the solution of problems in nuclear physics, reactor design, reactor engineering and operation. The Center, through a network of registered installations, collects, validates, maintains, and distributes a library of these computer programs and publishes a compilation of abstracts¹ describing them.

In 1972 the scope of the Center's activities was officially expanded to include computer programs developed in all of the U. S. Atomic Energy Commission program areas and the compilation and publication of this report. The Computer Program Summary report contains summaries of computer programs at the specification stage, under development, being checked out, in use, or available at ERDA offices, laboratories, and contractor installations. The purpose of the report is to keep the U. S. Energy Research and Development Administration, ERDA-laboratory and contractor personnel informed as to the existence, status, and availability of computer programs within the agency, thereby minimizing duplication costs and maximizing the value of ERDA computer program development effort and funding.

ERDA and contractor installation personnel responsible for ERDA funded computer program or system development are responsible for completing the standard Computer Program summary form used to produce this report. The form includes the following information.

Author/Contact: the name of the person responsible for the computer program or system described.

Category: a problem/system classification assigned on the basis of the class of physical problem solved, or the data processing activity performed.

Program Identification and Key-Word-In-Context Title: a limited program identification and description for use in the Report Table of Contents listing and Index section.

Contractor: the name and address of the USERDA or contractor installation.

Funding Division: the identification of the ERDA-division funding the development.

Status: the current stage of computer program development.

Computer: hardware system requirements for the program or system and operating system used.

Programming Language(s): the languages utilized in writing the program.

Program Size: an indication of the magnitude or complexity of the program, e.g. number of source statements or size of source decks and number of words of memory required.

Summary: a brief description of the physical problem solved and the method used for the solution together with the approximations employed and restrictions imposed by the program, or a definition of the data processing activity or system complete with restrictions and input/output data requirements.

Keywords: keywords or phrases designed to convey to the reader the area of applicability and computational algorithm employed.

References: bibliographic citations to pertinent published literature or technical reports.

Availability: an indication of the availability of the program package material and the source from which this material can be obtained.

Distribution: prescribed distribution limitations.

¹ Argonne Code Center: Compilation of Program Abstracts, Argonne National Laboratory Report ANL-7411 and supplements thereto.

ERDA COMPUTER PROGRAM SUMMARY

DATE	1	AUTHOR/CONTACT	2	CATEGORY	3
PROGRAM IDENTIFICATION AND KWIC TITLE (fewer than 47 characters)					4
ERDA/CONTRACTOR	5	FUNDING DIVISION	6	STATUS	7
				SPECIFICATION ☐	
				DEVELOPMENT ☐	
				CHECK OUT ☐	
				IN USE ☐	
				PACKAGED ☐	
COMPUTER	8	PROGRAMMING LANGUAGE(S)	9	PROGRAM SIZE	10
PROGRAM/SYSTEM SUMMARY					11
KEYWORDS					
REFERENCE(S)					12
AVAILABILITY:					13
DISTRIBUTION: ☐ UNLIMITED ☐ U.S. ONLY ☐ GOVERNMENT CONTRACT APPLICATIONS ONLY					14
☐ SPECIAL					

ACCF11

GLOSSARY

ERDA AND CONTRACTOR IDENTIFICATION

ALOO	— U. S. Energy Research and Development Administration Albuquerque Operations Office P. O. Box 5400 Albuquerque, New Mexico 87115	GEPI	— General Electric Company Neutron Devices Department P. O. Box 11508 St. Petersburg, Florida 33733
ANC	— Aerojet Nuclear Company 550 Second Street Idaho Falls, Idaho 83401	HEDL	— Hanford Engineering Development Laboratory P. O. Box 1970 Richland, Washington 99352
ANL	— Argonne National Laboratory 9700 South Cass Avenue Argonne, Illinois 60439	H&NN	— Holmes & Naiver, Incorporated P. O. Box 14340 Las Vegas, Nevada 89114
BKCD	— Bendix Corporation Kansas City Division P. O. Box 1159 Kansas City, Missouri 64141	LASL	— University of California Los Alamos Scientific Laboratory P. O. Box 1663 Los Alamos, New Mexico 87544
BKY	— University of California Lawrence Berkeley Laboratory Berkeley, California 94720	LLL	— University of California Lawrence Livermore Laboratory P. O. Box 808 Livermore, California 94550
BNWL	— Battelle-Northwest Pacific Northwest Laboratories P. O. Box 999 Richland, Washington 99352	MHBR	— Mason & Hanger-Silas Mason Co., Inc. P. O. Box 561 Burlington, Iowa 52601
CSCN	— Computer Sciences Corporation 825 Jadwin Avenue Richland, Washington 99352	MHSM	— Mason & Hanger-Silas Mason Co., Inc. P. O. Box 647 Amarillo, Texas 79105
DP	— E. I. duPont de Nemours Savannah River Laboratory Aiken, South Carolina 29801	MLMO	— Monsanto Research Corporation Mound Laboratory P. O. Box 32 Miamisburg, Ohio 45342
EG&G	— EG&G Las Vegas Area Operations P. O. Box 1912 Las Vegas, Nevada 89101	NVOO	— U. S. Energy Research and Development Administration Nevada Operations Office P. O. Box 14100 Las Vegas, Nevada 89114
EI	— Energy Incorporated P. O. Box 736 Idaho Falls, Idaho 83401	REEC	— Reynolds Electrical & Engineering Company P. O. Box 14400 Las Vegas, Nevada 89114
ERDA	— U. S. Energy Research and Development Administration Washington, D.C. 20545		
GA	— General Atomic Company P. O. Box 81608 San Diego, California 92138		

RFD Dow Chemical USA
 Rocky Flats Division
 P. O. Box 888
 Golden, Colorado 80401

SLA -- Sandia Laboratories
 P. O. Box 5800
 Albuquerque, New Mexico 87115

SLAC -- Stanford University
 Stanford Linear Accelerator Center
 P. O. Box 4349
 Stanford, California 94305

UCND -- Union Carbide Corporation
 Nuclear Division
 P. O. Box Y
 Oak Ridge, Tennessee 37830

UILL -- University of Illinois
 214 Nuclear Engineering Laboratory
 Urbana, Illinois 61801

UNI -- United Nuclear Industries, Incorporated
 P. O. Box 490
 Richland, Washington 99352

WARD -- Westinghouse Electric Corporation
 Advanced Reactors Division
 Waltz Mill Site
 P. O. Box 158
 Madison, Pennsylvania 15663

ERDA PROGRAM DIVISION ABBREVIATIONS

ANL -- Argonne National Laboratory	PA -- Office of Planning and Analysis
ARPA -- Advanced Research Projects Agency	PMM -- Division of Production and Materials Management
AT -- Division of Applied Technology	R -- Division of Physical Research
CTR -- Division of Controlled Thermonuclear Research	RLOO -- Richland Operations Office
DBER -- Division of Biomedical and Environmental Research	RRD -- Division of Reactor Research and Development
GEO -- Division of Geothermal Research	RS -- Directorate of Regulatory Standards
LLL -- Lawrence Livermore Laboratory	RSR -- Division of Reactor Safety Research
MA -- Division of Military Application	SNS -- Division of Space Nuclear Systems
NVOO -- Nevada Operations Office	

DISTRIBUTION AND STATUS

In the Table of Contents the summary accession number may be preceded by the letter R, G, or S. These letters indicate that the distribution of program, model, system, or data described in that summary is limited in some manner. Summary numbers not preceded by the letter R, G, or S imply that the material presented will be generally available. The letter R denotes *restricted* and indicates distribution of the material described in the summary is limited to the United States. The letter G designates distribution of the summary's material is limited to U. S. *Government* contractors, and the letter S identifies material which is available for distribution only with *Special* authorization.

Symbols listed in the column headed STATUS define the item's current status. Mnemonics used for this purpose are:

S Specification
 D Development
 C Checkout
 U In Use
 P Packaged

DEFINITIONS OF SYMBOLS USED IN TABLE OF CONTENTS

MACHINE DESIGNATION		PROGRAMMING LANGUAGES OR DATA REPRESENTATION	
210	ASI 210	ALA76	Lawrence Livermore Laboratory's ALA76 (ALGOL-like)
283	Burroughs 283	ANSIF	ANSI FORTRAN
360	IBM 360	ASM	Assembler
370	IBM 370	BAL	Basic Assembly Language
400	GE 400	BASIC	BASIC
435	GE 435	BIN	Binary
812	ND 812	CHAT	Lawrence Livermore Laboratory's CHAT (FORTRAN-like)
1108	UNIVAC 1108	COBOL, C	COBOL
3100	CDC 3100	COM	COMPASS Assembly Language
3600	CDC 3600	EBCDI	EBCDIC
6400	CDC 6400	F	FORTRAN
6500	CDC 6500	FOCAL	DEC Formula CALculation Interpretive Language
6600	CDC 6600	FTN	FTN FORTRAN
7040	IBM 7040	F36	3600 FORTRAN
7044	IBM 7044	F4	FORTRAN IV
7600	CDC 7600	F63	FORTRAN '63
9830	H-P 9830	GASP	GASP IV
GETS	GE Mark II Time-sharing	INT	Interpreter
MC80	Intel MCS 80	LRL	Lawrence Livermore Laboratory's LRLTRAN
MCS4	Intel MCS 4	MAC	MACRO-20 Assembly Language
MCS8	Intel MCS 8	MACH	Machine Code
MDCM	Modular Computer Systems MODCOMP III	MACRO	MACRO-11 Assembly Language
PDP8	DEC PDP 8	MTRAN	MACRO FORTRAN
PDP9	DEC PDP 9	PAL8	PDP 8 Assembly Language
PD10	DEC PDP 10	PL/1, P	PL/1
PD11	DEC PDP 11	PUTT	Lawrence Livermore Laboratory's PUTT (FORTRAN-like)
		QUIK	QUIKTRAN
		R	RPG
		SLE	SLEUTH Assembly Language

SUBJECT CLASSIFICATION GUIDE

- A **Cross Section and Resonance Integral Calculations** Computation of reaction cross sections from nuclear theory such as the optical or Hauser-Feshbach models, resonance cross sections by Breit-Wigner or multilevel theory, determination of differential scattering cross sections, cross section evaluation and compilation programs.
- B **Spectrum Calculations, Generation of Group Constants, Lattice and Cell Problems**—Determination of the slowing-down density or thermal spectrum, weighting and averaging of cross sections and related quantities for the production of group constants, and evaluation of design parameters by lattice and cell calculation.
- C **Static Design Studies** Calculation of the reactivity and flux distribution of the reactor system, and adjustment of design parameters to prescribed specifications, i.e., criticality and power distribution search procedures.
- D **Depletion, Fuel Management, Cost Analysis, and Reactor Economics** Includes burnup programs, isotope and fission product buildup and decay computations, and optimization studies.
- E **Space-Independent Kinetics** Studies of the time behavior of reactors including delayed neutron effects and feedback mechanisms, and transfer function evaluation.
- F **Space-Time Kinetics, Coupled Neutronics-Hydrodynamics-Thermodynamics and Excursion Simulations**—Programs which consider spatial design characteristics and accompanying effects in studying the time-behavior of the reactor.
- G **Radiological Safety, Hazard and Accident Analysis** Calculation of internal and external dose rates, determination of reactor thermodynamic and hydrodynamic properties following an accident, i.e., release of radioactive materials, coolant system blowdown, steam generator rupture.
- H **Heat Transfer and Fluid Flow** Steady state and transient heat transfer computations, fluid flow studies and calculations of thermodynamic properties.
- I **Deformation and Stress Distribution Computations, Structural Analysis and Engineering Design Studies**—Includes fuel-element design evaluations, core configuration studies, and composite structure analysis.
- J **Gamma Heating and Shield Design Programs** Computation of heat-generation rates, and penetration analysis and leakage calculations for reactor shields.
- K **Reactor Systems Analysis** Combinations of programs solving correlated problems in categories A through I.
- L **Data Preparation** Generation of program parameters, checking, editing and formatting of problem input information.
- M **Data Management** Construction, maintenance and retrieval of data files, e.g., cross-section libraries, management systems such as payroll and personnel systems, accounting and budgeting systems, property and equipment systems, production and inventory control, indexing and retrieval systems, etc.
- N **Subsidiary Calculations** Plotting, editing and display routines which process output data from other programs.
- O **Experimental Data Processing** Programs designed to process data directly acquired from an experimental situation or to assist experimenter in the design of the experiment.
- P **General Mathematical and Computing System Routines**—Calculation of mathematical functions, statistical analysis, special-language routines with general data-processing capabilities, and software systems.
- Q. **Materials** Measurements and computation of the physical and mechanical properties of materials, simulation of radiation damage processes, corrosion studies, determination of crystallographic functions.

- R. **Environmental and Earth Sciences**—Environmental impact studies, geology, seismology, geophysics calculations, hydrology and ground water studies, bioenvironmental systems analyses, meteorological calculations relating to the atmosphere and its phenomena, studies of airborne particulate matter, climatology, etc.
- S. **Space Sciences**—Analysis of orbits and trajectories, astronomy and astrophysics computations, wave propagation studies and the calculation of reentry parameters.
- T. **Electronics and Engineering Equipment**—Automated design of electronic equipment, engineering computations for numerically controlled machine tools and process control programs.
- U. **Chemistry**—Chemical analysis, mass spectroscopy, radiation chemistry, radiolysis studies, etc.
- V. **Particle Accelerators and High Voltage Machines**—Programs relating to the design, development and operation of high-voltage machines and particle accelerators such as Van de Graaff generators, linear accelerators, cyclotrons, synchrotrons, etc.
- W. **Physics**—Calculations relating to theory of atomic or molecular structure or properties, charged particle collision studies that involve phenomena such as charge exchange, excitation, ionization, dissociation, etc., elementary particle theories and models, scattering theory, quantum field theory and quantum electrodynamics studies, general relativity and gravitation theory computations.
- X. **Controlled Thermonuclear Research**—Electric discharge phenomena and plasma physics computations, electrodynamics and magnetic hydrodynamics studies.
- Y. **Biology and Medicine**—Biological, medical and radiological studies of the structure, functions, chemistry, biophysics, reproduction, and heredity of bacteria, plants, laboratory animals, and humans.
- Z. **Data**—Data prepared in specific program formats for program testing and evaluation, benchmark studies, or library use.

SUMMARY COLLECTION

(Pages 11–24 do not appear here, as they are printed in their entirety in ANL-8040; pages 25–39 do not appear here, as they are printed in their entirety in ANL-8040 Supplement 1; pages 41–52 do not appear here, as they are printed in their entirety in ANL-8040 Supplement 2.)

177 R. Hausman & T. Sathre **P**
RFIB, FIBONACCI, RANDOM-NUMBER GENERATOR
 Lawrence Livermore Laboratory **MA**
 Livermore, California **In Use**

ANSI FORTRAN 20 statements
 This code computes uniformly-distributed pseudorandom numbers which are correlation-free and have met extensive statistical tests. Two sequences of integers are used, one to select items from the other. No input is required, but the output may be restarted at any position in the sequence. The code is specializable to any binary computer. Output repeats after 150% of the available bit patterns have been produced. Execution time for an inline version of this code is comparable to the time of a linear congruential method.

Robert Hausman and Tom Sathre, Fibonacci Random Number Generator, UCID-30104, December 1974.

Source deck and documentation are available from the authors on request.

Distribution: Unlimited.

178 R. B. Hamilton, C-81 **P**
EGG GENERAL PLOT SYSTEM FOR GRAPHICAL OUTPUT
 EG&G, Inc. **MA**
 Las Vegas, Nevada **In Use**
 CDC 6000 series **COMPASS** 4000 words
 SCOPE 3.2/3.4 7000 cards

The General Plot System is a collection of routines which provide ease of use and a high-degree of flexibility in producing graphical output. The system is comprised of a set of routines to control the peripheral plotting hardware and two major logical subsystems, the Single-Frame Subsystem and the Multiple-Frame Subsystem. The Single-Frame Subsystem forces the final plots to fit within a 10-inch by 10-inch frame while the Multiple-Frame Subsystem permits the user to obtain final plots of virtually any size. The plot system contains sufficient mathematics to transform data from the following six geometries:

- Euclidean one-dimensional space
- Euclidean two-dimensional space
- Euclidean three-dimensional space
- Semi-log planar space with vertical logarithmic axis
- Semi-log planar space with horizontal logarithmic axis
- Log-log planar space.

The routines may be used from either Run or Fortran Extended. The current plotting devices in use are the CDC 245-2 microfilm unit and several Calcomp 565 and 663 incremental plotters at remote terminals. The system includes modifications to the Scope PP routine 1FM for microfilm output, and the CDC remote job entry package RJEMS for plotter output.

A Scope Update tape, source deck or listing and program documentation are available from the author on request.

Distribution: U. S. Only.

179 A. A. Mirin, L-382 **X**
HYBRID-II, A 2-D MULTISPECIES FOKKER-PLANCK COMPUTER CODE
 Lawrence Livermore Laboratory **CTR**
 Livermore, California **In Use**
CDC 7600 **FORTTRAN** 2000 cards

The computer program HYBRID-II solves the two dimensional Fokker Planck equation for an arbitrary number of ion species plus electrons with the assumption that the electron distribution is isotropic. The ion equations are advanced using a second-order fully implicit split difference scheme. An implicit algorithm is used to advance the electron equation. The ion velocity and angular finite difference meshes usually consist of 45 and 20 points, respectively. The electron velocity mesh, which is an extension of the ion velocity mesh, usually consists of 201 points. The field length for a three-species calculation on the above mesh is approximately 230,000, and the running time is 5 to 10 minutes on the CDC 7600, depending, of course, on the number of time steps required. The code operates without disk files or tapes. The necessary input consists merely of data cards. Both CRT plots and either HSP or microfiche printed data make up the output.

Arthur A. Mirin, HYBRID-II, A Two-Dimensional Multi-species Fokker-Planck Computer Code, UCRL-51615, July 26, 1974.

The reference document contains a source program listing.

Distribution: Unlimited.

180 T. J. Ward **M**
RADSAFE, RADIATION SCIENCES SYSTEM FOR PERSONNEL RADIATION DATA
 REEC Co. **MA**
 Las Vegas, Nevada **In Use**
 CDC 6400 **COBOL** 25,000 words
 SCOPE 3.2 14,050 cards

The REEC Co RADSAFE System consists of 23 programs which provide for the collection and reporting of the amounts of radiation received and accumulated by Nevada Test Site (NTS) personnel.

The system also provides for the recall of Exposure History Data in the form of reports of employees' exposure to radiation at NTS related activities.

This information can be recalled by individual, organization, or location, and would contain information from 1945 to present.

Also provided by the system is the generation of termination reports as specified by the AEC Manual, Chapter 0525.

Source decks and a system documentation package are available from the author on request.

Distribution: Unlimited.

181 R. C. Cook & W. G. Hoover, L-504 **I**
CRACK, TWO-DIMENSIONAL PLANE-STRAIN CALCULATION
 Lawrence Livermore Laboratory **MA**
 Livermore, California **In Use**
CDC 6600 **FORTTRAN** 700 cards

CRACK is a computer code which calculates the free energy and the energy and displacement fields of a two-dimensional triangular lattice connected by nearest neighbor Hookean springs. Certain of the bonds may be broken to approximate a crack and an external force can be applied to the boundaries parallel to the crack.

Robert C. Cook, Cracked Two-Dimensional Systems, UCRL-51655, October 31, 1974.

The reference document contains a source program listing.

Distribution Unlimited.

182 I. L. Kilmer **M**
PBP, FEDERAL PAYROLL, BUDGET, AND PERSONNEL SYSTEM

Nevada Operations Office MA
Las Vegas, Nevada In Use
CDC 6400 COBOL 40K words
SCOPE 3.4 41,518 cards

PBP is a combined federal personnel, payroll and budget system including time and attendance reports, payroll computation and reports with Treasury interface via magnetic tape, bond purchasing records, leave register and history, budget reports, actual versus projected costs, personnel organization and statistical summary reports. It is designed to permit entry of data into the computer process only once with the result that the data will be controlled at the proper level. It is an exception system for attendance reporting in that data does not have to be entered into the system for those employees who work a standard 80-hour pay period. Standard tables are used whenever the data items are common throughout the system. Total actual running time for the bi-weekly system is approximately 1650 system seconds on the CDC 6400.

Source decks or listings and documentation are available from the author on request.

Distribution Unlimited.

183 H. N. Friesen **R**
STATPAC, STATISTICAL PACKAGE FOR HYDROLOGIC DATA

Desert Research Institute MA
Las Vegas, Nevada Packaged
CDC 6400 FORTRAN RUN 48,000 words
SCOPE 3.4 16,104 cards

STATPAC is a full complement of statistical analysis programs used in hydrologic studies including data conversion, transformation, regression, factor analysis, matrix manipulation, correlation, analysis of variance, printer plotting, discriminant analysis, grid conversion, and contouring. The package contains more than 30 programs which may be used separately or in logical sequences as needed. Most input is by cards or tape, most output is to the printer.

Source decks and documentation are available from the U. S. Geological Survey, Water Resources Division, Denver Computation Branch, Denver Federal Center, Denver, Colorado, on request.

Distribution: Special.

184 F. Petersen **R**
SOC, A ONE-DIMENSIONAL WAVE PROPAGATION CODE

Lawrence Livermore Laboratory AT
Livermore, California In Use
CDC 7600 FORTRAN approx. 2500 stmts

The SOC code provides a numerical solution to the propagation of a stress wave of arbitrary amplitude through a

Lagrangian grid in one space dimension (spherical symmetry). The code has been structured to accept material properties data from a preshot testing program in order to predict the stress-induced effects on a rock mass caused by an explosive source. The code calculates stress, particle velocity and displacement history, cavity radius, extent of brittle failure, and the rock's efficiency for transmitting stress. The calculations are based on an equation of state for the rock which is developed from preshot field and laboratory measurements of the rock properties. The field measurements, made by hole logging, determine *in situ* values of the rock's density, water content, and propagation velocity for elastic waves.

J. T. Cherry and F. L. Petersen, "Peaceful Nuclear Explosions. Phenomenology and Status Report, 1970". IAEA, Vienna, STI/PUB-273 (CONF-700305) 241-325 (1970).

The source program listing appears as an appendix to the paper.

Distribution Unlimited.

185 H. F. Wren **M**
ADAM, A DATA ACCESS METHOD FOR LARGE, DYNAMIC FILES

E. I. duPont de Nemours & Co. PMM
Savannah River Laboratory, Aiken, South Carolina In Use
IBM 360/195 FORTRAN IV 82K bytes Program
100-260K bytes Buffer

The data manager ADAM was written to deal efficiently with large files and many daily changes. Data is stored by ADAM in an indexed sequential manner. ADAM is designed to handle an index length of 2 to 256 bytes with associated data length of 0 to 300 bytes. The maximum efficient index length has been found to be about 10 bytes. ADAM is designed to handle a large volume of small records and to allow data to be stored or retrieved by simple commands. The user can present an action, file name, index name, and data record to ADAM without specifying the storage location because ADAM itself maintains a directory of the various files and their indexes. Each file may have a different record size, structure, and content, but the record structure within each file is rigidly defined. Thus the user does not have to write a routine to add, modify, delete, or retrieve data from a direct-access file.

ADAM performs six data-handling functions:

1. Add a new record to a file.
2. Modify an existing record in a file.
3. Delete an existing record from a file.
4. Get a record from a file.
5. Get "next" record (read file sequentially).
6. Restore a record to some previous condition.

Each data record, identified by a unique index, resides within one of the many data blocks that make up the ADAM directories and files. The directory of each ADAM file includes the high and low indexes of each data block within the file. When an index is presented to ADAM, ADAM searches the appropriate file directory for the pertinent data block and retrieves (or stores) the data record associated with the index.

ADAM files are double-buffered, i.e., the user has the option of accepting or rejecting updated ADAM files. ADAM also maintains a history of all changes, optional for each file, which can provide a complete audit trail for every file in the system.

Distribution Unlimited.

186 D. W. Ross **Y**
GENE, TETRAD GENETIC ANALYSIS

Lawrence Berkeley Laboratory DBER
 Donner Laboratory, Berkeley, California In Use
 CDC 6600 F & BKY39 approx. 1000 cards

GENE is a FORTRAN program for analysis of genetic data obtained from tetrad analysis. The program analyses for gene frequency, crossovers, multiple crossovers, gene conversion and rare events. Input data are parental genotypes and tetrad-grouped progeny genotypes.

Source deck is available from the author on request.

Distribution: Unlimited.

187 B. L. Hulme & S. L. Daniel **P**
STFODE/COLODE, SOLUTION OF STIFF ORDINARY DIFFERENTIAL EQUATIONS BY COLLOCATION

Sandia Laboratories MA
 Albuquerque, New Mexico Packaged
 CDC 6600 FORTRAN approx. 1150 cards
 SCOPE 3.3

STFODE/COLODE are subroutines designed to solve stiff ordinary differential equations by collocation. COLODE may be called directly to integrate over a given interval, taking two equal steps at a time. The collocation method, chosen either automatically or by the user, is fixed during the integration. At each step a vector of continuous N-th degree piecewise polynomials is made to satisfy the o.d.e. at N Gauss-Legendre or Radau (right-end) points, where $1 \leq N \leq 12$. The Gauss-Legendre methods are A-stable and of order 2N, while the Radau methods are strongly A-stable and of order 2N-1. STFODE, a driver for COLODE, is intended for users who never want to supply a Jacobian subroutine or select the method.

Bernie L. Hulme, Discrete Galerkin and Related One-Step Methods for Ordinary Differential Equations, *Math. Comp.*, **26**, 881-891 (1972).

The program package containing the source deck, sample problem deck, and documentation are available from the Argonne Code Center as ACC No. 652.

Distribution: Unlimited.

188 V. Kopytoff, L-90 **T**
ACDES. A CODE TO DESIGN A PYROTECHNIC ACTUATOR

Lawrence Livermore Laboratory MA
 Livermore, California In Use
 CDC 6600,7600 FORTRAN 1650 statements

Code ACDES designs a self-stopping pyrotechnically-powered actuator. Input gives the mass to be moved, the length and time of stroke, and design constraints on maximum allowable final velocity, piston rod stress, and generator and cylinder pressures. The actuator consists of one or more double-acting cylinder assemblies, and uses a specific pyrotechnic gas generator loaded with a variable amount of propellant. Self-stopping action is obtained by the use of a vent-hole through the piston. Six independent variables completely specify the actuator, whose performance defined by seven quantities, is calculated by the STROKE subroutine which performs a thermodynamic analysis on the actuator. The values of the six independent variables approximating the desired performance are found by utilizing an A.E.R.E. optimizing program (POWSQ) to minimize the sum of

squares of nonlinear functions. The functions to be minimized are the differences between the seven quantities calculated by STROKE and their desired values. The program is fully interactive using a teletypewriter to inform the user of the solution progress and to secure user's design decisions as needed. A typical problem requires approximately eight minutes of CDC 7600 time to completely specify an actuator satisfying design requirements to less than 7% deviation from specified performance values. When compiled with PUTT (a Chiprewa-based compiler), the program has a length of 27,100_a.

Vadim Kopytoff (PhD thesis), Analysis and Design of a Pyrotechnic-Powered Self-Stopping Actuator, UCRL-51695, January 10, 1975.

The reference document contains a source program listing.

Distribution: Unlimited.

189 A. J. Snyder **D**
NUFUEL, NUCLEAR FUEL REQUIREMENTS FORECAST

USE RDA, Office of Planning & Analysis PA
 Washington, D.C. In Use
 IBM 360/50,370/165 FORTRAN IV 2500 cards
 OS/MVT 21.7 350K bytes

Computer program NUFUEL calculates and prints annual requirements for separative work and uranium related to a schedule of nuclear power plant additions. Related fuel cycle quantities such as plutonium production and requirements, requirements for conversion to UF₆, for fuel fabrication, and for spent-fuel reprocessing are also calculated and reported on a real-time basis. Besides the schedule of plant additions, reactor characteristics and fuel cycle data are needed as input data. They are provided for several common reactor types. Calculations assume that uranium enrichment plants approximate ideal cascade conditions and that the supporting facilities are available when needed. Array dimensions limit the forecasting to periods of 30 years at a time.

Artha Jean Snyder, Computer Program NUFUEL for Forecasting Nuclear Fuel Requirements and Related Quantities, WASH-1348, October 1974.

Artha Jean Snyder, Methods of Calculating U-235 Outputs and Charges by Use of Ideal Cascade Theory, TID-8522, February 1960.

William H. McVey, Edwin H. Davidson, and Gerald E. McTigue, Calculating U-235 Outputs and Charges, TID-8529, June 30, 1963.

The program will be available through the Argonne Code Center.

Distribution: Unlimited.

190 F. L. Conkle **M**
RND424RQ, RANDOM SAMPLING TABLE (PROGRAMS RNDM0985 & RNDM0993)

Monsanto Research Corporation MA
 Mound Laboratory, Miamisburg, Ohio In Use
 IBM 360/50 FORTRAN IV 64K bytes

This computer job generates a "uniformly random sequence" of consecutive non-repeating integer numbers between the user-selected starting and ending number. It can be used to generate random sequences for performing laboratory tests and for many statistical tests for Quality Control purposes or inventory sampling.

Frank L. Conkle, User Guide and System Documentation for Job RND424RQ "Random Sampling Table", Mound Laboratory document.

This program will be available through the Argonne Code Center.

Distribution: Unlimited.

191 W. R. Gage P
BARB, PROGRAM DOCUMENTATION AID
 Lawrence Berkeley Laboratory R
 Berkeley, California In Use
 CDC 6600 F and COM 20,000 words

BARB is a text formatting program to ease the chore of creating and updating program writeups. The input to BARB is basically a string of text with interspersed format control. The output consists of a print file in book-like format complete with a table of contents and an index. A diagnostics file of any errors found in processing is also available. The formatting options include titles, subtitles, appendices, and headings, boldface, left and right justification and centering of text. There are two modes of formatting--text mode and column mode. In the column mode the page is divided up into a number of columns and the text information is entered into each column separately. This is especially useful in preparing tables.

This program will be available through the Argonne Code Center.

Distribution: Unlimited.

192 P. R. Keller, L-73 R
EDS, ENVIRONMENTAL DATA STUDY GRAPHICS DISPLAY
 Lawrence Livermore Laboratory MA
 Livermore, California Development
 CDC 7600 FORTRAN 50K to 500K

This program provides interactive graphical display of collected three-dimensional multivariant environmental data. Data can be displayed from various positions. The program size expands to accommodate data storage requirements.

A source listing is available from the author.

Distribution: Special.

193 P. A. Crosetti G
SAFTAC, MONTE CARLO FAULT TREE SIMULATION PROGRAM
 United Nuclear Industries, Inc. RRD
 Richland, Washington Packaged
 UNIVAC 1108 F-98%, SLEUTH-2% approx. 700 cards

This program uses the fault tree technique to provide a systematic approach for analyzing system design, performing trade-off studies, and optimizing system changes or additions.

The program is a Monte Carlo fault tree simulation. It assumes an exponential failure distribution for basic input events and a choice of either Gaussian distributed or constant repair times. The program views the system represented by the fault tree as a statistical assembly of independent basic input events, each characterized by an exponential failure distribution and, if used, a constant or normal repair distribution.

Paul A. Crosetti, Fault Tree Simulation Computer Program, DUN-7697, June 1971.

This program will be available through the Argonne Code Center as ACC No. 674.

Distribution: Unlimited.

194 B. W. Hoffman M
MAXI, NADS DATA BASE STORAGE AND RETRIEVAL
 EG&G, Inc. MA
 Las Vegas, Nevada In Use
 PDP 10 MACRO-20 & F up to 6.5K words

MAXI (Mediation Algorithm for eXchange of Information) is a general-purpose data base executive which provides extended storage and retrieval mechanisms, and user definition of record structures through the facilities of a special data descriptor language. The MAXI-defined data base resides within the file structure of the DEC system-10 timesharing system, and consists of two files per data base. One file contains structural and bookkeeping information, and the other, primarily, user data.

User data are stored in arbitrary-length records which may either be named or unnamed. Each data base is divided into blocking units, a user-selectable parameter, for efficient allocation and usage of space. Thus, a record of information will consist of one or more unit blocks, as required, to contain the information.

Data identification or selection for retrieval may be accomplished via a number of mnemonic or direct routes. MAXI maintains a record-name directory, a keyword directory, and a data descriptor directory for record retrieval, and processes datum names specified within data descriptor records. Additionally, MAXI maintains the pointer lists associated with keywords found in the keyword directory, and provides for handling of the network node sets associated with individual data records.

The amount of in-core buffering is user selectable to allow greater efficiency in processing the data base information, with MAXI performing the necessary core management functions.

The source program and associated documentation are available from the author on request.

Distribution: U. S. Only.

195 R. M. Hellen M
SAFETY REPORTING AND COST SYSTEM
 REECO, MA
 Las Vegas, Nevada In Use
 CDC 6400 COBOL 7809 statements
 SCOPE 3.2

This system provides for reporting of all accidents and injuries by type, area, and frequency and accumulates associated costs. It consists of 22 programs.

Input to the system consists primarily of injury transactions, payroll/personnel data, vehicle accident data, and cost data. Three separate systems are utilized in obtaining said data: Payroll/personnel, Automotive/Equipment, and Safety. Costs are static factors supplied initially and used continuously as invariate variables. The KWIC system utilizes all safety codes as supplied by ANSI reference manuals on a current update basis. Utilization is within REECO and ERDA.

Source deck or listing and a system documentation package are available from the author on request.

Distribution: Unlimited.

196 R. M. Hellen **M**
BIO-RHYTHM SYSTEM FOR INJURY ANALYSIS
 REEC Co MA
 Las Vegas, Nevada Checkout
 CDC 6400 COBOL and F4 1500 statements
 SCOPE 3.2

This system, consisting of two programs, reports all critical days for any three-month span for any employee in the REEC Payroll File. Data utilized in the construction of the critical days are birthdate and injury date, if applicable. Other pertinent identification data, such as employee number and name, are selected and printed. Birthdate is essentially extracted from the Payroll Master File while injury date and type of injury data are taken from the Safety Injury Master File. Injury data are used primarily for the analysis and authentication of data. Utilization is within REEC Co.

Russell K. Anderson, Biorhythm-Man's Timing Mechanism, Professional Safety Journal, 17-21, February 1973.

Source decks or program listings and a system documentation package are available from the author on request.

Distribution: Unlimited.

197 R. Engelke, M-3 **O**
VEL. CYLINDER WALL VELOCITY DETERMINATION
 Los Alamos Scientific Laboratory MA
 Los Alamos, New Mexico In Use
 CDC 6600,7600 FORTRAN IV 400 statements

A least squares cubic spline method is used to smooth experimental radius versus time data derived from "smear" camera film measurements taken of an explosively-loaded cylinder. The principal output of the code is an accurate set of velocities determined as a function of time and radius.

LASL Reference LP-449.

Distribution: Unlimited.

198 J. Ortiz, H-5 **M**
HVL HOOD VELOCITY MEASUREMENT REPORTING
 Los Alamos Scientific Laboratory MA
 Los Alamos, New Mexico In Use
 CDC 6600,7600 FORTRAN 317 cards

HVL is a program prepared to assist in the evaluation and performance of exhaust hoods. The program provides information regarding location, type of hoods, number of hoods at this location, cross sectional area opening of hood, type of filtration, minimum acceptable velocity, current average velocity, preceding year's average velocity, current conditions of hood, e.g., satisfactory or unsatisfactory velocities, and a summary of all hoods in all areas.

LASL Reference LP-412.

Distribution: Unlimited.

199 R. Engelke, M-3 **H**
RAYTRACE, ACOUSTIC RAY TRACING IN UNSTEADY INHOMOGENEOUS FLOW
 Los Alamos Scientific Laboratory MA
 Los Alamos, New Mexico In Use
 CDC 6600 FORTRAN IV 400 statements

RAYTRACE computes the trajectory of (geometrical) acoustic rays and wavefronts in unsteady inhomogeneous one-dimensional fluid flows by solving the ray differential equations, with flow considered as a function of one space dimension and time. The ray differential equations for unsteady flow have the same general form as those for steady flow. The code could also be used to study the propagation of other types of disturbances (e.g., optical) for which an Eikonal approximation is appropriate.

Raymond Engelke, Ray Trace Acoustics in Unsteady Inhomogeneous Flow, J. Acous. Soc. America, 56, 1291-1292 (1974).

LASL Reference: LP-398.

Distribution: Unlimited.

200 R. Hoffstrier/R. Sanborn **M**
RODFAB, SIMULATION OF FUEL ROD FABRICATION PLANT
 Lawrence Livermore Laboratory R
 Livermore, California Development
 CDC 6600,7600 F4 and GASP IV 1300 cards
 ORDER

Program RODFAB simulates the production of mixed-oxide fuel rods in a fabrication plant. Its purpose is to provide position identification of special nuclear material (SNM) at all times through partitioning of the plant into unit processes with nondestructive assay of SNM between processes. The program requires the GASP IV run-time support package for execution. It runs under the ORDER Operating System after processing by the LLL CHAT Compiler.

Distribution: Special.

201 E. R. Fisher, L-403 **P**
ODT, OCTAL DEBUGGING PROGRAM FOR THE MCS-80 COMPUTER
 Lawrence Livermore Laboratory MA
 Livermore, California In Use
 MCS-80 ASSEMBLY 256 statements
 400 words

ODT-80 is an octal debugging routine for use on the Intel 8080 microprocessor. This routine provides the capability to examine and modify all of the memory that is available to the microcomputer and transfer program control to the created program. ODT-80 makes use of simple keyboard commands from any terminal similar to a teletype that is attached to the system. The program must be located in the lowest memory slot of the MCS-80 system since it uses the RESTART instructions. The original version for the Intel 8008 has been "front panel" for virtually hundreds of microprocessor applications.

E. R. Fisher, Octal Debugging Program (ODT-80) for the MCS-80 Computer, UCRL-51694 Rev 1, August 18, 1975.

The program listing is included in the reference report.

Distribution: Unlimited.

202 F. D. Seward, L-46 **W**
TKOR, THIN PLASMA X-RAY SPECTRUM CALCULATION
 Lawrence Livermore Laboratory MA
 Livermore, California In Use
 CDC 7600 FORTRAN 40K words

TKOR calculates the x-ray spectrum from a thin plasma. The processes considered are bremsstrahlung, line radiation, radioactive recombination and two photon emission. Input data are abundances of the elements comprising the plasma, and the temperature. Output spectra are compared with the x-ray spectra of the solar corona and other cosmic sources.

Wallace H. Tucker and Marvin Koren, Radiation from a High-Temperature, Low-Density Plasma: The X-Ray Spectrum of the Solar Corona, *Astrophysical J.* **168**, 283-311 (1971).

Distribution: Special.

203 A. D. Grandillo **P**
LATIN SQ, ANALYSIS OF VARIANCE OF AN N X N
LATIN SQUARE
Monsanto Research Corporation MA
Mound Laboratory, Miamisburg, Ohio Packaged
IBM 360/50 FORTRAN IV 25K words
DOS

This computer program performs the statistical analysis of data generated from an n x n Latin Square experimental design. In addition to the usual analysis of variance information for testing the significance of the row, column and treatment main effects, the analysis of variance table includes information for testing the linear and higher-order curvilinear components for each main effect. Supplementing the analysis of variance table is a subroutine for Duncan's New Multiple Range Test for making all pair-wise comparisons among the factor level mean values.

Anthony D. Grandillo, Analysis of Variance of an n x n Latin Square, with a Subroutine for Duncan's New Multiple Range Test, Mound Laboratory Program Documentation, 1975.

This program is available through the Argonne Code Center as ACC No. 630.

Distribution: Unlimited.

204 P. D. Brooke **T**
MEMSEG, BANK BY BANK MEMORY DIAGNOSTIC OR
TEST
Union Carbide Corporation CTR
Nuclear Division, Oak Ridge, Tennessee Packaged
PDP 11/40,45 MACRO-11 670 statements
4333₈ bytes

MEMSEG is a memory diagnostic for a DEC PDP-11/40 or PDP-11/45 computer, which utilizes memory management. The forte of MEMSEG is its ability to check a single bank of all that are available in the system, reporting if the bank is not visible to the program. There are currently four tests in the diagnostic, each of which may be looped-on: (1) uses a binary count; (2) uses all ones and zeroes; (3) uses alternate bits; and (4) uses byte instructions to write a byte checkerboard pattern.

A package consisting of the MEMSEG.MAC source file, MEMSEG.BIN absolute binary file, and SYSMAC.THM the Macro file is available through the DEC User Society, 146 Main Street, Maynard, Massachusetts 01754.

Distribution: Unlimited.

205 A. J. Toy, Jr., L-518 **T**
VENT, EXHAUST VENTILATION SIZING & BALANCING
CODE

Lawrence Livermore Laboratory LLL
Livermore, California In Use
CDC 7600 FORTRAN IV 35,000₈ words

VENT is a computer code that sizes and balances exhaust ventilation systems. Given the inlet flow requirements, geometric layout, and loss parameters of a ventilation system, the code calculates the duct sizes and/or damper setting as well as the exhaust fan size necessary to achieve desired system performance. The code will also determine changes in fan size, dampers which must be added, and calculates new duct diameters when adding new ducts to existing systems. Balance is achieved by varying duct sizes so that the pressures in each duct at a junction are equal. Input is from a disk or card file, output is to disk. The code will size and balance any number of separate systems but each system must have less than 100 ducts (a duct being defined as an air conduit from hood to junction, or to or from the fan). A typical problem with 50 ducts takes two seconds to execute on the CDC 7600. The code requires 35,000₈ words of storage.

The original version of the code was purchased from the American Conference of Governmental Industrial Hygienists (ACGIH) modified to allow balancing and sizing when new ducting is added to an existing system and to improve operational efficiency.

A. J. Toy and H. J. McDermott, VENT. A Program to Size and Balance Exhaust Ventilation Systems, UCRL-51698, October 23, 1974.

The reference report and a source deck or listing are available from the author on request.

Distribution: Unlimited.

206 W. H. Sutherland & J. A. Schur **I**
AXICRP, FINITE ELEMENT CODE FOR CREEP
ANALYSIS
Hanford Engineering Development Laboratory RRD
Richland, Washington Packaged
CYBER 74 FORTRAN 3000 cards

AXICRP is a program "... developed for the purpose of solving creep problems for plane stress, plane strain, and axisymmetric bodies of revolution. The code represents an extension of an elastic finite element code to include the nonlinear effects arising from creep by the use of an incremental procedure. This procedure permits the utilization of any creep law expressible in the general functional form $\dot{\epsilon}_e^C = F(\sigma_e, \epsilon_e^C, T, t)^n$.

Built-in limitations to the program include a maximum of 550 nodal points, 500 elements, 12 different materials, and 200 boundary pressure cards.

As output the initial elastic solution, the stresses, and effective stresses are printed for each element. The displacements are printed for each nodal point. After the initial elastic solution, a choice of printed results for specific elements can be made for the time-dependent creep results. Stresses, effective stress, effective creep strain, and total displacements for each nodal point are printed for the specified element.

W. H. Sutherland, A Finite Element Computer Code (AXICRP) for Creep Analysis, BNWL-1142, October 1969.

J. A. Schur, Supplement to Appendix A of AXICRP Document BNWL-1142 and Appendix A of AXICRP Document BNWL-SA-2608, CSC-RL-SCI-112, January 27, 1975.

The program will be available from the Argonne Code Center.
Distribution: Unlimited.

207 F. E. Foldvary, L 80 P
MTRAN, A STRUCTURED FORTRAN MACRO LANGUAGE
Lawrence Livermore Laboratory MA
Livermore, California In Use
CDC 7600 MTRAN 165 statements

MTRAN is a family of easy to use, self-explaining CHAT macros which can be used to write clearer and/or more efficient programs than with standard CHAT. Macros are included which simulate some of the programming structures of ALGOL, ALGOL and PL/I. The advantage of MTRAN (Macro FORTRAN) is that one can use these structured, label-free language features within a standard CHAT subroutine. Other macros in MTRAN can be used to produce very efficient conditional jumps.

Fred E. Foldvary, MTRAN, A Structured FORTRAN Macro Language, UCID-30102, February 1975.

The reference document contains a source program listing.

Distribution: Unlimited.

208 M. L. Callabresi & R. C. Young I
GNATS, MESH2, GPRINT, FINITE ELEMENT NON-LINEAR ANALYSIS OF 2-D STRUCTURES
Sandia Laboratories MA
Livermore, California In Use
CDC 6600 F4-98%, COM-2% GNATS-8000 cards
MESH2-1240 cards
GPRINT-1850 cards

The GNATS program is based on a total Lagrangian description of the displaced equilibrium configuration. The complete strain-displacement equations are used to include the effects of large displacements and large strains. Elastic-plastic material behavior with either isotropic or kinematic hardening may be selected. All solution options contain an equilibrium check which assures that the structure satisfies equilibrium to a specified tolerance at each stage of loading.

The preprocessor, MESH2, enables the user to generate either a four-node or eight-node quadrilateral element.

The postprocessor, GPRINT, provides users with considerable flexibility in selecting the most appropriate data to be printed.

R. C. Young, GNATS - A Finite Element Computer Program for General Nonlinear Analysis of Two-Dimensional Structures, SLL-74-0023, October 1974.

R. C. Young, Organization of GNATS - A General Nonlinear Analysis Computer Program for Two-Dimensional Structures, SLL-74-0022, October 1974.

These programs will be available through the Argonne Code Center.

Distribution: Unlimited.

209 S. E. Newfield I
DETECTR, COMPRESSION MOLD DESIGN FOR DETECTORS
Los Alamos Scientific Laboratory MA
Los Alamos, New Mexico In Use

CDC 7600 FORTRAN IV 1000 cards
SCOPE 2 L

Weapons diagnostics detectors are hemispherical shells compression-molded of polyethylene resin which has been filled with inorganic oxides and metals which are the detector elements. The code receives as input the desired detectors, the quantities of each detector wanted in the part, and the final part dimensions. It then designs the compression mold, calculates the ingredient mix plus a composition table, and prints the percentage of each chemical element present. After a part is made, its final weight is entered and the program is rerun to give the exact part composition. This information is included in a memorandum to the requestor and is ultimately used for the radiochemical analyses after the event.

LASL Reference LP-0389

A source deck is available from the author on request.

Distribution: Unlimited.

210 V. D. Vandervelde D
GOSPEL, ACTINIDE PRODUCTION AND DEPLETION
E. I. duPont de Nemours & Co. PMM
Savannah River Laboratory, Aiken, South Carolina In Use
IBM 360/195 FORTRAN IV 2500 cards
JOSHUA System:

Concentration of Actinides ^{230}Th to ^{257}Fm are calculated using cross sections computed from multigroup cross section sets and multigroup neutron spectra. A set of 53 differential equations, representing the decay and/or neutron capture for each isotope, is solved by the Runge-Kutta routine. The reaction rates are obtained using calculated effective cross sections and thermal neutron flux. Up to 10 multigroup neutron spectra are allowed per problem. These may be calculated using some other code or (optionally) the Maxwellian temperature and the fast-to-slow flux ratio may be used.

The source deck is available from Savannah River Laboratory through the Argonne Code Center.

Distribution: Unlimited.

211 F. Fushimi/D. Homan & R. Shaffer T
PVTALC, PVT CALIBRATION SYSTEM CONTROL PROGRAM

Monsanto Research Corporation MA
Mound Laboratory, Miamisburg, Ohio In Use
PDP 8/S w/4K core FOCAL 4K words

An automated pressure/volume calibration system was designed and developed for application by Mound's Standards Laboratory. This computerized system utilizes laboratory equipment to measure pressure, temperature, and vacuum precisely to provide data used in determining the "irregular" volumes of vessels for gas containment at Mound Laboratory. Irregular volumes are volumes that do not lend themselves to dimensional measurement which are calibrated by the pressure-volume-temperature (PVT) method. The computer is used to control, monitor, and document the calibration. The system has been designed to calibrate pressure transducers as well as volumes. This automated system under minicomputer control has increased by threefold the number of volume calibrations that can be performed in a given period of time with a large reduction in direct labor costs. The system can perform a volume calibration with documentation in a continuous twenty-four hour period with minimal manpower requirements, whereas

the original manual system required one man three working days to accomplish the same task.

R. L. Shafter and D. A. Homan, "Computerized Automated Pressure/Volume Calibration System", paper presented at The 1975 Monsanto Process Computer Symposium, Springfield, Massachusetts, April 7-9, 1975, MLM-2222.

Copies of the reference paper are available from the Argonne Code Center.

Distribution: Unlimited.

212 P. Seabaugh/D. Homan & R. Shafter O
PVTCALA, AUTOMATED PVT CALIBRATION DATA ANALYSIS

Monsanto Research Corporation MA
 Mound Laboratory, Miamisburg, Ohio In Use
 PDP 8/I FOCAL 5/69 8K words

The volumes of containers and the uncertainty in the volumes are calculated from precise pressure and temperature data provided by the mechanized and computerized automated measuring system described in Summary 211.

A volume determination consists of an experiment in which ten separate forward-reverse PVT calibrations are performed.

The data obtained from these measurements and the value of a known standard volume are used to calculate an unknown volume for gas containment to an accuracy of approximately $\pm 0.3\%$. The process utilizes the forward-reverse substitution technique which eliminates the need for a separate determination of the plumbing volume. The technique is usable for either regular or irregular-shaped volumes and is not limited in size restrictions as long as an adequate standard volume is available.

The 3σ limits of the ten readings are used for the random component of the error analysis. The systematic component of the error analysis is determined from the square root of the sum of the squares of the partial derivatives of the contributing factors with respect to the unknown volume. The total uncertainty is the algebraic sum of the random component and the systematic component.

R. L. Shafter and E. A. Homan, "Computerized Automated Pressure/Volume Calibration System", paper presented at The 1975 Monsanto Process Computer Symposium, Springfield, Massachusetts, April 7-9, 1975, MLM-2222.

Copies of the reference paper are available from the Argonne Code Center.

Distribution: Unlimited.

213 J. H. Pitts & F. A. Morrison, L-90 H
SIROCCO, CALCULATION OF TRANSIENT GAS FLOW
 Lawrence Livermore Laboratory MA
 Livermore, California In Use
 CDC 7600 FORTRAN 350 statements

Low Reynolds number transient, one-dimensional, isothermal flow of an ideal gas through layered porous material is calculated in the computer code SIROCCO. An implicit, iterative, unconditionally stable, finite difference scheme is utilized for solution. This code may be effectively applied to the evaluation of stemming plans for underground nuclear experiments.

Problem run times are less than one minute on the CDC 7600. Normal input and output files are utilized. The program requires only small core memory.

Frank A. Morrison, Jr., Transient Gas Flow Through Layered Porous Media, UCID-16692, January 16, 1975

Source deck on tape is available from the authors or request. The reference report contains a source program listing.

Distribution: Unlimited.

214 L. Sloan, L-73 P
BEGINMAP, A SUBROUTINE TO ANALYZE COMPUTER PROGRAM PERFORMANCE

Lawrence Livermore Laboratory MA
 Livermore, California In Use
 CDC 7600 LRLTRAN 3200₈ words SCM
 11,000₈ words LCM

Subroutine BEGINMAP, when called in a program, records how much CPU time is used by each portion of the program. Subroutine ENDMAP is called to analyze and print that data, giving a list and histogram of CPU time counts in a sequence of bins. ENDMAP prints other information, including an analysis of those areas of the program where optimizing could be cost-effective. The subroutines are available in the system library ORDERLIB on the CDC 7600 computer at Lawrence Livermore Laboratory.

P. Du Bois, CDC 7600 System Calls and I/O Requests, LTSS-10, Lawrence Livermore Laboratory Report (1974).

Lansing Sloan, Revision of BEGINMAP and ENDMAP, OC-895, Lawrence Livermore Laboratory Document (9/23/74).

L. J. Sloan, BEGINMAP: A Program that Analyzes Computer Programs, UCID-30091, April 7, 1974.

A source listing and reference documents are available from the author.

Distribution: U. S. Only.

215 R. M. Lee, L-73 T
DDHUM, STRAIGHT, JOINT, FOCUSNF: TEST PATTERNS FOR VEC FOR CRT DISPLAYS

Lawrence Livermore Laboratory MA
 Livermore, California In Use
 CDC 7600 FORTRAN 542 lines

DDHUM tests the accuracy with which a line-drawing cathode ray tube display positions the writing beam. It does this by drawing a series of small crosses across the face of the tube and then returning to surround them with squares. Positioning errors will cause mis-alignment of the crosses and squares.

The program listing is 32 lines; storage required is 53,300₈ words.

STRAIGHT tests the accuracy of the ramp generators for a line-drawing cathode ray tube display. It does this by drawing sets of parallel lines where adjacent lines are drawn from opposite directions.

The program listing is 107 lines; storage required is 200₈ words.

JOINT tests the accuracy with which a line-drawing cathode ray tube display joins lines. It does this by drawing line pairs joining at various angles and by drawing line pairs of varying lengths joining at right angles.

The program listing is 74 lines; storage required is 500₈ words.

FOCUSNF tests focus, brightness uniformity, and positioning accuracy for a line-drawing cathode ray tube display. It does this by drawing a complex pattern which uses both lines and points.

The program listing is 329 lines; storage required is 13,600₈ words.

Robert M. Lee, Four Test Patterns for Vector (Line Drawing) Computer Displays, UCRL-74720, April 24, 1973.

Robert M. Lee, Four Test Patterns for Vector (line drawings) Computer Displays, SID Journal, 11(2), 35-38 (March/April 1974).

UCRL-74720 contains the program listings.

Distribution: Unlimited.

216 W. C. Boshear/W. C. DeFer **M**
SKILLS INVENTORY, PERSONNEL DATA SYSTEM
 Holmes & Narver, Inc. NVOO
 On-Continent Test Division, Las Vegas, Nevada In Use
 CDC 6400 FORTRAN IV 135K words
 SCOPE 3.2 RUN

The Personnel Skills Inventory System consists of three programs. Skills UPDATE processes additions, changes and/or deletions to the master tape file. SEARCH performs a wide variety and combination of searches for specific skills specified by parameter cards. SKLFORM converts up to 50 employees' coded-master records into English-language readable form.

The core requirement ranges from 25K to a maximum 135K, for this card to tape-oriented system. The tape is 7-track, 800 BPI, with binary records, label records omitted. Each employee's record is limited to 999 ten-character words including comments. Program SEARCH has a limitation of 19 search items for each process. Skills UPDATE will not accept update data in the same process that an employee is added to the master file. Each update is limited to 999 skills cards.

A program package including a Personnel Skills Inventory System User Manual, source decks, a card deck to generate a master file, and test decks to perform UPDATE, SEARCH, and SKLFORM listing will be available from the Argonne Code Center. Output listings for the test runs are included in the Personnel Skills Inventory System User Manual.

Distribution: Government Contract Applications Only.

217 M. A. Green & H. S. Pines **D**
GEOETHM, GEOTHERMAL POWER PLANT CYCLE CALCULATION
 Lawrence Berkeley Laboratory GEO
 Berkeley, California Development
 CDC 7600 FORTRAN IV approx. 4000 cards

Program GEOETHM is a thermodynamic process program now under development for the LBL Geothermal Energy Program. To date, the program development has centered upon the modeling of working fluid properties, developing thermodynamic process models, and modeling the design and off-design performance of geothermal power plants. When the program is completed, it will be able to optimize a power plant or refrigeration plant for minimum cost power or refrigeration. Currently, program GEOETHM is able to calculate several types of geothermal power cycles using a wide variety of working fluids.

The program may be used with some modification on other power cycles such as 1) fossil fuel plants, 2) nuclear plants, 3) MHD plants, and 4) solar energy cycles.

M. A. Green and H. S. Pines, Program GEOETHM A Thermodynamic Process Program for Geothermal Power Plant Cycles, LBL-3060, October 1974.

The program is available from the authors upon request. Distribution: Unlimited.

218 E. C. Davis **M**
CUP, PAYROLL AND PERSONNEL ACCOUNTING SYSTEM
 Computer Sciences Corporation RRD
 Richland, Washington In Use
 CDC CYBER 70 COBOL 50,000 statements
 MODEL 74-18
 SCOPE 3.4

The system consists of eleven programs and four master files. The thirty different input record types are completely edited and the data values checked for accuracy. Consistency between types of records is verified. An employee's bi-weekly pay is computed weekly from a time card of project codes and hours spent on each project. Edit and update reports are produced weekly. The payroll register, checks and earnings statements, deduction reports, and personnel status reports are produced bi-weekly. A monthly report generator produces nine personnel reports. Federal and Washington State payroll reports are done quarterly. A performance review work sheet and a merit increase analysis are produced on request.

The system is available from the author upon request.

Distribution: Unlimited.

219 D. W. Pepper, ETD **R**
TORNADO, POLLUTANT SPREAD IN TORNADIC STORM
 E. I. du Pont de Nemours & Co. DBER, PMM
 Savannah River Laboratory, Aiken, So. Carolina In Use
 IBM 360/195 FORTRAN IVH 129,144 bytes
 w/FR80 DISSPLA software 140 cards

The TORNADO program computes downstream diffusion of small particulate pollutant using a Gaussian puff model, neglecting gravitational falling. Standard deviations are calculated as a function of turbulent energy dissipation in thunderstorms based on the method used by Lange and Crawford. The radioactive puff is assumed to undergo rapid dispersion at various heights and velocities in the thunderstorm cell. If pollutant is PuO₂ and its source is given, resulting dose (inhalation, 70-year bone dose) is calculated.

R. Lange, ADPIC: A Three-Dimensional Computer Code for the Study of Pollutant Dispersal and Deposition Under Complex Conditions, UCRL-51462, October 1973.

Todd V. Crawford, A Computer Program for Calculating the Atmospheric Dispersion of Large Clouds, UCRL-50179, November 23, 1966.

D. W. Pepper, Dispersion of Small Particles in a Tornado, DP-1387, May 1975.

This system will be made available from the Argonne Code Center upon request.

Distribution: Unlimited.

220 F Pothacker, Bin 88 **V**
TRANSPORT, DESIGN OF CHARGED PARTICLE BEAMS
Stanford Linear Accelerator Center **R**
Stanford, California Packaged
IBM 360/91 FORTRAN IVH 5500 statements
IBM 370/168 270K bytes
OS/VS ASP

TRANSPORT is a first- and second-order matrix multiplication computer program intended for the design of static-magnet beam transport systems. A transport system (beam line) is comprised of a set of magnetic elements placed sequentially at intervals along an assumed reference trajectory. The reference trajectory is here taken to be a path of a charged particle passing through idealized magnets (no fringing fields) and having the central design momentum of the beam line. The effects of space charge are assumed to be negligible.

In TRANSPORT, a beam line is described as a sequence of elements. Such elements may consist not only of magnets and the intervals between them, but also of specifications of the input beam, calculations to be done, printout required, or special configurations of the magnets. The program will step through the beam line, element by element, calculating the properties of the beam or other quantities, where requested.

Provision is made in the program to vary some of the physical parameters of the elements comprising the system and to impose various constraints on the beam design.

Quantities which appear in the output are the transfer matrices, the beam matrix, the layout coordinates, and the results of varying the parameters.

K. L. Brown, Transport - A Computer Program for Designing Charged Particle Beam Transport Systems, SLAC Report 91, Rev. 1, February 1974.

K. L. Brown, A First- and Second-Order Matrix Theory for the Design of Beam Transport Systems, and Charged Particle Spectrometers, SLAC Report 75, Rev. 3, August 1972

Notes on Transport, SLAC TN 72-12, August 1972 (obsolete).

The source program, test problems with printed output, and reference publications are available from the Stanford Linear Accelerator Center upon request.

Distribution: Unlimited.

221 A. J. Cook, Bin 88 **P**
MORTRAN2, A MACRO-BASED STRUCTURED FORTRAN EXTENSION
Stanford Linear Accelerator Center **R**
Stanford, California Packaged

ANSIF 777 statements
MORTRAN2 is a FORTRAN language extension that permits a relatively easy transition from FORTRAN to a more convenient and structured language. The language is implemented by a macro-based pre-processor and is further extensible by user-defined macros. Its features include (1) free-field format, (2) alphanumeric statement labels (3) flexible comment convention, (4) nested block structure, (5) FOR-BY-TO, DO, WHILE, UNTIL, LOOP, IF-THEN ELSEIF-ELSE, EXIT and NEXT statements, (6) multiple assignment statements, (7) conditional compilation, and (8) automatic listing indentation.

The MORTRAN2 pre-processor is written in ANSI standard FORTRAN, and the output is also FORTRAN to assure transportability of both the pre-processor and its generated programs. MORTRAN2 is an extension of the processor (and language) called MORTRAN.

A. J. Cook and L. J. Shustek, A User's Guide to MORTRAN2, CGTM 165 Rev. June 1975.

A. J. Cook and L. J. Shustek, MORTRAN2, A Macro-based Structured FORTRAN Extension, SLAC PUB 1527, January 1975.

Program package to be available from the Argonne Code Center as ACC No. 678 and from SHARE.

Distribution: Unlimited

222 R. H. Mallett **I**
ELTEMP, STRUCTURAL EVALUATION OF ELEVATED TEMPERATURE PIPING
Westinghouse Electric Corp **RRD**
Advanced Reactor Div., Madison, Pennsylvania **In Use**
CDC 7600 FORTRAN
SCOPE 2.0

The ELTEMP computer program is applicable to the structural evaluation of elevated temperature piping to the requirements of the 1971 ASME Boiler and Pressure Vessel Code Section III, Subsection NB-3000, ASME Code Case 1331, and RDT F9-1. The ELTEMP evaluation begins from results of elastic inflexibility and thermal analysis, and treats load-controlled stress limits and deformation limits. Design, Normal, Upset, Emergency, and Faulted conditions are considered.

R. H. Mallett, ELTEMP A Computer Program for Structural Evaluation of Elevated Temperature Piping, WARD-D-0069, Parts 1 & 2, February 1975.

Distribution: U.S. Only.

223 S. Mendicino, L-61 **P**
FLOE, LLL's OPERATING SYSTEM FOR THE CDC 7600
Lawrence Livermore Laboratory **MA**
Livermore, California **In Use**
CDC 7600 LRLTRAN 150,000 statements

The FLOE Operating System is a collection of about 200 software programs and subprograms. These programs, when executing in LLL's CDC 7600 computers, control the flow of all user codes (jobs) in those computers. The FLOE system runs jobs in a time-shared mode. The algorithms used in FLOE are typical of any time-sharing system. There is a queue of jobs which is controlled by a priority scheme, and as many of these jobs will be in central memory as will fit (up to 55 maximum). Each job is given a slot of execution time until it is finished, or suspended for message transactions, or terminated by a user at an interactive terminal. The input/output methods used by FLOE include punched cards, magnetic tape, intermediate storage, teletype, on-line printers, and film. During typical computer operation, the FLOE System uses about 5% of the total operating time. The system requires about 10,000 words of Small Core Memory (SCM) and about 100,000 words of Large Core Memory (LCM). The average rate at which user jobs are executed by the system is 200 jobs/hour.

LTSS Chapters - Livermore Time Sharing System, Lawrence Livermore Laboratory TID M-026 series documents.

UR Reports - Utility Routines, Lawrence Livermore Laboratory TID M-020 series documents.

Tapes, cards, microfiche, and documentation are available from the author upon request.

Distribution: Unlimited.

224 K. R. Peterson, L-142 R
2BPUF, LARGE PUFF CODE WITH SCALE-DEPENDENT
DIFFUSION

Lawrence Livermore Laboratory AT
 Livermore, California In Use
 CDC 7600 FORTRAN Approx. 1500 cards

The 2BPUF code was originally developed at LLL in 1966. Since then it has been revised to include calculation of dose via several pathways. The code calculates the dispersion of pollutants in a cylindrical cloud with a vertical axis of symmetry using a coordinate system fixed to the cloud's center. Scale-dependent diffusion is used to predict the horizontal diffusivity of a function of initial cloud size, turbulent atmospheric dissipation, and time. Vertical diffusivity is entered as a function of height and time, enabling entry of diurnal variations in the boundary layer and temperature inversions.

The model calculates cloud center and surface air concentrations, exposure rate, dry deposition, precipitation scavenging, and the vertical integral of individual nuclide and doses to an individual for a variety of pathways, including inhalation, whole body external gamma, submersion, forage-cow-milk, and pasture-meat.

Verification of the 2BPUF code against data from late 1960's cratering tests at the Nevada Test Site indicate that calculations using observed meteorological data are, with few exceptions, within a factor of two of surface and aircraft radioactivity measurements.

Typical running time on a CDC 7600 is one or two minutes, depending on the complexity of the input.

T. V. Crawford, A Computer Program for Calculating the Atmospheric Dispersion of Large Clouds, UCRL-50179, November 23, 1966.

A source tape, card deck, or listing, and user-level instructions are available on request from LLL.

Distribution: U.S. Only.

225 J. G. Colsher, L-523 Y
FLATLAND, A 3-D RECONSTRUCTION PROGRAM

Lawrence Livermore Laboratory DBER
 Livermore, California In Use
 CDC 7600 LRLTRAN 4000 statements

FLATLAND is a general interactive FORTRAN (LRLTRAN) computer program which solves for the three-dimensional reconstruction of an object from a conical series of two-dimensional projections. Projection geometry similar to a discrete circular tomographic system is assumed. Presently, several iterative reconstruction algorithms are implemented. Provisions for comparison with known cost objects and calculation of error functions are included.

James G. Colsher and Roger G. Hart, "Image Processing for 2-D & 3-D Reconstruction from Projections. Theory & Practice in Medicine & The Physical Sciences", a digest of technical papers presented at the Topical Meeting on Image Processing for 2-D & 3-D Reconstruction from Projections, August 4-7, 1975, Stanford University, Stanford, California, sponsored by Stanford University and the Optical Society of America (NSF-funded).

Distribution: Special.

226 J. G. Colsher L-523 Y
TESTIM, PROJECTION AND TEST IMAGE DATA

Lawrence Livermore Laboratory DBER
 Livermore, California In Use
 CDC 7600 LRLTRAN 2000 statements

TESTIM is a general interactive FORTRAN (LRLTRAN) computer program which generates projection and test image data for use by FLATLAND, a computer program for three-dimensional image reconstruction. Provision to add Gaussian or uniform noise to the projection data is provided.

James G. Colsher and Roger G. Hart, "Image Processing for 2-D & 3-D Reconstruction from Projections: Theory & Practice in Medicine & The Physical Sciences", a digest of technical papers presented at the Topical Meeting on Image Processing for 2-D & 3-D Reconstruction from Projections, August 4-7, 1975, Stanford University, Stanford, California, sponsored by Stanford University and The Optical Society of America (NSF-funded).

Distribution: Special.

227 D. E. Cullen, L-71 B
SIGMA-1, DOPPLER-BROADENING OF ENDF/B CROSS
SECTION DATA

Lawrence Livermore Laboratory MA
 Livermore, California In Use
 CDC 7600 FORTRAN IV 688 cards
 IBM 360

Program SIGMA-1 is designed to Doppler-broaden tabulated neutron cross section data in the ENDF/B format. This version will Doppler-broaden all of the materials on an ENDF/B tape to one temperature. The input is a single card using 2E11.4 format to specify, (1) allowable error (try 0.005 (0.5%) or 0.01 (1.0%)), (2) Kelvin temperature (e.g. 293° K for room temperature).

The program may be used to thin data by specifying a zero or negative temperature. To Doppler-broaden a number of cross sections, thin the RESEND output first (the algorithm in RESEND generates too many points), then Doppler-broaden on a second pass.

D. E. Cullen, Program Sigma-1 (Version 74-1), UCID-16426, January 1974.

D. E. Cullen, O. Ozer, C. R. Weisbin, Exact Doppler-Broadening of Evaluated Neutron Cross Sections, Trans. ANS 16, 320, June 1973.

The source deck is available from the author on request.

Distribution: Unlimited.

228 A. C. Hindmarsh, L-310 P
GEARB: SOLUTION OF ORDINARY DIFFERENTIAL
EQUATIONS

Lawrence Livermore Laboratory MA
 Livermore, California Packaged
 CDC 6600/7600 F4 Approx. 600 statements
 IBM 360

GEARB is a package of subroutines for the numerical solution of systems of ordinary differential equations in which the Jacobian matrix has a band structure. It is a modified version of the package described in GEAR: Ordinary Differential Equation System Solver, UCID-30001 (Rev. 3), and is intended primarily for stiff problems. The principal modification is the substitution of band matrix solution routines for the full matrix solution routines. This

report describes the GEARB package briefly and gives instructions on its use.

A. C. Hindmarsh, GEARB Solution of Ordinary Differential Equations Having Banded Jacobian, UCID-30059 Rev. 1, March 1975.

This program package is available from the Argonne Code Center as ACC No. 661.

Distribution: Unlimited.

229 E. R. Bissell, L-402 Q
HP9830 PROGRAMS: MOLECULAR WEIGHT AND VOLUME AND DETONATION VELOCITY

Lawrence Livermore Laboratory MA
 Livermore, California In Use
 HP 9830 BASIC 176 statements

The program calculates molecular volume (ML) by summing para char contributions and molecular weight (MW) by summing atomic weights. Density (ρ) is calculated from the ratio of MW to MV. The detonation velocity (D), Chapman-Jouget pressure (P_{CJ}) and relative energy (E_{rel}) are calculated from the following:

$$D = 101 P_{CJ}^{1/2} (1 + 1.3\rho)$$

$$P_{CJ} = 15.58 \text{ NM}^2 \times Q^{1/2} \rho^2$$

$$E_{rel} = P_{CJ} \div (0.14 + 1.26\rho) (\rho D^2 \div 2P) (0.0006808)$$

where N, M and Q are defined as follows:

$$N = (b + 3c + 2d + 2e) \div (48a + 4b + 76c + 56d + 64e)$$

$$M = (88c + 8b + 56d + 88e) \div (b + 3c + 2d + 2e)$$

$$Q = 1000(5.4b + 58.8c + 47e + H) \div (12a + b + 19c + 14d + 16e)$$

where a, b, c, d and e are the C, H, F, N, O coefficients and H is the heat of formation.

E. R. Bissell, Estimation of Some Properties of Polymers Used As High Explosive Binders, UCRL-51773 (in publication).

The reference document contains the program listings
 Distribution: Unlimited.

230 S. C. Bourret T
LIL8: LIST INTERPRETIVE LANGUAGE FOR THE MCS 8

Lawrence Livermore Laboratory ARPA
 Livermore, California In Use
 MCS-8 INTERPRETER 512 8-bit words

LIL8 is a list-processing language designed for microcomputer-based programmable control systems. The language was designed to be used by scientific personnel for controlling real-time process chemistry experiments. This use required a simple way to program the access of inputs, outputs, and delays via TTY, and to easily modify and save a copy of the program. The language was written to compete in simplicity of understanding with a rotating cam programmer.

The approach is to use a code word for a particular I/O function, followed by a word or two describing the specific conditions for that function. The user builds his program in a list memory field in the form of a table, or list, with the main I/O events specified in the order they are to occur.

At present, the program has twenty-one instructions, a special interrupt capability, and the ability to process sub-lists.

E. Fisher Octal Debugging Program (ODT) for MCS 8 Computer, UCID 16507, November 13, 1972

S. C. Bourret, A List Interpretive Language for Process Control Applications of the MCS 8 Microcomputer, UCRL-76608, February 14, 1975

A program listing is included in UCRL 76608
 Distribution: Unlimited

231 F. M. Strange, L 154 T
RTSX SYSTEM EXECUTIVE

Lawrence Livermore Laboratory LLL
 Livermore, California In Use
 PDP-8 PAL 8 12K words

RTSX is the system executive used to interface the FOCAL-X dialect of Digital Equipment Corporation's FOCAL language to a real time multi-user data acquisition and control environment. The RTSX executive provides a multi-tasking monitor which is designed primarily to be driven by the FOCAL-X command module. The system is capable of handling up to four independent users on a time-shared basis. Each user is allocated to swapping area on disc and users are moved into main memory on a round-robin basis for execution. User devices supported include display terminals (TTY or CRT), paper tape reader/punch, incremental magnetic tape, disc, line printer and special function switches. System devices supported include IDVM, A/D, DAC, programmable switch closures and other special equipment. The system requires a minimum 12K PDP-8.

A source listing or paper tape is available from the author on request.

Distribution: Special

232 H. Walker, L-307 & L. S. Hall, L-388 P
SIMPLEX, GENERAL LINEAR PROGRAMMING PROBLEM

Lawrence Livermore Laboratory CTR
 Livermore, California In Use
 CDC 7600 LRLTRAN 6,000, plus array strg 355 statements

A set of procedures is described for solution of a general linear programming problem that seeks to maximize the

linear functional $W = \sum_{j=1}^n c_j x_j$ for coordinates $x_j \geq 0$, subject

to m restrictions of the form $\sum_{j=1}^n a_{ij} x_j \leq b_i$ and k restrictions

of the form $\sum_{j=1}^n a_{ij} x_j = b_i$. An LRLTRAN computer code,

which performs the maximization, has been developed to follow these procedures and is also described. Illustration of the use of the simplex procedure is given, and the conversion to FORTRAN IV is outlined.

H. Walker and L. Hall, SIMPLEX, A Code For The Solution of Linear Programming Problems, UCRL 51820 (in publication).

L. S. Hall, E. B. Hooper, Jr., and W. A. Newcomb, Optimal Injection of Beams in a Mirror Well, UCRL-75561, February 7, 1975.

A source listing is included in UCRL-51820, and the source deck is available from the authors on request.

Distribution: Unlimited.

233 D. L. Lager & R. J. Lytle **T**
WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN

Lawrence Livermore Laboratory **LLL**
 Livermore, California **In Use**
 CDC 7600 **LRLTRAN** 5000 statements

WF-LLL2A solves the problem of electromagnetic radiation from wire structures in free space or in the presence of a lossy half-space, including structures penetrating the interface. The solution is effected in the frequency domain via the application of the thin-wire electric field integral equation. Antenna structures may be composed of many interconnected wires of differing radii, which may also be impedance loaded. Electric space and surface wave fields may be evaluated.

D. L. Lager and R. J. Lytle, Fortran Subroutines for the Numerical Evaluation of Sommerfeld Integrals--Unter Ardem, UCRL 51821, May 21, 1975.

The source deck is available on request from R. M. Bevensen, L 156, at Lawrence Livermore Laboratory.

Distribution: Unlimited

234 P. M. Spray **P**
FWNO, FOCAL WRITE NULLS OVERLAY

Mason & Hanger **MA**
 Silas Mason Co., Inc., Amarillo, Texas **Packaged**
 PDP-8 **MACHINE** 12 words
FOCAL 69

This short overlay to FOCAL-69 modifies the WRITE command to output three null characters after every line. This produces a program tape with three blank frames between program lines eliminating the need for periodic stopping of the low-speed reader on input.

A binary paper tape and listing have been submitted to the Digital Equipment Corporation users' library (DECUS). Copies are also on file at the Argonne Code Center.

Distribution: Unlimited.

235 P. M. Spray **T**
LCRU, LC RESONANCE WITH UNITS

Mason & Hanger **MA**
 Silas Mason Co., Inc., Amarillo, Texas **Packaged**
 PDP-8 **FOCAL** 4K-word machine
FOCAL-69

This program calculates any of three parameters F, frequency, L, inductance, or C, capacitance, given the other two values, with units specified. The result is provided in consistent units. Acceptable units for the quantities, F, L, and C are:

F HZ, KHZ, MHZ, GHZ

L H, MH, UH, NH

C F, UF, PF

A source paper tape, program description, and listing have been submitted to the Digital Equipment Corporation users' library (DECUS). Copies are also on file at the Argonne Code Center.

Distribution: Unlimited.

236 P. M. Spray **T**
TDOS, TRANSFORMER DESIGN COMPUTATION

Mason & Hanger **MA**

Silas Mason Co., Inc., Amarillo, Texas **Packaged**
 PDP 8 **FOCAL** 4K-word machine

This program calculates the turns and wire size required for an audio transformer. Wire sizes are calculated on the basis of 800 cm A. The program requests two input conditions, each consists of a quantity and a unit. Acceptable units and their abbreviations are:

V	volts	W	watts
KV	kilovolts	KW	kilowatts
MV	millivolts	MW	milliwatts
A	amperes	O	ohms
MA	milliamperes	K	kiloohms
KA	kiloamperes		

The program then asks whether or not the primary is push-pull; the expected answer is Y or N, for yes or no. One output condition is requested, and then, input and output quantities E, I, Z, and P are printed. The low-frequency cutoff point is requested and the program proceeds to compute and print the primary and secondary winding data and the core area.

Ed Francis, "Winding Your Own Output Transformers" Popular Electronics, **33** 78-82, September 1970.

A source paper tape, program description, and listing have been submitted to the Digital Equipment Corporation users' library (DECUS). Copies are also on file at the Argonne Code Center.

Distribution: Unlimited.

237 P. M. Spray **U**
DEWP, PRESSURE DEW POINT TABLE GENERATION

Mason & Hanger **MA**
 Silas Mason Co., Inc., Amarillo, Texas **Packaged**
 PDP-8 **FOCAL** 4K-word machine
FOCAL-69

When air is compressed, the dewpoint is changed; this program calculates the new dewpoint of air of a specified dewpoint when compressed from local atmospheric pressure to a higher pressure.

The output of this program is a table of dewpoints. The table entries are the dewpoints at the requested pressures.

Input data are: (1) local atmospheric pressure, (2) pressures (starting, ending, and increment), and (3) atmospheric dewpoints (starting, ending, and increment). All pressures are in standard atmospheres; all temperatures are in C.

The program uses the Goff formula for temperatures below 0 C and the Keenan, Keyes, Hill, and Moore formula for temperatures above 0 C, as given in the American Society of Heating, Refrigeration, and Air Conditioning Engineers Handbook.

A source paper tape, program description, and listing have been submitted to the Digital Equipment Corporation users' library (DECUS). Copies are also on file at the Argonne Code Center.

Distribution: Unlimited.

238 P. M. Spray **U**
VDW, VAN DER WAALS' EQUATION OF STATE

Mason & Hanger **MA**
 Silas Mason Co., Inc., Amarillo, Texas **Packaged**
 PDP-8 **FOCAL** 4K or 8K-word machine
FOCAL-69

This program solves the Van Der Waals' equation for gases for any of the quantities P, V, T, N. A table of constants is included; 12 gases may be used in the table in a 4K machine.

with extended functions deleted. The program accepts parameters and units as follows:

P ATM, BAR, PSI, KPA, MPA
V L, CF, CC, ML, CI
T C, F, K, R
N GM, LBM

Internal calculations are done in liters, atm, K, GM, table constants must be in these units.

The program initially asks for the gas formula; if formula is not included in the table, the program will request A and B values. These values must be entered in table units (L, ATM, GM, K). The program then asks for the unknown; acceptable answers are any of P, V, T, N, followed by the desired units from the above table. Following this entry, the program requests the other three quantities and their units, and prints the result using the units which were specified at entry. Gases are changed by entering "Z" as the unknown parameter. To use a gas not included in the table, "Z" is entered as the FORMULA.

Handbook of Chemistry and Physics, 46th edition, D-92 (1965).

A source paper tape, program description, and listing have been submitted to the Digital Equipment Corporation users' library (DECUS). Copies are also on file at the Argonne Code Center.

Distribution: Unlimited.

239

P. M. Spray

T

PCOL, PIPE COLUMN DESIGN CALCULATION

Mason & Hanger

MA

Silas Mason Co., Inc., Amarillo, Texas

Packaged

PDP-8

FOCAL

4K-word machine

FOCAL-69

This program selects the lightest standard pipe which will carry a given eccentric load for a given height. Schedule 40 and Schedule 80 pipes from 1 to 12 inches are included in the data table. The program returns the size and schedule of the pipe having the least area (or weight) which will give a maximum stress less than 20,000 psi.

The usual engineering judgments must be made in selecting the input data. For example, the column length must be the Euler length, which depends on the mode of support for the particular column. Care must also be taken in the selection of eccentricity values, as values near zero are unrealistic. The secant formula is used for computing the maximum stress; limitations to the use of this formula must be observed.

A source paper tape, program description, and listing have been submitted to the Digital Equipment Corporation users' library (DECUS). Copies are also on file at the Argonne Code Center.

Distribution: Unlimited.

APPENDIX A PROGRAMS BY SUBJECT CATEGORY

A. CROSS SECTION AND RESONANCE INTEGRAL CALCULATIONS

119	MULTI, R-MATRIX LEAST-SQUARES CROSS SECTIONS	LASL	7600	F4	MA	U	A
						(	1)

B. SPECTRUM CALCULATIONS, GENERATION OF GROUP CONSTANTS, LATTICE AND CELL PROBLEMS

81	MCN, NEUTRON TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	B
168	PHRG2, MULTI-GP X-SECTIONS FAST SPECTRUM CALC	ANC	360	F4	RRD	U	B
170	SCRARLE, MULTI-GP FAST CONSTANTS RESONANCE	ANC	360	F4	RRD	U	B
227	SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	360	F4	MA	O	B
227	SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	7600	F4	MA	D	B
						(	5)

C. STATIC DESIGN STUDIES

77	TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	7600	F	RRD	U	C
77	TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	360	F	RRD	U	C
77	TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	6600	F	RRD	U	C
2142	MORSE-L, MONTE CARLO MULTIGROUP TRANSPORT CODE	LLL	6600	CHAT	MA	U	C
166	DISNCL, DIFFUSION SOLUTION 19 ENERGY LEVELS	ANC	360	F4	RRD	U	C
171	SCAMP, MULTI-GP SN NEUTRON TRANSPORT CODE	ANC	360	F4	RRD	U	C
173	INTERACT, INTERACTION OF FISSILE UNITS	DP	360	F4	PMM	U	C
						(	7)

D. DEPLETION, FUEL MANAGEMENT, COST ANALYSIS, AND REACTOR ECONOMICS

2	1 ISOGEN, RADIOACTIVE DECAY GROWTH OF NUCLIDES	RFD	360	F4	MA	U	D
102	GEM, ANALYSIS OF NUCLEAR FUEL CYCLE ECONOMICS	UTIL	360	F4		P	D
187	NUFUEL, NUCLEAR FUEL REQUIREMENTS FORECAST	FRDA	360	F4	PA	U	D
210	GOSPEL, ACTINIDE PRODUCTION & DEPLETION STUDY	DP	360	F4	PMM	U	D
217	GEOTHM, GEOTHERMAL POWER PLANT CYCLE CALC	PKY	7600	F4	GFC	D	D
						(	5)

E. SPACE-INDEPENDENT KINETICS

152	SWIFT, JOSHUA POINT-KINETICS SOLUTION MODULE	CP	360	F4	PMM	U	F
						(	1)

F. SPACE-TIME KINETICS, COUPLED NEUTRONICS-HYDRODYNAMICS-THERMODYNAMICS AND EXCURSION SIMULATIONS

151	SCRAM/WIGLE, 1D TRANSIENT NEUTRONICS MODULES	CP	360	F4	PMM	U	F
153	DISC., JOSHUA 2D SPACE-TIME FLUX CALC MODULES	CP	360	F4	PMM	U	F
						(	2)

G. RADIOLOGICAL SAFETY, HAZARD AND ACCIDENT ANALYSIS

80	SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	6600	F4	MA	U	G
90	SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	360	F4	MA	U	G
94	RKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	7600	F4	MA	U	G
94	RKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	360	F4	MA	U	G
106	SPONK, DOSE TO MAN FROM REACTOR GAS RELEASES	RNWL	1108	BASIC	RS	U	G
107	CRITP, INTERNAL INGESTION DOSE TO ORGANISMS	RNWL	1108	BASIC	RS	U	G
108	ARRPG, DOSE TO MAN FROM REACTOR LIQUID RELEASE	RNWL	1108	BASIC	RS	U	G
114	COMBACR, WHOLE BODY & CHEST RADIOACTIVITY CALC	SP	812	RASC	PHM	U	G
193	SAFTAC, MONTE CARLO FAULT TREE SIMULATION	UNI	1108	F+SLE	RRD	P	G

(9)

H. HEAT TRANSFER AND FLUID FLOW

R 37	TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	6600	F4	MA	U	H
R 37	TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600	F4	MA	U	H
R 37	TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600	F4	MA	U	H
P 49	SANPIC, PARTICLE-IN-CELL PROGRAM	SLA	6600	F+COM	MA	U	H
73	SNAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	LASL	6600	F4	MA	U	H
94	YAQUI, LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	7600	F4	MA	U	H
123	6KILF, CORE HEATUP CODE FOR BWR/6 ANALYSIS	FI	360	F4	L	P	H
167	FLOOD, CORE REFLOODING RATE CALCULATION ECC	ANC	360	F4	RSR	U	H
193	PAYTRAC, ACOUSTIC RAY TRACING UNSTEADY FLOW	LASL	6600	F4	MA	U	H
213	SIROCCO, CALCULATION OF TRANSIENT GAS FLOW	LLI	7600	F	MA	U	H

(10)

I. DEFORMATION AND STRESS DISTRIBUTION COMPUTATIONS, STRUCTURAL ANALYSIS, AND ENGINEERING DESIGN STUDIES

R 2	SLADE, STATIC ANALYSIS OF THIN SHELLS	SLA	6600	F+COM	MA	U	I
99	SLADE-2, FINITE ELEMENT DYNAMIC SHELL RESPONSE	SLA	6600	F4	MA	P	I
110	CHILFS, LINEAR ELASTIC FINITE ELEMENT ANALYSIS	SLA	6600	F4	MA	U	I
172	OMESH, RENUM, SELF-ORGANIZING MESH GENERATION	SLA	6600	F	MA	P	I
176	NUBOW, STRUCTURAL ANALYSIS BOWED REACTOR CORES	ANL	360	F4	RRD	U	I
181	CRACK, 2-DIMENSIONAL PLANE-STRAIN CALCULATION	LLL	6600	F	MA	U	I
206	AXICRP, FINITE ELEMENT CODE FOR CRFP ANALYSIS	HEDL	6500	F	RRD	P	I
208	GNATS, MESH2, GPRINT, NONLINEAR FINITE ELEMENT	SLA	6600	F+COM	MA	U	I
209	DETECTR, COMPRESSION MOLD DESIGN FOR DETECTORS	LASL	7600	F4	MA	U	I
R222	ELTFMP, ELEVATED TEMPERATURE PIPING EVALUATION	WAPC	7600	F	RRD	U	I

(10)

J. GAMMA HEATING AND SHIELD DESIGN

82	MCG, GAMMA TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	J
93	MCP, PHOTON TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	J

(2)

K. REACTOR SYSTEMS ANALYSIS

121	PFALLY, GAS TURBINE HTGR TRANSIENT MODEL	GA	1108	F5	RRD	D	K
150	GRASS, THE JOSHUA REACTOR ANALYSIS SUBSYSTEM	OP	360	F4	PHM	C	K

(2)

M. DATA MANAGEMENT

R 3	RALCRPH, RESOURCE ALLOCATION BY CRITICAL PATH	MLMC	360	F+C+R	MA	U	M
P 4	RFCOM, REC PURCHASE VERSUS LEASE ANALYSIS	SLA	1108	COBOL	MA	U	M
R 4	RFCOM, REC PURCHASE VERSUS LEASE ANALYSIS	SLA	360	COBOL	MA	U	M
P 38	TRUMP/K02, THERMAL PROPERTY DATA COMPILATION	LLL	6600	F+LRL	MA	U	M
R 39	GE MEDICAL INSURANCE REIMBURSEMENT SYSTEM	GEPI	435	COBOL	MA	U	M
P 40	TRAMP, TAPE LIBRARY MANAGEMENT PROGRAM	ALCC	8283	COBOL	MA	U	M
R 43	MPR PRODUCT RECORD FILE SYSTEM	MHSM	360	C+BAL	MA	U	M
P 96	MAPPER, PROJECTING MANUFACTURING REQUIREMENTS	GEPI	GETS	BASIC	MA	P	M
P 99	SPIRAL, FULL-TEXT STORAGE, SEARCH & RETRIEVAL	SLA	1108	F+BAL	MA	P	M
P 113	FUEL PIN, FUEL PIN DATA MANAGEMENT SYSTEM	LASL	7600	F4	MA	D	M
P 123	WIRPDP, INFORMATION RETRIEVAL & REPORTS SYSTEM	MLMC	360	PL/1	MA	P	M
P 129	PLTRS, PL MAGNETIC TAPE RESERVATION SYSTEM	CSCN	6600	F+COM	RLC	U	M
P 157	OFNUP/RENCPO, LIBRARY JOURNAL ORDERING PROGRAM	ANL	360	P+BAL	ANL	U	M
P 160	JORSHDP, JORSHOP ENVIRONMENT SCHEDULING SYSTEM	CSCN	6600	FTN	RLO	U	M
P 162	CUF, PROPERTY INVENTORY & ACCOUNTING SYSTEM	CSCN	6600	COBOL	RLO	U	M
P 174	COMPUTER PROGRAM FOR LIBRARY BOOK CONTROL	DP	360	COBOL	PHM	U	M
P 175	TAFI, RADIOACTIVE WASTE MANAGEMENT PROGRAM	DP	360	F4	PHM	U	M
P 180	PANSAP, RADIATION SCIENCES PERSONNEL DATA	REEC	6400	COBOL	MA	U	M
P 182	PRP, U.S. PAYROLL, BUDGET, & PERSONNEL SYSTEM	NVOC	6400	COBOL	MA	U	M
P 185	ADAM, LARGE DYNAMIC FILES DATA ACCESS METHOD	DP	360	F4	PHM	U	M
P 190	RND4249Q, RANDOM SAMPLING TABLE NON-BIAS ORDER	MLMC	360	F4	MA	U	M
P 194	MAXI, NADS DATA BASE STORAGE & RETRIEVAL	EGEG	PD10	F+MAC	MA	U	M
P 195	SAFFTY REPORTING & COST SYSTEM	REEC	6400	COBOL	MA	U	M
P 196	R10RHYTHM SYSTEM FOR PERSONAL INJURY ANALYSIS	REEC	6400	C+F	MA	C	M
P 199	MVL, EXHAUST HOOD VELOCITY MEASUREMENT REPORT	LASL	6600	F	MA	U	M
P 200	PODFAS, FUEL ROD FABRICATION PLANT SIMULATION	LLL	6600	F+GSP	R	D	M
P 216	SKILLS INVENTORY, PERSONNEL DATA SYSTEM	HENN	6400	F4	NVO	U	M
P 219	CUP, PAYROLL & PERSONNEL ACCOUNTING SYSTEM	CSCN	6600	COBOL	RRO	U	M

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N. SUBSIDIARY CALCULATIONS

P 134	SHEMP, HEMP PROGRAM 2D GRID PROCESSING ROUTINE	LLL	7600	CHAT	MA	U	N
P 154	RIFLE, JOSHUA RESONANCE INTEGRAL MODIFICATIONS	DP	360	F4	PHM	U	N
P 155	EDIT MODULES, JOSHUA PRINTED EDIT FACILITIES	DP	360	F4	PHM	U	N

(3)

O. EXPERIMENTAL DATA PROCESSING

P 95	CONFOLD, UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL	6600	F4	MA	U	O
P 138	NEWPTO/PERMFA, PERMEABILITY MEASUREMENTS	LLL	PDPS	FOCAL	MA	U	O
P 144	LIF/RESPONSE, LITHIUM FLUORIDE GAMMA RESPONSE	LLL	6600	F4	LLL	U	O
P 145	LIF/PLOT, LITHIUM FLUORIDE SPECTRUM PLOTTING	LLL	PD11	BASIC	LLL	U	O
P 197	VFL, CYLINDER WALL VELOCITY DETERMINATION CALC	LASL	6600	F	MA	U	O
P 212	PVTCALA, PVT CALIBRATION SYSTEM DATA ANALYSIS	MLMC	PDPS	FOCAL	MA	U	O

(6)

P. GENERAL MATHEMATICAL AND COMPUTING SYSTEM ROUTINES

R 5	PLOT, 2-D CONTOUR AND AREA CALCULATION	SLA	6600	F4	MA	U	P
R 6	SANDIA SCOPE USERS' MANUAL FOR THE CDC6600	SLA	6600	FTN	MA	U	P
R 7	NON-LINEAR LEAST SQUARES FITTING OF FUNCTIONS	RFD	400	F4	MA	U	P
R 8	CONVERSION FROM PAPER TAPE TO CARD OR DISK	RFD	360	F+BAL	MA	U	P
R 9	SURFACE AREA & VOLUME OF A SOLID OF REVOLUTION	RFD	400	F	MA	U	P
R 10	POLYNOMIAL CURVE FIT BY LEAST SQUARES ANALYSIS	RFD	360	F4	MA	U	P
11	IRW360 UTILITY AND PDP9/15 ASCII MAG TAPE R/W	SLAC	360	F+BAL	R	U	P
12	FORMAT, A TEXT PROCESSING PROGRAM	SLAC	360	F4	R	U	P
R 13	INTERACTIVE MONITOR TELEMETRY PLAYBACK SYSTEM	SLA	3100	COM	MA	U	P
R 14	PLOT, AUTOMATIC PLOTTING FOR THE GERBER 2000	RFD	360	F4	MA	U	P
R 26	RUNKUT, RUNGE-KUTTA ODE INTEGRATION ROUTINE	SLA	6600	F+COM	MA	U	P
R 48	SEVER, SYMMETRIC MATRIX EIGENVALUES & VECTORS	SLA	6600	F4	MA	U	P
R 50	AVINT, INTEGRATION OF TABULATED DATA	SLA	6600	F4	MA	U	P
R 50	AVINT, INTEGRATION OF TABULATED DATA	SLA	3600	F63	MA	U	P
R 51	ERF,ERFC, ERROR & COMPLEMENTARY ERROR FUNCTION	SLA	6600	F4	MA	U	P
R 52	GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	6600	F4	MA	U	P
R 52	GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	1102	F4	MA	U	P
R 52	GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	PD10	F4	MA	U	P
R 53	RES, CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA	6600	F4	MA	U	P
R 54	ERRCHK,ERRGET,ERRSET, SYSTEM ERROR ROUTINES	SLA	6600	F+COM	MA	U	P
56	FINDMAP, COMPLEX GREEN'S FUNCTION SUBROUTINE	LASL	6600	F+COM	MA	U	P
59	I401, LOAD FORTRAN FORMAT-PRPF INPUT DATA	LASL	6600	F4	MA	U	P
60	Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER	LASL	6600	F4	MA	U	P
61	ARITHMETIC SUBROUTINES CATEGORY A	LASL	6600	F4	MA	U	P
62	ELEMENTARY FUNCTION SUBROUTINES CATEGORY B	LASL	6600	COM	MA	U	P
63	SUBROUTINES FOR SPECIAL FUNCTIONS CATEGORY C	LASL	6600	F4	MA	U	P
64	1301, TRUNCATED BUNEMAN POISSON EQUATION SOLVR	LASL	6600	F	MA	U	P
65	SUBROUTINES FOR INTERPOLATION CATEGORY E1	LASL	6600	F4	MA	U	P
66	LEAST SQUARES & SMOOTHING ROUTINES CATEGORY E2	LASL	6600	F4	MA	U	P
67	VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1	LASL	6600	F4	MA	U	P
67	EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY F2	LASL	6600	F4	MA	U	P
67	SIMULTANEOUS LINEAR SYSTEMS CATEGORY F4	LASL	6600	F4	MA	U	P
70	SPECTRAL ANALYSIS OF TIME SERIES CATEGORY G6	LASL	6600	F4	MA	U	P
71	DATA HANDLING & SORTING SUBROUTINES CATEGORY M	LASL	6600	F4	MA	U	P
72	N103, ERROR TERMINATION MESSAGE W/COUNT CONTRL	LASL	6600	F4	MA	U	P
R 73	FILE CODE GENERATOR, 6-CHARACTER ALPHANUMERIC	BKCC	360	F4	MA	U	P
74	HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE	BKCD	360	F4	MA	U	P
R 75	GROUPS COMPARISON, QUALITY CONTROL PROGRAM	BKCC	360	F4	MA	U	P
76	GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC	BKCD	360	F4	MA	U	P
97	PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	F4	MA	U	P
R101	SETS, SET EQUATION TRANSFORMATION SYSTEM	SLA	6600	FTN	MA	P	P
115	DYNDSK, OPTIMAL DISK DATA SET RE-ORDERING	DP	360	F+BAL	PMM	U	P
116	SUP/STACKLIB, FORTRAN VECTOR FUNCTION ROUTINES	LLL	7600	F+COM	MA	U	P
117	PROM, READ-ONLY MEMORY PROGRAMMING LANGUAGE	LLL	MCS8	ASM	MA	U	P
133	TIC-TAC-TOE, STRUCTURED PROGRAMMING IN ALA76	LLL	7600	ALA76	MA	U	P
140	MODCOMP BCD CHARACTER CODE CONVERSION FACILITY	LLL	MODCM	ASM	LLL	U	P
141	MODCOMP TEKTRONIX 4010 PLOTTING ROUTINES	LLL	MODCM	F+ASM	MA	U	P
143	PDP-8E, INTERACTIVE SIMULATOR ON THE CDC7600	LLL	7600	PIUTT	MA	U	P
147	LINEAR LEAST SQUARES FIT WITH STATISTICS	DP	360	F4	PMM	U	P
158	ODE/STEP/INTRP, ADAMS INTEGRATOR FOR ODE'S	SLA		ANSIF		U	P
159	ODEONE, NONLINEAR PARTIAL DIFFERENTIAL EQN AID	LLL		ANSIF	MA	U	P
161	RATS, RATS/ARPA PDP-11 OPERATING SYSTEM	LLL	PD11	ASM	ARP	U	P
165	MRTS-TGS GRAPHICS SOFTWARE FOR III FR-80 COM	ANC	360	F+PAL	RRD	U	P
177	RFIR, FIBONACCI RANDOM-NUMBER GENERATION	LLL		ANSIF	MA	U	P
R178	EGG GENERAL PLOT SYSTEM FOR GRAPHICAL OUTPUT	FG&G	6400	COM	MA	U	P
187	STFODE/COLODE, COLLOCATION SOLN OF STIFF ODE'S	SLA	6600	F	MA	P	P
191	RARB, TEXT-FORMATTING PROGRAM DOCUMENTING AID	BKY	6600	F+COM	R	U	P
201	ODT, OCTAL DEBUGGING FOR THE MCS-80 COMPUTER	LLL	MC80	ASM	MA	U	P
203	LATIN SQ, LATIN SQUARE ANALYSIS OF VARIANCE	MLMO	360	F4	MA	P	P
207	MTTRAN, A STRUCTURED FORTRAN MACRO LANGUAGE	LLL	7600	MTRAN	MA	U	P
R214	BEGINMAP, PROGRAM PERFORMANCE ANALYSIS ROUTINE	LLL	7600	LRL	MA	U	P
221	MORTTRAN2, A MACRO-BASED STRUCTURED FORTRAN	SLAC		ANSIF	R	P	P
223	LCDF, LIL OPERATING SYSTEM FOR THE CDC7600	LLL	7600	LRL	MA	U	P
228	GFARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	6600	F4	MA	P	P
228	GFARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	360	F4	MA	P	P
232	SIMPLEX, GENERAL LINEAR PROGRAMMING SOLUTION	LLL	7600	LRL	CTR	U	P
234	FWNO, FOCAL-60 WRITE NULL CHARACTERS OVERLAY	MHSM	PDP8	MACH	MA	P	P

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Q. MATERIALS

P 15	SIMULATION OF STRESS CORROSION CRACKING	SLA	6600	F	MA	U	Q
R 16	SURFACE FILM ELLIPSCMETER MEASUREMENT ANALYSIS	RFO	360	F4	MA	U	Q
R 17	INDEX, X-RAY POWDER PATTERN CRYSTAL INDEXING	RFO	360	F+REAL	MA	U	Q
R 18	CALCULATION OF CRYSTALLOGRAPHIC FUNCTIONS	RFO	360	F4	MA	U	Q
R 42	MASS DETERMINATION BY TRANSPOSITION METHOD	MHSM	360	F4	MA	U	Q
P 44	UNIVERSAL DENSITY CONTROL PROGRAM	MHSM	360	F4	MA	U	Q
57	INDEX, X-RAY POWDER PATTERN INDEXING	LASL	6600	F4	MA	U	Q
91	INDEX, X-RAY DIFFRACTION PROFILE ANALYSIS	LASL	6600	F4	MA	U	Q
R100	ISOTAP, PU POWER CALCULATION OF MIXED ISOTOPES	MLMO	360	F4	MA	P	Q
148	XOTRAP, GAS DIFFUSION WITH TRAPPING	OP	360	F4	MA	U	Q
229	MP9830 MOLE WGT, VOL, & DETONATION VELOCITY	LLL	9830	BASIC	MA	U	Q

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R. ENVIRONMENTAL AND EARTH SCIENCES

P 19	MOEFL-R, FALL AND DISPERSION OF PARTICLES	SLA	3600	F 36	MA	U	R
R107	LEACH, KINETICS OF IN-PLACE LEACHING MODEL	LLL	7600	F	AT	U	R
126	NST, 2-1/2 DIMENSION PREDICTION MODELS	OP	360	F4	DBE	C	R
127	TRJ, POINT SOURCE 2D WIND TRAJECTORY PROGRAM	DP	360	F4	DBE	C	R
129	VARSCH, VARIABLE SCAN RADIUS UPPER ATR STUDY	DP	360	F4	DBE	C	R
129	TETRAD, STREAM TRANSPORT DIFFUSION COEF CALC	DP	360	F4	PMM	C	R
130	MAPC, MAN-REM DOSE FROM ATMOSPHERIC TRANSPORT	DP	360	F4	PMM	C	R
131	LODIPS, STREAM-RIVER POLLUTANT PREDICTION	DP	360	F4	PMM	D	R
132	TRAJLIN, SINGLE TOWER DISPERSION CLIMATOLOGY	OP	360	F4	PMM	C	R
137	PAVF, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	6600	F4	LLL	U	R
137	PAVF, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	360	F4	LLL	U	R
S183	STATPAC, HYDROLOGIC DATA STATISTICAL PACKAGE	NVOO	6400	F	MA	P	R
194	SOC, 1-DIMENSIONAL WAVE PROPAGATION SIMULATION	LLL	7600	F	AT	U	R
S192	FDS, ENVIRONMENTAL DATA STUDY GRAPHICS DISPLAY	LLL	7600	F	MA	O	R
219	TORNADO, POLLUTANT SPREAD IN TORNADIC STORM	DP	360	F4	DBE	U	R
R224	ZBPUF, ATMOSPHERIC DISPERSION OF LARGE CLOUDS	LLL	7600	F	AT	U	R

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S. SPACE SCIENCES

P 20	HRS017, MULTIPLE REVOLUTION REENTRY	SLA	1108	F4	SNS	U	S
R 20	HRS017, MULTIPLE REVOLUTION REENTRY	SLA	7040	QUICK	SNS	U	S
R 20	HRS017, MULTIPLE REVOLUTION REENTRY	SLA	3600	F4	SNS	U	S
R 20	HRS017, MULTIPLE REVOLUTION REENTRY	SLA	6600	F4	SNS	U	S
R 21	WONDY3A, 1-D WAVE PROPAGATION CALCULATION	SLA	6600	F4	MA	U	S
R 22	SWAPP, STRESS WAVE ANALYSIS PROGRAM	SLA	6600	F4	MA	U	S
R 23	SATLOC, SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	3600	F36	MA	U	S
R 24	HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	6600	F4	SNS	U	S
R 24	HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	3600	F36	SNS	U	S
R 24	HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	7044	QUICK	SNS	U	S
R 24	HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	1108	F4	SNS	U	S
R 25	HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	7040	QUICK	SNS	U	S
R 25	HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	3600	F36	SNS	U	S
R 25	HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	1108	F4	SNS	U	S
R 25	HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	6600	F4	SNS	U	S
P 47	TOCNY2, 2-DIMENSIONAL WAVE PROPAGATION PROGRAM	SLA	3600	F 36	MA	U	S

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T. ELECTRONICS AND ENGINEERING EQUIPMENT

R 27	ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	6600	F4	MA	U	T
P 27	ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	1108	F4	MA	U	T
R 29	CALIBRATION OF SURFACE PLATES	MHBR	360	F4	MA	U	T
P 29	EEFAPS, LAPLACE EQUATION SIMULATION STUDY	SLA	6600	F4	MA	U	T
P 41	ELEMENTAL MOMENT OF INERTIA CALCULATION	MHSM	360	F4	MA	U	T
R 45	WHEATSTONE BRIDGE RESISTANCE CALIBRATION	MHSM	360	F4	MA	U	T
R124	SOL-HOL CONF, CONICAL MONOPOLE ANTENNA CALC	LLL	6600	F	MA	U	T
136	ALARM, REMOTE ALARM SENSOR MONITORING PROGRAM	LLL	MCS4	ASM	DBE	U	T
156	WT-MPA/LLLIP, ELECTROMAGNETIC RESPONSE CALC	LLL	7600	F4	MA	U	T
188	ACFES, A CODE TO DESIGN A PYROTECHNIC ACTUATOR	LLL	6600	F	MA	U	T
204	MEMSES, BANK BY BANK MEMORY DIAGNOSTIC OR TEST	UCND	PD11	MACRO	CTR	U	T
205	VENT, EXHAUST VENTILATION SIZING & BALANCING	LLL	7600	F4	LLL	U	T
211	PVTCALC, PVT CALIBRATION SYSTEM CONTROL CODE	MLMO	PDP8	FOCAL	MA	U	T
215	ODHUM, STRAIGHT, JOINT, FOCUSNF, CRT TESTING	LLL	7600	F	MA	U	T
230	LILR, LIST-INTERPRETIVE LANGUAGE FOR THE MCS-8	LLL	MCS8	INT	ARP	U	T
S231	PTXK SYSTEM EXECUTIVE FOR USE WITH FOCAL-X	LLL	PDP8	PALR	LLL	U	T
233	WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN	LLL	7600	LRL	LLL	U	T
235	LFRU, INDUCTANCE-CAPACITANCE-RESONANCE CALC	MHSM	PDP8	FOCAL	MA	P	T
236	TDFS, AUDIO TRANSFORMER DESIGN COMPUTATION	MHSM	PDP8	FOCAL	MA	P	T
239	PCCL, PIPE COLUMN DESIGN COMPUTATION	MHSM	PDP8	FOCAL	MA	P	T

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U. CHEMISTRY

R 30	CRLE, SPECTROPHOTOMETRIC REACTION KINETICS	RFD	360	F4	MA	U	U
P 31	PACF, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	210	F2	MA	U	U
R 31	PACF-2, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	360	F4	MA	U	U
R 32	GAS-GAS & GAS-SOLID REACTION DATA REDUCTION	RFD	360	F4	MA	U	U
P 33	DYNAMIC ANALYSIS OF GASES BY MASS SPECTROMETRY	RFD	400	F	MA	U	U
P 34	CHEMICAL DIFFUSIVITIES BY EOLTZMAN-MATANO	RFD	400	BASIC	MA	U	U
P 35	STICKING PROBABILITY OF GASES ON SOLID SURFACE	RFD	360	F4	MA	U	U
P 46	TCHFACT, CHEMICAL REACTOR ANALYSIS PROGRAM	MHSM	360	F4	MA	U	U
55	TDF-A, COMPUTING THERMODYNAMIC FUNCTIONS	LASL	6600	F+COM	MA	U	U
122	UNICALB, PDP-11 BASIC SPECTROCHEMICAL ANALYSIS	LASL	PD11	RASIC	MA	U	U
146	RECNG, PATTERN RECOGNITION ANALYSES	LLL	6600	F	MA	U	U
163	GAMANAL, INTERPRETATION OF GAMMA-RAY SPECTRA	LLL	6600	LRL	MA	U	U
164	GAMANAL LIBRARY AND AUXILIARY ROUTINES	LLL	6600	LRL	MA	U	U
237	DEWP, PRESSURE DEW POINT TABLE GENERATION	MHSM	PDP8	FOCAL	MA	P	U
239	VOW, VAN DER WALL'S EQUATION OF STATE OF GASES	MHSM	PDP8	FOCAL	MA	P	U

(15)

V. PARTICLE ACCELERATORS AND HIGH VOLTAGE MACHINES

36	SLAC ELECTRON GUN DESIGN PROGRAM	SLAC	360	PL/1	R	U	V
220	TRANSPORT, DESIGN OF CHARGED PARTICLE BEAMS	SLAC	370	F4	R	P	V

(2)

W. PHYSICS

58	LASL LENS DESIGN PROGRAM VERSION 2.2	LASL	6600	F+COM	MA	U	W
86	HANJON, ELECTRON ENERGY DISTRIBUTION CALC	LASL	7600	F4	MA	U	W
89	CORCOUP, NILSSON CORIOLIS COUPLING PROGRAM	LASL	6600	F4	MA	U	W
89	DEGAA, POLYNOMIAL SOLN OF SCHRÖDINGER EQUATION	LASL	7600	F4	MA	U	W
92	HELGAAS, ELECTRON & PROTON SCATTERING BY HELIUM	LASL	6600	F4	MA	U	W
93	HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	6600	F4	MA	U	W
93	HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	7600	F4	MA	U	W
103	LEVEL, ATOMIC-ENERGY-LEVEL VALUES CALCULATION	LASL	6600	F4	MA	P	W
104	CALOR, WAVE NUMBERS DERIVED FROM LEVEL VALUES	LASL	6600	F4	MA	P	W
105	IT, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	F4	MA	U	W
111	APW, ENERGY BANDS VIA AUGMENTED PLANE WAVES	LASL	6600	F+COM	MA	U	W
112	RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	6600	F4	MA	U	W
112	RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	7600	F4	MA	U	W
135	MAB, SATURATION SPECTROSCOPY DATA REDUCTION	LLL	7600	F4	MA	U	W
S202	TKOP, THIN PLASMA X-RAY SPECTRUM CALCULATION	LLL	7600	F	MA	U	W

(15)

X. CONTROLLED THERMONUCLEAR RESEARCH

85	CRMEXP, CO2 GAS LASER AMPLIFICATION STUDIES	LASL	7600	F4	MA	U	X
87	HIL, CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL	7600	F4	MA	U	X
119	TIBRO-GENERAL, CHARGED-PARTICLE TRAJECTORIES	LLL	7600	F400	CTR	U	X
149	DART, FUSION REACTOR ENERGY CONVERTER MODEL	LLL	7600	CHAT	CTR	U	X
179	HYBRID-II, 2-D MULTISPECIES FOKKER-PLANCK CODE	LLL	7600	F	CTR	U	X

(5)

Y. BIOLOGY AND MEDICINE

78	PICTA2, BIOME POPULATION INTERACTION MODELING	LASL	1108	F4	MA	U	Y
78	PICTA2, BIOME POPULATION INTERACTION MODELING	LASL	6600	F4	MA	U	Y
90	ABISATL3, ANTIBODY PRODUCTION SIMULATION	LASL	6600	F4	MA	U	Y
186	GENE, TETRAO GENETIC ANALYSIS PROGRAM	BKY	6600	F	DBF	U	Y
S225	FLATLAND, A 3-D OBJECT RECONSTRUCTION PROGRAM	LLL	7600	LRL	DBF	U	Y
S226	TESTIM, PROJECTION & TEST IMAGE DATA GENERATOR	LLL	7600	LRL	DBF	U	Y

(6)

Z. DATA

139	GAMTAB, RADIOACTIVE DECAY GAMMA RAY CATALOG	DP	360	EBCDI	PMM	U	Z
169	INCITE LIBRARY, THERMAL X-SECTIONS ENDF/R DATA	ANC	360	RIN	RRD	U	Z

(2)

APPENDIX B
KWIC INDEX

ABIGAIL 3

ATOMIC-ENERGY-LEVEL

ABIGAIL3, ANTIBODY PRODUCTION SIMULATION	LASL	6600	F4	MA	U	Y	\$	90
ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	1108	F4	MA	U	T	\$	R 27
ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	6600	F4	MA	U	T	\$	R 27
ACCESS METHOD DP	360	F4	PMM	U	M			185
ACCOUNTING SYSTEM	CSCN	6600	COBOL	RRD	U	M		218
ACCOUNTING SYSTEM	CSCN	6600	COBOL	RLC	U	M		162
ACDES, A CODE TO DESIGN A PYROTECHNIC ACTUATOR	LLL	6600	F	MA	U	T	\$	188
ACOUSTIC RAY TRACING UNSTEADY FLOW	LASL	6600	F4	MA	U	H		199
ACTINIDE PRODUCTION & DEPLETION STUDY	DP	360	F4	PMM	U	C		210
ACTUATOR LLL	6600	F	MA	U	T			188
ADAM, LARGE DYNAMIC FILES DATA ACCESS METHOD	DP	360	F4	PMM	U	M	\$	185
ADAMS INTEGRATOR FOR ODE'S	SLA			ANSIF	U	P		158
AEC PURCHASE VERSUS LEASE ANALYSIS	SLA	360	COBOL	MA	U	M		R 4
AEC PURCHASE VERSUS LEASE ANALYSIS	SLA	1108	COBOL	MA	U	M		R 4
AID RKY	6600	F+COM	R	U	P			191
AID LLL	ANSIF	MA	U	P				159
AIR STUDY DP	360	F4	DBF	C	R			128
ALARM SENSOR MONITORING PROGRAM	LLL	MCS4	ASM	DBE	U	T		136
ALARM, REMOTE ALARM SENSOR MONITORING PROGRAM	LLL	MCS4	ASM	DBE	U	T	\$	136
ALA76 LLL	7600	ALA76	MA	U	P			133
ALA76 MA	U	P						133
ALLOCATION BY CRITICAL PATH	MLMD	360	F+C+R	MA	U	M		R 3
ALOT R2R3	COBOL	MA	U	M				R 40
ALPHANUMERIC BKCD	360	F4	MA	U	P			R 73
AMPLIFICATION STUDIES	LASL	7600	F4	MA	U	X		85
ANALYSES	LLL	6600	F	MA	U	U		146
ANC	360	RIN	RPD	U	Z			169
ANC	360	F+BAL	RRD	U	P			165
ANC	360	F4	RRD	U	R			168
ANC	360	F4	RRD	U	R			170
ANC	360	F4	RRD	U	C			166
ANC	360	F4	RRD	U	C			171
ANC	360	F4	RRD	U	H			167
ANL	360	F4	RRD	U	I			176
ANL	360	P+BAL	ANL	U	M			157
ANL U M	\$RENUP/RENORD, LIBRARY JOURNAL ORDERING PROGRAM	ANL	360	P+BAL				157
ANSIF	U	P						158
ANSIF MA	U	P						159
ANSIF MA	U	P						177
ANSIF R	P	P						221
ANTENNA CALC	LLL	6600	F	MA	U	T		R124
ANTIBODY PRODUCTION SIMULATION	LASL	6600	F4	MA	U	Y		90
APW, ENERGY BANDS VIA AUGMENTED PLANE WAVES	LASL	6600	F+COM	MA	U	W	\$	111
AREA & VOLUME OF A SOLID OF REVOLUTION	REF	400	F	MA	U	P		R 9
AREA CALCULATION	SLA	6600	F4	MA	U	P		R 5
ARITHMETIC SUBROUTINES CATEGORY A	LASL	6600	F4	MA	U	P	\$	61
ARP D P	\$RATS, RISOS/ARPA PDP-11 OPERATING SYSTEM	LLL	PD11	ASM				161
ARP U T	\$LTLR, LIST-INTERPRETIVE LANGUAGE FOR THE MCS-8	LLL	MCS8	INT				230
ARPRG, CODE TO MAN FROM REACTOR LIQUID RELEASE	BNWL	1108	BASIC	RS	U	G	\$	108
ASCII MAG TAPE R/W	SLAC	360	F+BAL	R	U	P		11
ASM	ARP D P	\$RATS, RISOS/ARPA PDP-11 OPERATING SYSTEM	LLL	PD11				161
ASM	DBE U T	\$ALARM, REMOTE ALARM SENSOR MONITORING PROGRAM	LLL	MCS4				136
ASM	LLL U P	\$MOLCOMP RCD CHARACTER CODE CONVERSION FACILITY	LLL	MDCM				140
ASM	MA U P	\$JOT, OCTAL DEBUGGING FOR THE MCS-80 COMPUTER	LLL	MC80				201
ASM	MA U P	\$PROM, READ-ONLY MEMORY PROGRAMMING LANGUAGE	LLL	MCS8				117
ASSURANCE STATISTICAL CODE	BKCD	360	F4	MA	U	P		74
AT U R	\$LEACH, KINETICS OF IN-PLACE LEACHING MODEL	LLL	7600	F				R109
AT U R	\$SOC, 1-DIMENSIONAL WAVE PROPAGATION SIMULATION	LLL	7600	F				184
AT U R	\$2BPUF, ATMOSPHERIC DISPERSION OF LARGE CLOUDS	LLL	7600	F				R224
ATMOSPHERIC DISPERSION OF LARGE CLOUDS	LLL	7600	F	AT	U	R		R224
ATMOSPHERIC TRANSPORT	DP	360	F4	PMM	C	R		130
ATOMIC ENERGY LEVELS AND SPECTRA	LASL	6600	F4	MA	U	W		112
ATOMIC ENERGY LEVELS AND SPECTRA	LASL	7600	F4	MA	U	W		112
ATOMIC STRUCTURE	LASL	6600	F4	MA	U	W		93
ATOMIC STRUCTURE	LASL	7600	F4	MA	U	W		93
ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	F4	MA	U	W		105

ATOMIC-ENERGY-LEVEL

C+F

ATOMIC-ENERGY-LEVEL VALUES CALCULATION	LASL	6600	F4	MA	P	W	\$LEVEL,	103
AUDIO TRANSFORMER DESIGN COMPUTATION	MHSM	PDP8	FOCAL	MA	P	T	\$TDES,	236
AUGMENTED PLANE WAVES	LASL	6600	F+COM	MA	U	W	\$APW, ENERGY BANDS VIA	111
AUTOMATIC PLOTTING FOR THE GERBER 2000	RFD	360	F4	MA	U	P	\$PLOT,	R 14
AUXILIARY ROUTINES	LLL	6600	LRL	MA	U	U	\$GAMANAL LIBRARY AND	164
AVINT, INTEGRATION OF TABULATED DATA	SLA	3600	F63	MA	U	P	\$	R 50
AVINT, INTEGRATION OF TABULATED DATA	SLA	6600	F4	MA	U	P	\$	R 50
AXICPP, FINITE ELEMENT CODE FOR CREEP ANALYSIS	HEDL	6500	F	RRD	P	I	\$	206
BALANCING	LLL	7600	F4	LLL	U	T	\$VENT, EXHAUST VENTILATION SIZING &	205
BALLISTIC COEFFICIENT COMPUTATION	SLA	1108	F4	SNS	U	S	\$HRS015,	R 25
BALLISTIC COEFFICIENT COMPUTATION	SLA	3600	F36	SNS	U	S	\$HRS015,	R 25
BALLISTIC COEFFICIENT COMPUTATION	SLA	6600	F4	SNS	U	S	\$HRS015,	R 25
BALLISTIC COEFFICIENT COMPUTATION	SLA	7040	QUIK	SNS	U	S	\$HRS015,	R 25
BANDS VIA AUGMENTED PLANE WAVES	LASL	6600	F+COM	MA	U	W	\$APW, ENERGY	111
BANK BY BANK MEMORY DIAGNOSTIC OR TEST UCND	PD11	MACRO	CTR	U	T		\$MEMSEG,	204
BANK MEMORY DIAGNOSTIC OR TEST UCND	PD11	MACRO	CTP	U	T		\$MEMSEG, BANK BY	204
BAPP, TEXT-FORMATTING PROGRAM DOCUMENTING AID	BKY	6600	F+COM	R	U	P	\$	191
BASC PMM U G \$COWBACR, WHOLE BODY & CHEST RADIOACTIVITY CALC	DP	812						114
BASE STORAGE & RETRIEVAL	EGGG	PD10	F+MAC	MA	U	M	\$MAXI, NADS DATA	R194
BASIC LLL U O \$LIF/PLOT, LITHIUM FLOURIDE SPECTRUM PLOTTING	LLL	PD11						145
BASIC MA P M \$MAPPER, PREDICTING MANUFACTURING REQUIREMENTS	GEPI	GETS						96
BASIC MA U Q \$HPP830 MOLE WTGT, VOL, & DETONATION VELOCITY	LLL	9830						229
BASIC MA U U \$CHEMICAL DIFFUSIVITIES BY BOLTZMAN-MATAND	RFD	400						R 34
BASIC MA U U \$UNICALB, PDP-11 BASIC SPECTROCHEMICAL ANALYSIS	LASL	PD11						122
BASIC RS U G \$ARRRG, DOSE TO MAN FROM REACTOR LIQUID RELEASE	BNWL	1108						108
BASIC RS U G \$SCRTR, INTERNAL INGESTION DOSE TO ORGANISMS	BNWL	1108						107
BASIC RS U G \$GRONK, DOSE TO MAN FROM REACTOR GAS RELEASES	BNWL	1108						106
BASIC SPECTROCHEMICAL ANALYSIS	LASL	PD11	BASIC	MA	U	U	\$UNICALB, PDP-11	122
BCH CHARACTER CODE CONVERSION FACILITY	LLL	MDCM	ASM	LLL	U	P	\$MODCOMP	140
BEAMS	SLAC	370	F4	R	P	V	\$TRANSPORT, DESIGN OF CHARGED PARTICLE	220
BECON, AEC PURCHASE VERSUS LEASE ANALYSIS	SLA	360	COROL	MA	U	M	\$	R 4
BECON, AEC PURCHASE VERSUS LEASE ANALYSIS	SLA	1108	COROL	MA	U	M	\$	R 4
BEGINMAP, PROGRAM PERFORMANCE ANALYSIS ROUTINE	LLL	7600	LRL	MA	U	P	\$	R214
BES, CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA	6600	F4	MA	D	P	\$	R 53
BESSEL FUNCTION EVALUATION	SLA	6600	F4	MA	D	P	\$BES, CYLINDRICAL	R 53
BIN RRD U Z \$INITE LIBRARY, THERMAL X-SECTIONS ENDF/B DATA	ANC	360						169
BIONE POPULATION INTERACTION MODELING	LASL	1108	F4	MA	U	Y	\$BIOTA2,	78
BIONE POPULATION INTERACTION MODELING	LASL	6600	F4	MA	U	Y	\$BIOTA2,	78
BIORHYTHM SYSTEM FOR PERSONAL INJURY ANALYSIS	REFC	6400	C+F	MA	C	M	\$	196
BIOTA2, BIONE POPULATION INTERACTION MODELING	LASL	1108	F4	MA	U	Y	\$	78
BIOTA2, BIONE POPULATION INTERACTION MODELING	LASL	6600	F4	MA	U	Y	\$	78
BKCD 360 F4 MA U P \$FILE CODE GENERATOR, 6-CHARACTER ALPHANUMERIC								R 73
BKCD 360 F4 MA U P \$GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC								76
BKCD 360 F4 MA U P \$GROUPS COMPARISON, QUALITY CONTROL PROGRAM								R 75
BKCD 360 F4 MA U P \$HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE								74
BKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	360	F4	MA	U	G	\$	84
BKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	7600	F4	MA	U	G	\$	84
BKY 6600 F DRE U Y \$GENE, TETRAD GENETIC ANALYSIS PROGRAM								186
BKY 6600 F+COM R U P \$BARR, TEXT-FORMATTING PROGRAM DOCUMENTING AID								191
BKY 7600 F4 GFD D C \$GEOTHM, GEOTHERMAL POWER PLANT CYCLE CALC								217
BNWL 1108 BASIC RS U G \$ARRRG, DOSE TO MAN FROM REACTOR LIQUID RELEASE								108
BNWL 1108 BASIC RS U G \$SCRTR, INTERNAL INGESTION DOSE TO ORGANISMS								107
BNWL 1108 BASIC RS U G \$GRONK, DOSE TO MAN FROM REACTOR GAS RELEASES								106
BJARDS SLA 1108 F4 MA U T \$ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT								R 27
BJARDS SLA 6600 F4 MA U T \$ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT								R 27
BODY & CHEST RADIOACTIVITY CALC	DP	912	BASC	PMM	U	G	\$COWBACR, WHOLE	114
BOLTZMAN-MATAND	RFD	400	BASIC	MA	U	U	\$CHEMICAL DIFFUSIVITIES BY	R 34
BOOK CONTROL	DP	360	COROL	PMM	U	M	\$COMPUTER PROGRAM FOR LIBRARY	174
POWER REACTOR CORES AML	360	F4	RRD	U	I		\$NUBOW, STRUCTURAL ANALYSIS	176
BRIDGE RESISTANCE CALIBRATION	MHSM	360	F4	MA	U	T	\$WHEATSTONE	R 45
BUDGET, & PERSONNEL SYSTEM	NVOC	6400	COROL	MA	U	M	\$PRP, U.S. PAYROLL,	182
BUNEMAN POISSON EQUATION SOLVR	LASL	6600	F	MA	U	P	\$D301, TRUNCATED	64
BWR/6 ANALYSIS	FI	360	F4	L	P	H	\$KILER, CORE HEATUP CODE FOR	123
BZB3 COROL MA U M \$STRAMP, TAPE LIBRARY MANAGEMENT PROGRAM								R 40
C+PAL MA U M \$MPR PRODUCT RECORD FILE SYSTEM	MHSM	360						R 43
C+F MA C M \$BIORHYTHM SYSTEM FOR PERSONAL INJURY ANALYSIS	REFC	6400						196

[illegible]

CONFIRMATION

CAUTION

CONFOLD

DATA

CONFOLD, UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL 6600 F4	MA U O	\$	95
CONICAL MONOPOLE ANTENNA CALC	LLL 6600 F	MA U T	\$SOL-HOL CONE,	R 124
CONSTANTS RESONANCE	ANC 360 F4	RRD U B	\$SCRABLE, MULTI-GP FAST	170
CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL 7600 F4	MA U X	\$HII,	87
CONTINUOUS SPECTRA	LASL 6600 F4	MA U O	\$CONFOLD, UNFOLDING SMOOTH	95
CONTOUR AND AREA CALCULATION	SLA 6600 F4	MA U P	\$PLOT, 2-D	R 5
CONTRL LASL 6600 F4	MA U P	\$N103, ERROR TERMINATION MESSAGE W/COUNT		72
CONTROL DP 360 COBOL PMM U M		\$COMPUTER PROGRAM FOR LIBRARY BOOK		174
CONTROL CODE MLMD POPB FOCAL MA U T		\$PVTALC, PVT CALIBRATION SYSTEM		211
CONTROL PROGRAM MHSN 360 F4	MA U Q	\$UNIVERSAL DENSITY		R 44
CONTROL PROGRAM BKED 360 F4	MA U P	\$GROUPS COMPARISON, QUALITY		R 75
CONVERSION FACILITY LLL MDCM ASM LLL U P		\$MODCOMP BCD CHARACTER CODE		140
CONVERSION FROM PAPER TAPE TO CARD OR DISK	RFD 360 F+BAL	MA U P	\$	R 8
CONVERTER MODEL LLL 7600 CHAT CTR U X		\$DART, FUSION REACTOR ENERGY		149
CORCOUP, NILSSON CORIOLIS COUPLING PROGRAM	LASL 6600 F4	MA U W	\$	88
CORE HEATUP CODE FOR BWR/6 ANALYSIS	EI 360 F4	L P H	\$6KILR,	123
CORE REFLOODING RATE CALCULATION FCC	ANC 360 F4	RSR U H	\$FLOOD,	167
CORE STORAGE I/O DATA TRANSFER	LASL 6600 F4	MA U P	\$Q409, EXTENDED	60
COSES ANL 360 F4	RRD U I	\$NUROW, STRUCTURAL ANALYSIS BOWED REACTOR		176
CORICIS COUPLING PROGRAM	LASL 6600 F4	MA U W	\$CORCOUP, NILSSON	88
CORROSION CRACKING	SLA 6600 F	MA U Q	\$SIMULATION OF STRESS	R 15
COST SYSTEM REEC 6400 COBOL MA U M		\$SAFETY REPORTING &		195
COUPLING PROGRAM LASL 6600 F4	MA U W	\$CORCOUP, NILSSON CORIOLIS		88
COWBACR, WHOLE BODY & CHEST RADIOACTIVITY CALC	DP 812 BASC	PMM U G	\$	114
CO2 GAS LASER AMPLIFICATION STUDIES	LASL 7600 F4	MA U X	\$CBMEXP,	85
CRACK, 2-DIMENSIONAL PLANE-STRAIN CALCULATION	LLL 6600 F	MA U I	\$	181
CRACKING	SLA 6600 F	MA U Q	\$SIMULATION OF STRESS CORROSION	R 15
CRFEP ANALYSIS MEOL 6500 F	RRD P I	\$AXICRP, FINITE ELEMENT CODE FOR		206
CRITICAL PATH MLMD 360 F+C+R	MA U M	\$RALCRTPH, RESOURCE ALLOCATION BY		R 3
CRITR, INTERNAL INGESTION DOSE TO ORGANISMS	BNWL 1108 BASC	RS U G	\$	107
CROSS SECTIONS	LASL 7600 F4	MA U A	\$MULTI, R-MATRIX LEAST-SQUARES	119
CRT TESTING LLL 7600 F	MA U T	\$DDHUM, STRAIGHT, JOINT, FOCUSNF,		215
CRYSTAL INDEXING	RFD 360 F+RAL	MA U Q	\$INDEX, X-RAY POWDER PATTERN	R 17
CRYSTALLOGRAPHIC FUNCTIONS	RFD 360 F4	MA U Q	\$CALCULATION OF	R 18
CSCN 6600 COBOL PLO U M		\$CUF, PROPERTY INVENTORY & ACCOUNTING SYSTEM		162
CSCN 6600 COBOL RRD U M		\$CUP, PAYROLL & PERSONNEL ACCOUNTING SYSTEM		218
CSCN 6600 F+COM PLO U M		\$RLTRS, RL MAGNETIC TAPE RESERVATION SYSTEM		125
CSCN 6600 FTN PLO U M		\$JOBSHOP, JCRSHOP ENVIRONMENT SCHEDULING SYSTEM		160
CTR U P		\$SIMPLEX, GENERAL LINEAR PROGRAMMING SOLUTION		232
CTR U T		\$MEMSEF, BANK BY BANK MEMORY DIAGNOSTIC OR TEST		204
CTR U X		\$DART, FUSION REACTOR ENERGY CONVERTER MODEL		149
CTR U X		\$HYPRID-II, 2-D MULTISPECIES FOKKER-PLANCK CODE		179
CTR U X		\$TIROD-GENERAL, CHARGED-PARTICLE TRAJECTORIES		118
CUF, PROPERTY INVENTORY & ACCOUNTING SYSTEM	CSCN 6600 COBOL	RLO U M	\$	162
CUP, PAYROLL & PERSONNEL ACCOUNTING SYSTEM	CSCN 6600 COBOL	RRD U M	\$	218
CURVE FIT BY LEAST SQUARES ANALYSIS	RFD 360 F4	MA U P	\$POLYNOMIAL	R 10
CYCLE CALC	BKY 7600 F4	GFD D D	\$GEOTHM, GEOTHERMAL POWER PLANT	217
CYCLE ECONOMICS	UILL 360 F4	P O	\$GEM, ANALYSIS OF NUCLEAR FUEL	102
CYLINDER WALL VELOCITY DETERMINATION CALC	LASL 6600 F	MA U O	\$VEL,	197
CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA 6600 F4	MA D P	\$BFS,	R 53
DART, FUSION REACTOR ENERGY CONVERTER MODEL	LLL 7600 CHAT	CTR U X	\$	149
DATA	SLA 3600 F63	MA U P	\$AVINT, INTEGRATION OF TABULATED	R 50
DATA	SLA 6600 F4	MA U P	\$AVINT, INTEGRATION OF TABULATED	R 50
DATA	LASL 6600 F4	MA U P	\$I401, LOAD FORTRAN FORMAT-FREE INPUT	59
DATA	PFEC 6400 COBOL	MA U M	\$PADSAFE, RADIATION SCIENCES PERSONNEL	180
DATA	ANC 360 RIN	RRD U Z	\$TNCITF LIBRARY, THERMAL X-SECTIONS ENDF/R	169
DATA ACCESS METHOD	DP 360 F4	PMM U M	\$ADAM, LARGE DYNAMIC FILES	185
DATA ANALYSIS	MLMD POPB FOCAL	MA U O	\$PVTALC, PVT CALIBRATION SYSTEM	212
DATA BASE STORAGE & RETRIEVAL	EGEG PD10	F+MAC	MA U M \$MAXI, NADS	R 194
DATA COMPILATION	LLL 6600 F+LRL	MA U M	\$TRUMP/XB2, THERMAL PROPERTY	R 38
DATA DOPPLER-BROADENING	LLL 360 F4	MA D R	\$SIGMA-1, ENDF/B X-SEC	227
DATA DOPPLER-BROADENING	LLL 7600 F4	MA D B	\$SIGMA-1, ENDF/B X-SEC	227
DATA GENERATOR	LLL 7600 LRL	DBF U Y	\$TESTIM, PROJECTION & TEST IMAGE	S226
DATA HANDLING & SORTING SUBROUTINES CATEGORY M	LASL 6600 F4	MA U P	\$	71
DATA MANAGEMENT SYSTEM	LASL 7600 F4	MA D M	\$FUELPIN, FUEL PIN	113
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DATA STUDY GRAPHICS DISPLAY	LLL	7600	F	MA	D	R	\$EDS, ENVIRONMENTAL			S192	
DATA SYSTEM	HENN	6400	F4	NVO	U	M	\$SKILLS INVENTORY, PERSONNEL			G216	
DATA TRANSFER	LASL	6600	F4	MA	U	P	\$Q409, EXTENDED CORE STORAGE I/O			60	
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DBF C R	\$TRJ, POINT SOURCE 2D WIND TRAJECTORY PROGRAM	DP	360	F4						127	
DBF C R	\$VARSON, VARIABLE SCAN RADIUS UPPER AIR STUDY	DP	360	F4						128	
DBF U R	\$TORNADO, POLLUTANT SPREAD IN TORNADOIC STORM	DP	360	F4						219	
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DETONATION PROPERTIES OF EXPLOSIVES	LASL	7600	F4	MA	U	G	\$BKW,			84	
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DISK DATA SET RE-ORDERING	DP	360	F+BAL	PMM	U	P	\$DYNSK, OPTIMAL			115	
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FACILITY	LLL	MDCM	ASH	LLL	U	P	\$MODCOMP BCD CHARACTER CODE CONVERSION
FALL AND DISPERSION OF PARTICLES	SLA	3600	F36	MA	U	K	\$MODEL-B,
FAST CONSTANTS RESONANCE	ANC	360	F4	RRD	U	B	\$SCRABLE, MULTI-GP
FAST SPECTRUM CALC	ANC	360	F4	RRD	U	B	\$PHROG2, MULTI-GP X-SECTIONS
FAULT TREE SIMULATION	UNI	1108	F+SLE	RRD	P	G	\$SAFTAC, MONTE CARLO
FEARS, LAPLACE EQUATION SIMULATION STUDY	SLA	6600	F4	MA	U	T	\$
FIBONACCI RANDOM-NUMBER GENERATION	LLL			ANSIF	MA	U	P
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FILE SYSTEM	MHSM	360	C+RAL	MA	U	M	\$MPR PRODUCT RECORD
FILES DATA ACCESS METHOD	DP	360	F4	PMM	U	M	\$ADAM, LARGE DYNAMIC
FILM ELLIPSO-METER MEASUREMENT ANALYSIS	RFD	360	F4	MA	U	O	\$SURFACE
FINDMAP, COMPLEX GREEN'S FUNCTION SUBROUTINE	LASL	6600	F+COM	MA	U	P	\$
FINITE ELEMENT SLA	6600	F+COM	MA	U	I		\$GNATS, MESH2, GPRINT, NONLINEAR
FINITE ELEMENT ANALYSIS	SLA	6600	F4	MA	U	I	\$CHILES, LINEAR ELASTIC
FINITE ELEMENT CODE FOR CREEP ANALYSIS	HFDL	6500	F	RRD	P	I	\$AXICR,
FINITE ELEMENT DYNAMIC SHELL RESPONSE	SLA	6600	F4	MA	P	I	\$SLADE-D,
FISSILE UNITS	DP	360	F4	PMM	U	C	\$INTERACT, INTERACTION OF
FIT BY LEAST SQUARES ANALYSIS	RFD	360	F4	MA	U	P	\$POLYNOMIAL CURVE
FIT WITH STATISTICS	DP	360	F4	PMM	U	P	\$LINEAR LEAST SQUARES
FITTING OF FUNCTIONS	RFD	400	F4	MA	U	P	\$NON-LINEAR LEAST SQUARES
FLATLAND, A 3-D OBJECT RECONSTRUCTION PROGRAM	LLL	7600	LRL	ORE	U	Y	\$
FLOP, LLL OPERATING SYSTEM FOR THE CDC7600	LLL	7600	LRL	MA	U	P	\$
FLOOD, CORE REFLOOING RATE CALCULATION ECC	ANC	350	F4	RSR	U	H	\$
FLOURIDE GAMMA RESPONSE	LLL	6600	F4	LLL	U	O	\$LIF/RESPONSE, LITHIUM
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FLOW	LLL	7600	F	MA	U	H	\$STROCCO, CALCULATION OF TRANSIENT GAS
FLOW	LASL	6600	F4	MA	U	H	\$RAYTRACE, ACOUSTIC RAY TRACING UNSTEADY
FLOW	LLL	7600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID
FLOW	LLL	6600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID
FLOW	LLL	7600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID
FLOW CALCULATION	LASL	6600	F4	MA	U	H	\$SMAC, INCOMPRESSIBLE FLUID
FLUID DYNAMICS	LASL	7600	F4	MA	U	H	\$YAQUI, LAGRANGIAN-EULERIAN
FLUID FLOW	LLL	7600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE
FLUID FLOW	LLL	6600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE
FLUID FLOW	LLL	7600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE
FLUID FLOW CALCULATION	LASL	6600	F4	MA	U	H	\$SMAC, INCOMPRESSIBLE
FLUX CALC MODULES	DP	360	F4	PMM	U	F	\$DISC., JOSHUA 2D SPACE-TIME
FOCAL	MA	P	T	\$LCPU, INDUCTANCE-CAPACITANCE-RESONANCE CALC	MHSM	PDP8	235
FOCAL	MA	P	T	\$PCOL, PIPE COLUMN DESIGN COMPUTATION	MHSM	PDP8	239
FOCAL	MA	P	T	\$TDES, AUDIO TRANSFORMER DESIGN COMPUTATION	MHSM	PDP8	236
FOCAL	MA	P	U	\$DEWP, PRESSURE DEW POINT TABLE GENERATION	MHSM	PDP8	237
FOCAL	MA	P	U	\$VDW, VAN DER WALL'S EQUATION OF STATE OF GASES	MHSM	PDP8	238
FOCAL	MA	U	O	\$NFWPIC/PERMEA, PERMEABILITY MEASUREMENTS	LLL	PDP9	138
FOCAL	MA	U	O	\$PVTCLAL, PVT CALIBRATION SYSTEM DATA ANALYSIS	MLMO	PDP8	212
FOCAL	MA	U	T	\$PVTCLAL, PVT CALIBRATION SYSTEM CONTROL CODE	MLMO	PDP8	211
FOCAL-X	LLL	PDP8	PALR	LLL	U	T	\$RTSX SYSTEM EXECUTIVE FOR USE WITH
FOCAL-69 WRITE NULL CHARACTERS OVERLAY	MHSM	PDP8	MACH	MA	P	P	\$FWNC,
FOCUSNE, CRT TESTING	LLL	7600	F	MA	U	T	\$DDHM, STRAIGHT, JOINT,
FOKKER-PLANCK CODE	LLL	7600	F	CTR	U	X	\$HYBRID-II, 2-D MULTISPECIES
FORECAST	ERDA	360	F4	PA	U	O	\$NUFUEL, NUCLEAR FUEL REQUIREMENTS
FORMAT-FREE INPUT DATA	LASL	6600	F4	MA	U	P	\$I401, LOAD FORTRAN
FORMAT, A TEXT PROCESSING PROGRAM	SLAC	360	F4	R	U	P	\$
FORTRAN	SLAC	ANSIF	R	P	P		\$MORTAN2, A MACRO-BASED STRUCTURED
FORTRAN FORMAT-FREE INPUT DATA	LASL	6600	F4	MA	U	P	\$I401, LOAD
FORTRAN MACRO LANGUAGE	LLL	7600	MTRAN	MA	U	P	\$MTRAN, A STRUCTURED
FORTRAN VECTOR FUNCTION ROUTINES	LLL	7600	F+COM	MA	U	P	\$SUB/STACKLIB,
FR-80 COM	ANC	360	F+BAL	RRD	U	P	\$NPTS-IGS GRAPHICS SOFTWARE FOR III
FREQUENCY DOMAIN	LLL	7600	LRL	LLL	U	T	\$WF-LLL2A, WIRE CONFIGURATION,

FTN

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FTN	MA	P	P	\$SETS, SET EQUATION TRANSFORMATION SYSTEM	SLA	6600	R101		
FTN	MA	U	P	\$SANDIA SCOPE USERS' MANUAL FOR THE CDC6600	SLA	6600	R 8		
FTN	RLO	U	M	\$JOB SHOP, JOB SHOP ENVIRONMENT SCHEDULING SYSTEM	CSCN	6600	160		
FJFL	CYCLE ECONOMICS	UILL	360	F4	P	D	\$GEM, ANALYSIS OF NUCLEAR	202	
FUEL	PIN DATA MANAGEMENT SYSTEM	LASL	7600	F4	MA	D	M	\$FUELPIN,	113
FUEL	REQUIREMENTS FORECAST	FRDA	360	F4	PA	U	C	\$NUFUEL, NUCLEAR	189
FUEL	ROD FABRICATION PLANT SIMULATION	LLL	6600	F+GSP	R	D	M	\$ROOFAS,	S200
FUELPIN,	FUEL PIN DATA MANAGEMENT SYSTEM	LASL	7600	F4	MA	D	M	\$	113
FULL-TEXT	STORAGE, SEARCH & RETRIEVAL	SLA	1108	F+BAL	MA	P	M	\$SPIRAL,	R 99
FUSION	REACTOR ENERGY CONVERTER MODEL	LLL	7600	CHAY	CTR	U	X	\$DART,	149
FWND,	FOCAL-69 WRITE NULL CHARACTERS OVERLAY	MHSM	PDPR	MACH	MA	P	P	\$	234
F1	LASL 6600	F4	MA	U	P	\$VECTOR & MATRIX OPERATION ROUTINES CATEGORY		67	
F2	MA	U	U	\$RAOF, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	210	R 31		
F2	LASL 6600	F4	MA	U	P	\$EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY		68	
F36	MA	U	R	\$MODEL-B, FALL AND DISPERSION OF PARTICLES	SLA	3600	R 19		
F36	MA	U	S	\$SATLOC, SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	3600	R 23		
F36	MA	U	S	\$TODDY2, 2-DIMENSIONAL WAVE PROPAGATION PROGRAM	SLA	3600	R 47		
F36	SNS	U	S	\$HRS004, REFENTRY PARAMETERS OF DECAYING OBJECTS	SLA	3600	R 24		
F36	SNS	U	S	\$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	3600	R 25		
F4	P	D	\$GEM, ANALYSIS OF NUCLEAR FUEL CYCLE ECONOMICS	UILL	360		102		
F4	LASL 6600	F4	MA	U	P	\$SIMULTANEOUS LINEAR SYSTEMS CATEGORY		69	
F4	DBE	C	R	\$NST, 2-1/2 DIMENSION PREDICTION MODELS	DP	360	126		
F4	DBF	C	R	\$TPJ, POINT SOURCE 2D WIND TRAJECTORY PROGRAM	DP	360	127		
F4	DBF	C	R	\$VARSCN, VARIABLE SCAN RADIUS UPPER AIP STUDY	DP	360	128		
F4	DBF	U	R	\$TORNADO, POLLUTANT SPREAD IN TORNADO STORM	DP	360	219		
F4	GFO	U	D	\$GFOTHM, GEOTHERMAL POWER PLANT CYCLE CALC	BKY	7600	217		
F4	I	P	H	\$6KILFR, CORE HEATUP CODE FOR RWR/6 ANALYSIS	EI	360	123		
F4	LLL	U	D	\$LIF/RESPONSE, LITHIUM FLUORIDE GAMMA RESPONSE	LLL	6600	144		
F4	LLL	U	R	\$PAVE, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	360	137		
F4	LLL	U	P	\$PAVE, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	6600	137		
F4	LLL	U	T	\$VENT, EXHAUST VENTILATION SIZING & BALANCING	LLL	7600	205		
F4	MA	D	B	\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	360	227		
F4	MA	D	B	\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	7600	227		
F4	MA	D	M	\$FUELPIN, FUEL PIN DATA MANAGEMENT SYSTEM	LASL	7600	113		
F4	MA	D	P	\$RES, CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA	6600	R 53		
F4	MA	D	P	\$GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	PD10	R 52		
F4	MA	D	P	\$GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	1108	R 52		
F4	MA	D	P	\$GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	6600	R 52		
F4	MA	P	I	\$SLADE-D, FINITE ELEMENT DYNAMIC SHELL RESPONSE	SLA	6600	98		
F4	MA	P	P	\$GFARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	360	228		
F4	MA	P	P	\$GEARB, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	6600	228		
F4	MA	P	P	\$LATIN SQ, LATIN SQUARE ANALYSIS OF VARIANCE	MLMO	360	203		
F4	MA	P	O	\$ISOTAB, PU POWER CALCULATION OF MIXED ISOTOPES	MLMO	360	R100		
F4	MA	P	W	\$CALOR, WAVE NUMBERS DERIVED FROM LEVEL VALUES	LASL	6600	104		
F4	MA	P	W	\$LEVEL, ATOMIC-ENERGY-LEVEL VALUES CALCULATION	LASL	6600	103		
F4	MA	U	A	\$MULTI, F-MATRIX LEAST-SQUARES CROSS SECTIONS	LASL	7600	119		
F4	MA	U	R	\$MCN, NEUTRON TRANSPORT MONTE CARLO CODE	LASL	7600	81		
F4	MA	U	O	\$ISGFEN, RADIOACTIVE DECAY GROWTH OF NUCLIDES	RFD	360	R 1		
F4	MA	U	G	\$SRKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	360	84		
F4	MA	U	G	\$SRKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	7600	84		
F4	MA	U	G	\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	360	80		
F4	MA	U	G	\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	6600	80		
F4	MA	U	H	\$RAYTRACE, ACOUSTIC RAY TRACING UNSTEADY FLOW	LASL	6600	199		
F4	MA	U	H	\$SMAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	LASL	6600	79		
F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	3600	R 37		
F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	6600	R 37		
F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600	R 37		
F4	MA	U	H	\$YAQUI, LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	7600	94		
F4	MA	U	I	\$CHILES, LINEAR ELASTIC FINITE ELEMENT ANALYSIS	SLA	6600	110		
F4	MA	U	I	\$DETECTR, COMPRESSION MOLD DESIGN FOR DETECTORS	LASL	7600	209		
F4	MA	U	J	\$MCG, GAMMA TRANSPORT MONTE CARLO CODE	LASL	7600	82		
F4	MA	U	J	\$MCP, PHOTON TRANSPORT MONTE CARLO CODE	LASL	7600	83		
F4	MA	U	M	\$RND424RQ, RANDOM SAMPLING TABLE NON-BIAS ORDER	MLMO	360	191		
F4	MA	U	O	\$CONFOLO, UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL	6600	95		
F4	MA	U	P	\$ARITHMETIC SUBROUTINES CATEGORY A	LASL	6600	61		
F4	MA	U	P	\$AVINT, INTEGRATION OF TABULATED DATA	SLA	6600	R 50		

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F4	MA	U	P	\$DATA HANDLING & SORTING SUBROUTINES CATEGORY M	LASL	6600	71
F4	MA	U	P	\$EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY F2	LASL	6600	68
F4	MA	U	P	\$ERF,ERFC, ERROR & COMPLEMENTARY ERROR FUNCTION	SLA	6600	R 51
F4	MA	U	P	\$FILE CODE GENERATOR, 6-CHARACTER ALPHANUMERIC	BKCD	360	R 73
F4	MA	U	P	\$GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC	BKCD	360	76
F4	MA	U	P	\$GROUPS COMPARISON, QUALITY CONTROL PROGRAM	BKCD	360	R 75
F4	MA	U	P	\$HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE	BKCD	360	74
F4	MA	U	P	\$I401, LOAD FORTRAN FORMAT-FREE INPUT DATA	LASL	6600	59
F4	MA	U	P	\$LEAST SQUARES & SMOOTHING ROUTINES CATEGORY E2	LASL	6600	66
F4	MA	U	P	\$NON-LINEAR LEAST SQUARES FITTING OF FUNCTIONS	RFD	400	R 7
F4	MA	U	P	\$N103, FRRJR TERMINATION MESSAGE W/COUNT CONTRL	LASL	6600	72
F4	MA	U	P	\$PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	97
F4	MA	U	P	\$PLOT, AUTOMATIC PLOTTING FOR THE GERBER 2000	RFD	360	R 14
F4	MA	U	P	\$PLOT, 2-D CONTOUR AND AREA CALCULATION	SLA	6600	R 5
F4	MA	U	P	\$POLYNOMIAL CURVE FIT BY LEAST SQUARES ANALYSIS	RFD	360	R 10
F4	MA	U	P	\$Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER	LASL	6600	60
F4	MA	U	P	\$SEVER, SYMMETRIC MATRIX EIGENVALUES & VECTORS	SLA	6600	R 48
F4	MA	U	P	\$SIMULTANEOUS LINEAR SYSTEMS CATEGORY F4	LASL	6600	69
F4	MA	U	P	\$SPECTRAL ANALYSIS OF TIME SERIES CATEGORY G6	LASL	6600	70
F4	MA	U	P	\$SUBROUTINES FOR INTERPOLATION CATEGORY E1	LASL	6600	65
F4	MA	U	P	\$SUBROUTINES FOR SPECIAL FUNCTIONS CATEGORY C	LASL	6600	63
F4	MA	U	P	\$VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1	LASL	6600	67
F4	MA	U	Q	\$CALCULATION OF CRYSTALLOGRAPHIC FUNCTIONS	RFD	360	R 18
F4	MA	U	Q	\$INDEX, X-RAY POWDER PATTERN INDEXING	LASL	6600	57
F4	MA	U	Q	\$MASS DETERMINATION BY TRANSPOSITION METHOD	MHSM	360	R 42
F4	MA	U	Q	\$SURFACE FILM ELLIPSOMETER MEASUREMENT ANALYSIS	RFD	360	R 16
F4	MA	U	Q	\$UNFOLD, X-RAY DIFFRACTION PROFILE ANALYSIS	LASL	6600	91
F4	MA	U	Q	\$UNIVERSAL DENSITY CONTRL PROGRAM	MHSM	360	R 44
F4	MA	U	Q	\$XOTRAP, GAS DIFFUSION WITH TRAPPING	DP	360	148
F4	MA	U	S	\$SWAP9, STRESS WAVE ANALYSIS PROGRAM	SLA	6600	R 22
F4	MA	U	S	\$WONDY3A, 1-D WAVE PROPAGATION CALCULATION	SLA	6600	R 21
F4	MA	U	T	\$ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	1108	R 27
F4	MA	U	T	\$ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	6600	R 27
F4	MA	U	T	\$CALIBRATION OF SURFACE PLATES	MHRR	360	R 28
F4	MA	U	T	\$ELEMENTAL MOMENT OF INERTIA CALCULATION	MHSM	360	R 41
F4	MA	U	T	\$FFARS, LAPLACE EQUATION SIMULATION STUDY	SLA	6600	R 29
F4	MA	U	T	\$HEATSTONE BRIDGE RESISTANCE CALIBRATION	MHSM	360	R 45
F4	MA	U	T	\$MT-MRA/LL18, ELECTROMAGNETIC RESPONSE CALC	LLL	7600	156
F4	MA	U	U	\$PRLF, SPECTROPHOTOMETRIC REACTION KINETICS	RFD	360	R 30
F4	MA	U	U	\$GAS-GAS & GAS-SOLID REACTION DATA REDUCTION	RFD	360	R 32
F4	MA	U	U	\$RADF-2, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	360	R 31
F4	MA	U	U	\$STICKING PROBABILITY OF GASES ON SOLID SURFACE	RFD	360	R 35
F4	MA	U	U	\$TCHREACT, CHEMICAL REACTOR ANALYSIS PROGRAM	MHSM	360	R 46
F4	MA	U	W	\$SCORCOUP, NILSSON CORTOLIS COUPLING PROGRAM	LASL	6600	88
F4	MA	U	W	\$DEGAA, POLYNOMIAL SOLN OF SCHRODINGER EQUATION	LASL	7600	89
F4	MA	U	W	\$HANJON, ELECTRON ENERGY DISTRIBUTION CALC	LASL	7600	86
F4	MA	U	W	\$HELIGAS, ELECTRON & PROTON SCATTERING BY HELIUM	LASL	6600	92
F4	MA	U	W	\$HERPSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	6600	93
F4	MA	U	W	\$HERPSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	7600	93
F4	MA	U	W	\$IT, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	105
F4	MA	U	W	\$MAR, SATURATION SPECTROSCOPY DATA REDUCTION	LLL	7600	135
F4	MA	U	W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	6600	112
F4	MA	U	W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	7600	112
F4	MA	U	W	\$SCMFXP, CO2 GAS LASER AMPLIFICATION STUDIES	LASL	7600	85
F4	MA	U	X	\$SHI, CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL	7600	87
F4	MA	U	Y	\$ABTGAIL3, ANTIBODY PRODUCTION SIMULATION	LASL	6600	90
F4	MA	U	Y	\$BIOTA2, BIOME POPULATION INTERACTION MODELING	LASL	1108	78
F4	MA	U	Y	\$BIOTA2, BIOME POPULATION INTERACTION MODELING	LASL	6600	78
F4	NVD	U	M	\$SKILLS INVENTORY, PERSONNEL DATA SYSTEM	WENN	6400	G 216
F4	PA	U	D	\$NUFUEL, NUCLEAR FUEL REQUIREMENTS FORECAST	FRDA	360	189
F4	PMH	C	K	\$GRASS, THE JOHNSIA REACTOR ANALYSIS SUBSYSTEM	DP	360	150
F4	PMH	C	R	\$MAPC, MAN-REM DOSE FROM ATMOSPHERIC TRANSPORT	DP	360	130
F4	PMH	C	R	\$TETRAP, STREAM TRANSPORT DIFFUSION COEFF CALC	DP	360	129
F4	PMH	C	R	\$TRAJCLIM, SINGLE TOWER DISPERSION CLIMATOLOGY	DP	360	132
F4	PMH	C	R	\$LODIPS, STREAM-PIVER POLLUTANT PREDICTION	DP	360	131
F4	PMH	U	C	\$INTERACT, INTERACTION OF FISSILE UNITS	DP	360	173

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F4	PMM	U	D	\$GOSPEL, ACTINIOE PRODUCTION & DEPLETION STUDY	DP	360	210
F4	PMM	U	E	\$SWIFT, JOSHUA POINT-KINETICS SOLUTION MODULE	DP	360	152
F4	PMM	U	F	\$OISC., JOSHUA 2D SPACE-TIME FLUX CALC MODULES	DP	360	153
F4	PMM	U	F	\$SCRAM/WIGLE, 1D TRANSIENT NEUTRONICS MODULES	DP	360	151
F4	PMM	U	M	\$ADAM, LARGE DYNAMIC FILES DATA ACCESS METHOD	DP	360	185
F4	PMM	U	M	\$TAFI, RADIOACTIVE WASTE MANAGEMENT PROGRAM	DP	360	175
F4	PMM	U	N	\$EDIT MODULES, JOSHUA PRINTED EDIT FACILITIES	DP	360	155
F4	PMM	U	N	\$RIFLE, JOSHUA RESONANCE INTEGRAL MODIFICATIONS	CP	360	154
F4	PMM	U	P	\$LINEAR LEAST SQUARES FIT WITH STATISTICS	DP	360	147
F4	R	P	V	\$TRANSPORT, DESIGN OF CHARGED PARTICLE BEAMS	SLAC	370	220
F4	R	U	P	\$FORMAT, A TEXT PROCESSING PROGRAM	SLAC	360	12
F4	RRD	U	B	\$PHROG2, MULTI-GP X-SECTIONS FAST SPECTRUM CALC	ANC	360	168
F4	RRD	U	B	\$SCRABLE, MULTI-GP FAST CONSTANTS RESONANCE	ANC	360	170
F4	RRD	U	C	\$DISNEL, DIFFUSION SOLUTION 19 ENERGY LEVELS	ANC	360	166
F4	RRD	U	C	\$SCAMP, MULTI-GP SN NEUTRON TRANSPORT CODE	ANC	360	171
F4	RRD	U	J	\$NUBOW, STRUCTURAL ANALYSIS BOWED REACTOR CORES	ANL	360	176
F4	RSR	U	H	\$FLOOD, CORE REFLOODING RATE CALCULATION ECC	ANC	360	167
F4	SNS	U	S	\$HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	1108	R 24
F4	SNS	U	S	\$HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	6600	R 24
F4	SNS	U	S	\$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	1108	R 25
F4	SNS	U	S	\$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	6600	R 25
F4	SNS	U	S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	1108	R 20
F4	SNS	U	S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	3600	R 20
F4	SNS	U	S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	6600	R 20
F400	CTR	U	X	\$TIBRO-GENERAL, CHARGED-PARTICLE TRAJECTORIES	LLL	7600	118
F5	RRD	O	K	\$REALLY, GAS TURBINE HTGR TRANSIENT MODEL	GA	1108	121
F63	MA	U	P	\$AVINT, INTEGRATION OF TABULATED DATA	SLA	3600	R 50
GA	1108	F5	RRD	O K \$REALLY, GAS TURBINE HTGR TRANSIENT MODEL			121
GAMANAL	LIBRARY AND AUXILIARY ROUTINES				LLL	6600	LRL MA U U \$
GAMANAL	INTERPRETATION OF GAMMA-RAY SPECTRA				LLL	6600	LRL MA U U \$
GAMMA RAY CATALOG	DP	360	EBCCI	PMM U Z \$GAMTAB, RADIOACTIVE DECAY			139
GAMMA RESPONSE	LLL	6600	F4	LLL U O \$LIF/RESPONSE, LITHIUM FLUORIDE			144
GAMMA TRANSPORT MONTE CARLO CODE				LASL 7600 F4 MA U J \$MCG,			82
GAMMA-RAY SPECTRA	LLL	6600	LRL	MA U U \$GAMANAL, INTERPRETATION OF			163
GAMTAB, RADIOACTIVE DECAY GAMMA RAY CATALOG	DP	360	EBCCI	PMM U Z \$			139
GAS DIFFUSION WITH TRAPPING	DP	360	F4	MA U O \$XOTRAP,			148
GAS FLUX	LLL	7600	F	MA U H \$STROCCN, CALCULATION OF TRANSIENT			213
GAS LASER AMPLIFICATION STUDIES	LASL	7600	F4	MA U X \$CBMEXP, CO2			85
GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	210	F2	MA U U \$RADF,			R 31
GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	360	F4	MA U U \$RADF-2,			R 31
GAS RELEASES	BNWL	1108	BASIC	RS U G \$GRONK, DOSE TO MAN FROM REACTOR			106
GAS TURBINE HTGR TRANSIENT MODEL	GA	1108	F5	RFD O K \$REALLY,			121
GAS-GAS & GAS-SOLID REACTION DATA REDUCTION	RFD	360	F4	MA U U \$			R 32
GAS-SOLID REACTION DATA REDUCTION	RFD	360	F4	MA U U \$GAS-GAS &			R 32
GASES MHSM POP8 FOCAL MA P U \$VOW, VAN DER WALL'S EQUATION OF STATE OF							238
GASES BY MASS SPECTROMETRY	RFD	400	F	MA U U \$DYNAMIC ANALYSIS OF			R 33
GASES ON SOLID SURFACE	RFD	360	F4	MA U U \$STICKING PROBABILITY OF			R 35
GE MEDICAL INSURANCE REIMBURSEMENT SYSTEM	GEPI	435	COBOL	MA U M \$			R 39
GEARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	360	F4	MA P P \$			228
GEARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	6600	F4	MA P P \$			228
GEM, ANALYSIS OF NUCLEAR FUEL CYCLE ECONOMICS	UILL	360	F4	P O \$			102
GENE, TETRAD GENETIC ANALYSIS PROGRAM	BKY	6600	F	DRE U Y \$			186
GENERATOR	LLL	7600	LRL	DBE U Y \$TESTIM, PROJECTION & TEST IMAGE DATA			S226
GENERATOR, 6-CHARACTER ALPHANUMERIC	BKCD	360	F4	MA U P \$FILE CODE			R 73
GENETIC ANALYSIS PROGRAM	BKY	6600	F	DBE U Y \$GENE, TETRAD			186
GEO D D \$GEOTHM, GEOTHERMAL POWER PLANT CYCLE CALC				BKY	7600	F4	217
GEOGRAPHIC EVENT POSITIONING	SLA	3600	F36	MA U S \$SATLOC, SATELLITE			R 23
GEOTHERMAL POWER PLANT CYCLE CALC	BKY	7600	F4	GEO D D \$GEOTHM,			217
GEOTHM, GEOTHERMAL POWER PLANT CYCLE CALC	BKY	7600	F4	GEO D D \$			217
GEPI 435 COBOL MA U M \$GE MEDICAL INSURANCE REIMBURSEMENT SYSTEM							R 39
GEPI GETS BASIC MA P M \$MAPPER, PREDICTING MANUFACTURING REQUIREMENTS							96
GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	PD10	F4	MA O P \$			R 52
GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	1108	F4	MA O P \$			R 52
GERBER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	6600	F4	MA O P \$			R 52
GERBER 2000	RFD	360	F4	MA U P \$PLOT, AUTOMATIC PLOTTING FOR THE			R 14
GETS BASIC MA P M \$MAPPER, PREDICTING MANUFACTURING REQUIREMENTS	GEPI						96

GNATS

INJURY

GNATS, MESH2, GPRINT, NONLINEAR FINITE ELEMENT	SLA	6600	F+COM	MA	U	I	\$	208
OSPEL, ACTINIDE PRODUCTION & DEPLETION STUDY	DP	360	F4	PMM	U	D	\$	210
GPRINT, NONLINEAR FINITE ELEMENT	SLA	6600	F+COM	MA	U	I	\$GNATS, MESH2,	208
GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC	BKCD	360	F4	MA	U	P	\$	76
GRAPHICAL OUTPUT	EGGG	6400	CCM	MA	U	P	\$EGG GENERAL PLOT SYSTEM FOR	R 178
GRAPHICS DISPLAY	LLL	7600	F	MA	D	R	\$EODS, ENVIRONMENTAL DATA STUDY	S192
GRAPHICS SOFTWARE FOR ILL FR-80 COM	ANC	360	F+BAL	RRD	U	P	\$NRTS-IGS	165
GRASS, THE JOSHUA REACTOR ANALYSIS SUBSYSTEM	DP	360	F4	PMM	C	K	\$	150
GREEN'S FUNCTION SUBROUTINE	LASL	6600	F+COM	MA	U	P	\$FINDMAP, COMPLEX	56
GRID PROCESSING ROUTINE	LLL	7600	CHAT	MA	U	N	\$SHEMP, HEMP PROGRAM 2D	134
GRONK, DOSE TO MAN FROM REACTOR GAS RELEASES	BNWL	1108	BASIC	RS	U	G	\$	106
GROUPS COMPARISON, QUALITY CONTROL PROGRAM	BKCD	360	F4	MA	U	P	\$	R 75
GROWTH OF NUCLIDES	RFD	360	F4	MA	U	D	\$ISOGEN, RADIOACTIVE DECAY	R 1
GUN DESIGN PROGRAM	SLAC	360	PL/I	R	U	V	\$SLAC ELECTRON	36
GS	LASL	6600	F4	MA	U	P	\$SPECTRAL ANALYSIS OF TIME SERIES CATEGORY	70
HENN	6400	F4	NVO	U	M	\$SKILLS INVENTORY, PERSONNEL DATA SYSTEM	G216	
HANDLING & SORTING SUBROUTINES CATEGORY M	LASL	6600	F4	MA	U	P	\$DATA	71
HANJON, ELECTRON ENERGY DISTRIBUTION CALC	LASL	7600	F4	MA	U	W	\$	86
HEATUP CODE FOR BWR/6 ANALYSIS	FI	360	F4	L	P	H	\$6KILER, CORE	123
HEOL	6500	F	RRD	P	I	\$AXICAP, FINITE ELEMENT CODE FOR CREEP ANALYSIS	206	
HEL GAS, ELECTRON & PROTON SCATTERING BY HELIUM	LASL	6600	F4	MA	U	W	\$	92
HELIUM	LASL	6600	F4	MA	U	W	\$HEL GAS, ELECTRON & PROTON SCATTERING BY	92
HEMP PROGRAM 2D GRID PROCESSING ROUTINE	LLL	7600	CHAT	MA	U	N	\$SHEMP,	134
HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	6600	F4	MA	U	W	\$HERSKL,	93
HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	7600	F4	MA	U	W	\$HERSKL,	93
HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	6600	F4	MA	U	W	\$	93
HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	7600	F4	MA	U	W	\$	93
HIDDEN LINES REMOVED	LASL	6600	F4	MA	U	P	\$PICTURE, 3D PLOTTING WITH	97
HIT, CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL	7600	F4	MA	U	X	\$	87
HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE	BKCD	360	F4	MA	U	P	\$	74
H700 VELOCITY MEASUREMENT REPORT	LASL	6600	F	MA	U	M	\$HVL, EXHAUST	198
HP930 MOLT WGT, VOL, & DETONATION VELOCITY	LLL	9830	BASIC	MA	U	O	\$	229
HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	1108	F4	SNS	U	S	\$	R 24
HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	3600	F36	SNS	U	S	\$	R 24
HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	6600	F4	SNS	U	S	\$	R 24
HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	7044	QUIK	SNS	U	S	\$	R 24
HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	1108	F4	SNS	U	S	\$	R 25
HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	3600	F36	SNS	U	S	\$	R 25
HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	6600	F4	SNS	U	S	\$	R 25
HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	7040	QUIK	SNS	U	S	\$	R 25
HR5017, MULTIPLE REVOLUTION REENTRY	SLA	1108	F4	SNS	U	S	\$	R 20
HR5017, MULTIPLE REVOLUTION REENTRY	SLA	3600	F4	SNS	U	S	\$	R 20
HR5017, MULTIPLE REVOLUTION REENTRY	SLA	6600	F4	SNS	U	S	\$	R 20
HR5017, MULTIPLE REVOLUTION REENTRY	SLA	7040	QUIK	SNS	U	S	\$	R 20
HTGP TRANSIENT MODEL	GA	1108	F5	RRD	D	K	\$REALLY, GAS TURBINE	121
HVL, EXHAUST HOOD VELOCITY MEASUREMENT REPORT	LASL	6600	F	MA	U	M	\$	198
HYBRID-II, 2-D MULTISPECIES FOKKER-PLANCK CODE	LLL	7600	F	CTR	U	X	\$	179
HYDRODYNAMIC CALCULATIONS	LASL	360	F4	MA	U	G	\$SIN, ONE-DIMENSIONAL	80
HYDRODYNAMIC CALCULATIONS	LASL	6600	F4	MA	U	G	\$SIN, ONE-DIMENSIONAL	80
HYDROLOGIC DATA STATISTICAL PACKAGE	NVOD	6400	F	MA	P	R	\$STATPAC,	S183
I/O DATA TRANSFER	LASL	6600	F4	MA	U	P	\$0409, EXTENDED CORE STORAGE	60
I3M360 UTILITY AND PDP/15 ASCII MAG TAPE R/W	SLAC	360	F+BAL	R	U	P	\$	11
ILL FR-80 COM	ANC	360	F+BAL	RRD	U	P	\$NRTS-IGS GRAPHICS SOFTWARE FOR	165
IMAGE DATA GENERATOR	LLL	7600	LRL	DRE	U	Y	\$TESTIM, PROJECTION & TEST	S226
IN-PLACE LEACHING MODEL	LLL	7600	F	AT	U	R	\$LEACH, KINETICS CF	R109
INCITE LIBRARY, THERMAL X-SECTIONS ENDF/B DATA	ANC	360	RIN	RRD	U	Z	\$	169
INCOMPRESSIBLE FLUID FLOW CALCULATION	LASL	6600	F4	MA	U	M	\$SMAC,	79
INDEX, X-RAY POWDER PATTERN CRYSTAL INDEXING	RFD	360	F+BAL	MA	U	Q	\$	R 17
INDEXING	LASL	6600	F4	MA	U	Q	\$INDEX, X-RAY POWDER PATTERN	57
INDEXING	RFD	360	F+BAL	MA	U	Q	\$INDEX, X-RAY POWDER PATTERN CRYSTAL	R 17
INDUCTANCE-CAPACITANCE-RESONANCE CALC	MHSM	PDP8	FOCAL	MA	P	T	\$LCRU,	235
INDEX, X-RAY POWDER PATTERN INDEXING	LASL	6600	F4	MA	U	Q	\$	57
INERTIA CALCULATION	MHSM	360	F4	MA	U	T	\$ELEMENTAL MOMENT OF	R 41
INFORMATION RETRIEVAL & REPORTS SYSTEM	MLMD	360	PL/I	MA	P	M	\$MIRROR,	R120
INGESTION DOSE TO ORGANISMS	BNWL	1108	BASIC	RS	U	G	\$CRITR, INTERNAL	107
INJURY ANALYSIS	RFFC	6400	C+F	MA	C	M	\$BIORHYTHM SYSTEM FOR PERSONAL	196

INPUT

LASL

INPUT DATA	LASL	6600	F4	MA	U	P	\$I401, LOAD FORTRAN FORMAT-FREE	59
INSURANCE REIMBURSEMENT SYSTEM	GEPI	435	COBOL	MA	U	M	\$GE MEDICAL	R 39
INT ARP U T \$L118, LIST-INTERPRETIVE LANGUAGE FOR THE MCS-8	LLL	MCS8						230
INTEGRATION OF TABULATED DATA	SLA	3600	F63	MA	U	P	\$AVINT,	R 50
INTEGRATION OF TABULATED DATA	SLA	6600	F4	MA	U	P	\$AVINT,	R 50
INTEGRATION ROUTINE	SLA	6600	F+COM	MA	D	P	\$RUNKUT, RUNGE-KUTTA ODE	R 26
INTEGRATOR FOR ODE'S	SLA			ANSIF	U	P	\$CE/STEP/INTRP, ADAMS	158
INTERACT, INTERACTION OF FISSILE UNITS					OP		360 F4 PMM U C \$	173
INTERACTION MODELING	LASL	1108	F4	MA	U	Y	\$BIOTA2, BIOME POPULATION	78
INTERACTION MODELING	LASL	6600	F4	MA	U	Y	\$BIOTA2, BIOME POPULATION	78
INTERACTION OF FISSILE UNITS				DP	360	F4	PMM U C \$INTERACT,	173
INTERACTIVE MONITOR TELEMETRY PLAYBACK SYSTEM	SLA	3100	COM	MA	U	P	\$	R 13
INTERACTIVE SIMULATOR ON THE CDC7600	LLL	7600	PUTT	MA	U	P	\$POD-8F,	143
INTERNAL INGESTION DOSE TO ORGANISMS	BWML	1108	BASIC	RS	U	G	\$SCRITR,	107
INTERPOLATION CATEGORY E1	LASL	6600	F4	MA	U	P	\$SUBROUTINES FOR	65
INTERPRETATION OF GAMMA-RAY SPECTRA	LLL	6600	LRL	MA	U	U	\$GAMANAL,	163
INTERVAL CALC	BKCO	360	F4	MA	U	P	\$GRAPH, REGRESSION & CONFIDENCE	76
INVENTORY & ACCOUNTING SYSTEM	CSCN	6600	COBOL	RLO	U	M	\$CUE, PROPERTY	162
INVENTORY, PERSONNEL DATA SYSTEM	HENN	6400	F4	NVO	U	M	\$SKILLS	G216
ISOGEN, RADIOACTIVE DECAY GROWTH OF NUCLIDES	RFO	360	F4	MA	U	D	\$	R 1
ISOTAP, PU POWER CALCULATION OF MIXED ISOTOPE'S	MLMO	360	F4	MA	P	Q	\$	R100
ISOTOP'S MLMO	360	F4	MA	P	Q	\$ISOTAP, PU POWER CALCULATION OF MIXED	R100	
IT, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	F4	MA	U	W	\$	105
ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	F4	MA	U	W	\$IT,	105
I401, LOAD FORTRAN FORMAT-FREE INPUT DATA	LASL	6600	F4	MA	U	P	\$	59
JOBSHOP ENVIRONMENT SCHEDULING SYSTEM	CSCN	6600	FTN	RLO	U	M	\$JOBSHOP,	160
JOBSHOP, JOBSHOP ENVIRONMENT SCHEDULING SYSTEM	CSCN	6600	FTN	RLO	U	M	\$	160
JOINT, FOCUSNE, CRT TESTING	LLL	7600	F	MA	U	T	\$DDHUM, STRAIGHT,	215
JOSHUA PRINT-KINETICS SOLUTION MODULE	DP	360	F4	PMM	U	E	\$SWIFT,	152
JOSHUA PRINTED EDIT FACILITIES	DP	360	F4	PMM	U	N	\$EDIT MODULES,	155
JOSHUA REACTOR ANALYSIS SUBSYSTEM	DP	360	F4	PMM	C	K	\$GRASS, THE	150
JOSHUA RESONANCE INTEGRAL MODIFICATIONS	DP	360	F4	PMM	U	N	\$RIFLE,	154
JOSHUA 2D SPACE-TIME FLUX CALC MODULES	DP	360	F4	PMM	U	F	\$DISC.,	153
JOURNAL ORDERING PROGRAM	ANL	360	P+BAL	ANL	U	M	\$RENUP/RENORD, LIBRARY	157
KINETICS	RFO	360	F4	MA	U	U	\$ERLF, SPECTROPHOTOMETRIC REACTION	R 30
KINETICS OF IN-PLACE LEACHING MOOFI	LLL	7600	F	AT	U	R	\$LEACH,	R109
L P H \$6KILFR, CORE HEATUP CODE FOR BWR/6 ANALYSIS	EI	360	F4					123
LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	7600	F4	MA	U	H	\$YAQUI,	94
LANGUAGE	LLL	7600	MTRAN	MA	U	P	\$MTRAN, A STRUCTURED FORTRAN MACRO	207
LANGUAGE	LLL	MOSP	ASM	MA	U	P	\$PROM, READ-ONLY MEMORY PROGRAMMING	117
LANGUAGE FOR THE MCS-8	LLL	MOSP	INT	ARP	U	T	\$L118, LIST-INTERPRETIVE	230
LAPLACE EQUATION SIMULATION STUDY	SLA	6600	F4	MA	U	T	\$FFEARS,	R 29
LARGE CLOUDS	LLL	7600	F	AT	U	R	\$Z8PUF, ATMOSPHERIC DISPERSION OF	R224
LARGE DYNAMIC FILES DATA ACCESS METHOD	DP	360	F4	PMM	U	M	\$ADAM,	185
LASER AMPLIFICATION STUDIES	LASL	7600	F4	MA	U	X	\$CBMEXP, CO2 GAS	85
LASL	360	F	RPO	U	C		\$TRIPLT, TRIANGULAR MESH MULTI-GP TRANSPORT	77
LASL	360	F4	MA	U	G		\$BKW, DETONATION PROPERTIES OF EXPLOSIVES	84
LASL	360	F4	MA	U	G		\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	80
LASL	PD11	BASIC	MA	U	U		\$UNICALB, POP-11 BASIC SPECTROCHEMICAL ANALYSIS	122
LASL	1108	F4	MA	U	Y		\$BIOTA2, BIOME POPULATION INTERACTION MODELING	78
LASL	6600	COM	MA	U	P		\$ELEMENTARY FUNCTION SUBROUTINES CATEGORY B	62
LASL	6600	F	MA	U	M		\$HVL, EXHAUST HOOD VELOCITY MEASUREMENT REPORT	198
LASL	6600	F	MA	U	D		\$VEL, CYLINDER WALL VELOCITY DETERMINATION CALC	197
LASL	6600	F	MA	U	P		\$D301, TRUNCATED BUNEMAN POISSON EQUATION SOLVR	64
LASL	6600	F	RPO	U	C		\$TRIPLT, TRIANGULAR MESH MULTI-GP TRANSPORT	77
LASL	6600	F+COM	MA	U	P		\$FINDMAP, COMPLEX GREEN'S FUNCTION SUBROUTINE	56
LASL	6600	F+COM	MA	U	U		\$TDF-A, COMPUTING THERMODYNAMIC FUNCTIONS	55
LASL	6600	F+COM	MA	U	W		\$APW, ENERGY BANDS VIA AUGMENTED PLANE WAVES	111
LASL	6600	F+COM	MA	U	W		\$LASL LENS DESIGN PROGRAM VERSION 2.2	58
LASL	6600	F4	MA	P	W		\$CALOR, WAVE NUMBERS DERIVED FROM LEVEL VALUES	104
LASL	6600	F4	MA	P	W		\$LEVEL, ATOMIC-ENERGY-LEVEL VALUES CALCULATION	103
LASL	6600	F4	MA	U	G		\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	80
LASL	6600	F4	MA	U	H		\$RAYTRACE, ACOUSTIC RAY TRACING UNSTEADY FLOW	199
LASL	6600	F4	MA	U	H		\$SMAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	79
LASL	6600	F4	MA	U	D		\$CONFOLD, UNFOLDING SMOOTH CONTINUOUS SPECTRA	95
LASL	6600	F4	MA	U	P		\$ARITHMETIC SUBROUTINES CATEGORY A	61

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LASL	6600	F4	MA U P	\$DATA HANDLING & SORTING SUBROUTINES CATEGORY M			71
LASL	6600	F4	MA U P	\$EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY F2			68
LASL	6600	F4	MA U P	\$I401, LOAD FORTRAN FORMAT-FREE INPUT DATA			59
LASL	6600	F4	MA U P	\$LEAST SQUARES & SMOOTHING ROUTINES CATEGORY E2			66
LASL	6600	F4	MA U P	\$N103, ERROR TERMINATION MESSAGE W/COUNT CONTRL			72
LASL	6600	F4	MA U P	\$PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVED			97
LASL	6600	F4	MA U P	\$Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER			60
LASL	6600	F4	MA U P	\$SIMULTANEOUS LINEAR SYSTEMS CATEGORY F4			69
LASL	6600	F4	MA U P	\$SPECTRAL ANALYSIS OF TIME SERIES CATEGORY G6			70
LASL	6600	F4	MA U P	\$SUBROUTINES FOR INTERPOLATION CATEGORY E1			65
LASL	6600	F4	MA U P	\$SURROUTINES FOR SPECIAL FUNCTIONS CATEGORY C			63
LASL	6600	F4	MA U P	\$VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1			67
LASL	6600	F4	MA U Q	\$INX, X-RAY POWDER PATTERN INDEXING			57
LASL	6600	F4	MA U Q	\$UNFOLD, X-RAY DIFFRACTION PROFILE ANALYSIS			91
LASL	6600	F4	MA U W	\$CORCOUP, NILSSON CORIOLIS COUPLING PROGRAM			88
LASL	6600	F4	MA U W	\$HELGAS, ELECTRON & PROTON SCATTERING BY HELIUM			92
LASL	6600	F4	MA U W	\$HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE			93
LASL	6600	F4	MA U W	\$IT, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC			105
LASL	6600	F4	MA U W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA			112
LASL	6600	F4	MA U Y	\$ABIGAIL3, ANTIRODY PRODUCTION SIMULATION			90
LASL	6600	F4	MA U Y	\$BIOTA2, BIOME POPULATION INTERACTION MODELING			78
LASL	7600	F	RRD U C	\$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT			77
LASL	7600	F4	MA D M	\$FUELFIN, FUEL PIN DATA MANAGEMENT SYSTEM			113
LASL	7600	F4	MA U A	\$MULTI, R-MATRIX LEAST-SQUARES CROSS SECTIONS			119
LASL	7600	F4	MA U B	\$MCN, NEUTRON TRANSPORT MONTE CARLO CODE			81
LASL	7600	F4	MA U G	\$BRKW, DETONATION PROPERTIES OF EXPLOSIVES			84
LASL	7600	F4	MA U H	\$YAQUI, LAGRANGIAN-EULERIAN FLUID DYNAMICS			94
LASL	7600	F4	MA U I	\$DETECTR, COMPRESSION MOLD DESIGN FOR DETECTORS			209
LASL	7600	F4	MA U J	\$MCG, GAMMA TRANSPORT MONTE CARLO CODE			82
LASL	7600	F4	MA U J	\$MCP, PHOTON TRANSPORT MONTE CARLO CODE			83
LASL	7600	F4	MA U W	\$DEGAA, POLYNOMIAL SOLN OF SCHRODINGER EQUATION			89
LASL	7600	F4	MA U W	\$SHANJON, ELECTRON ENERGY DISTRIBUTION CALC			86
LASL	7600	F4	MA U W	\$HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE			93
LASL	7600	F4	MA U W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA			112
LASL	7600	F4	MA U X	\$CBMEXP, CO2 GAS LASER AMPLIFICATION STUDIES			85
LASL	7600	F4	MA U X	\$HII, CONTINUITY EQUATION SOLN IN DENSE PLASMA			87
LASL	LENS DESIGN PROGRAM VERSION 2.2			LASL 6600 F+COM MA U W \$			58
LATIN SQ, LATIN SQUARE ANALYSIS OF VARIANCE			MLMD 360 F4 MA P P \$				203
LATIN SQUARE ANALYSIS OF VARIANCE			MLMD 360 F4 MA P P \$				203
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LEACHING MODEL			LLL 7600 F AT U P \$				R109
LEASE ANALYSIS			SLA 360 COBOL MA U M \$BFCOM, AEC PURCHASE VERSUS				R 4
LEASE ANALYSIS			SLA 1100 COBOL MA U M \$BFCOM, AEC PURCHASE VERSUS				R 4
LEAST SQUARES & SMOOTHING ROUTINES CATEGORY F2			LASL 6600 F4 MA U P \$				66
LEAST SQUARES ANALYSIS			RFD 360 F4 MA U P \$POLYNOMIAL CURVE FIT BY				R 10
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LEAST SQUARES FITTING OF FUNCTIONS			RFD 400 F4 MA U P \$NON-LINEAR				R 7
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LIF/RESPONSE, LITHIUM FLUORIDE GAMMA RESPONSE			LLL 6600 F4 LLL U O \$				144
LIL3, LIST-INTERPRETIVE LANGUAGE FOR THE MCS-8			LLL MCS8 INT ARP U T \$				230
LINEAR ELASTIC FINITE ELEMENT ANALYSIS			SLA 6600 F4 MA U I \$CHILES,				110
LINEAR LEAST SQUARES FIT WITH STATISTICS			DP 360 F4 PMM U P \$				147
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LINEAR

LLL

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LITHIUM FLUORIDE SPECTRUM PLOTTING	LLL PD11 BASIC	LLL U O	\$LIF/PLOT,	145
LLL	ANSIF MA U P	\$PDEONE, NONLINEAR PARTIAL DIFFERENTIAL EGN AID		159
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LLL MCS9 INT ARP U T		\$LIL8, LIST-INTERPRETIVE LANGUAGE FOR THE MCS-8		230
LLL MCS0 ASM MA U P		\$OOT, OCTAL DEBUGGING FOR THE MCS-80 COMPUTER		201
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LLL MDCM F+ASM MA U P		\$MODCOMP TEKTRONIX 4010 PLOTTING ROUTINES		141
LLL PDPA DALB LLL U T		\$RTSX SYSTEM EXECUTIVE FOR USE WITH FOCAL-X		S231
LLL PDPA FOCAL MA U O		\$NEWPIO/PERMEA, PERMEABILITY MEASUREMENTS		138
LLL PD11 ASM ARP D P		\$RATS, RISOS/ARPA PDP-11 OPERATING SYSTEM		161
LLL PD11 BASIC LLL U O		\$LIF/PLOT, LITHIUM FLUORIDE SPECTRUM PLOTTING		145
LLL 3600 F4	MA U H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW		R 37
LLL 6600 CHAT MA U C		\$MORSE-L, MONTE CARLO MULTIGROUP TRANSPORT CODE		R142
LLL 6600 F MA U I		\$CRACK, 2-DIMENSIONAL PLANE-STRAIN CALCULATION		181
LLL 6600 F MA U T		\$ACDES, A CODE TO DESIGN A PYROTECHNIC ACTUATOR		188
LLL 6600 F MA U T		\$SOL-HOL CONE, CONICAL MONOPOLE ANTENNA CALC		R124
LLL 6600 F MA U U		\$RECOG, PATTERN RECOGNITION ANALYSES		146
LLL 6600 F+GSP R D M		\$ROOFAS, FUEL ROD FABRICATION PLANT SIMULATION		S200
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LLL 6600 F4 LLL U O		\$LIF/RESPONSE, LITHIUM FLUORIDE GAMMA RESPONSE		144
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LLL 6600 F4 MA P P		\$GEARB, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS		228
LLL 6600 F4 MA U H		\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW		R 37
LLL 6600 LRL MA U U		\$GAMANAL LIBRARY AND AUXILIARY ROUTINES		164
LLL 6600 LRL MA U U		\$GAMANAL, INTERPRETATION OF GAMMA-RAY SPECTRA		163
LLL 7600 ALA76 MA U P		\$TIC-TAC-TOE, STRUCTURED PROGRAMMING IN ALA76		133
LLL 7600 CHAT CTR U X		\$DART, FUSION REACTOR ENERGY CONVERTER MODEL		149
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LLL 7600 F CTR U X		\$HYBRID-11, 2-D MULTISPECIES FOKKER-PLANCK CODE		179
LLL 7600 F MA D R		\$SENS, ENVIRONMENTAL DATA STUDY GRAPHICS DISPLAY		S192
LLL 7600 F MA U H		\$SIROCCO, CALCULATION OF TRANSIENT GAS FLOW		213
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LLL 7600 F+COM MA U P		\$SUB/STACKLIB, FORTRAN VECTOR FUNCTION ROUTINES		116
LLL 7600 F4 LLL U T		\$VENT, EXHAUST VENTILATION SIZING & BALANCING		205
LLL 7600 F4 MA D R		\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING		227
LLL 7600 F4 MA U H		\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW		R 37
LLL 7600 F4 MA U T		\$MT-MBA/LLL18, ELECTROMAGNETIC RESPONSE CALC		156
LLL 7600 F4 MA U W		\$MAB, SATURATION SPECTROSCOPY DATA REDUCTION		135
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LLL 7600 LRL DRE U Y		\$FLATLAND, A 3-D OBJECT RECONSTRUCTION PROGRAM		S225
LLL 7600 LRL DRE U Y		\$TESTIM, PROJECTION & TEST IMAGE DATA GENERATOR		S226
LLL 7600 LRL LLL U T		\$WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN		233
LLL 7600 LRL MA U P		\$BEGINMAP, PROGRAM PERFORMANCE ANALYSIS ROUTINE		R 214
LLL 7600 LRL MA U P		\$FLDF, LLL OPERATING SYSTEM FOR THE CDC7600		223
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LLL 7600 PUTT MA U P		\$PDP-9E, INTERACTIVE SIMULATOR ON THE CDC7600		143
LLL 9830 BASIC MA U O		\$HP9830 MOLE WGT, VOL, & DETONATION VELOCITY		229
LLL U O	\$LIF/PLOT, LITHIUM FLUORIDE SPECTRUM PLOTTING	LLL PD11 BASIC		145
LLL U O	\$LIF/RESPONSE, LITHIUM FLUORIDE GAMMA RESPONSE	LLL 6600 F4		144
LLL U P	\$MODCOMP BCD CHARACTER CODE CONVERSION FACILITY	LLL MDCM ASM		140
LLL U R	\$PAVF, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL 360 F4		137

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LLL	U	R	\$PAVF, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	6600 F4 137
LLL	U	T	\$RTSX SYSTEM EXECUTIVE FOR USE WITH FOCAL-X	LLL	PDP8 PAL8 S231
LLL	U	T	\$VENT, EXHAUST VENTILATION SIZING & BALANCING	LLL	7600 F4 205
LLL	U	T	\$WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN	LLL	7600 LRL 233
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LRL	CTR	U P	\$SIMPLEX, GENERAL LINEAR PROGRAMMING SOLUTION	LLL	7600 232
LRL	DBF	U Y	\$FLATLAND, A 3-D OBJECT RECONSTRUCTION PROGRAM	LLL	7600 S225
LRL	DBF	U Y	\$TESTIM, PROJECTION & TEST IMAGE DATA GENERATOR	LLL	7600 S226
LRL	ILL	U T	\$WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN	LLL	7600 233
LPL	MA	U P	\$BEGINMAP, PROGRAM PERFORMANCE ANALYSIS ROUTINE	LLL	7600 R214
LRL	MA	U P	\$FLOF, LLL OPERATING SYSTEM FOR THE CDC7600	LLL	7600 223
LRL	MA	U U	\$GAMANAL LIBRARY AND AUXILIARY ROUTINES	LLL	6600 164
LRL	MA	U U	\$GAMANAL, INTERPRETATION OF GAMMA-RAY SPECTRA	LLL	6600 163
MA	C	M	\$BIORHYTHM SYSTEM FOR PERSONAL INJURY ANALYSIS	REFC	6400 C+F 196
MA	C	P	\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	360 F4 227
MA	D	R	\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	7600 F4 227
MA	C	M	\$FUEPIN, FUEL PIN DATA MANAGEMENT SYSTEM	LASL	7600 F4 113
MA	C	P	\$RES, CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA	6600 F4 R 53
MA	D	P	\$FPRCHK, FPRGET, FPRSET, SYSTEM ERROR ROUTINES	SLA	6600 F+COM R 54
MA	C	P	\$GFRFR SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	PD10 F4 R 52
MA	D	P	\$GFRFR SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	1108 F4 R 52
MA	D	P	\$GFRFR SERIES 1200 & 2000 PLOTTING PACKAGE	SLA	6600 F4 R 52
MA	C	P	\$RIUNKIT, RUNGE-KUTTA ODE INTEGRATION ROUTINE	SLA	6600 F+COM R 26
MA	D	R	\$EOS, ENVIRONMENTAL DATA STUDY GRAPHICS DISPLAY	LLL	7600 F S192
MA	P	I	\$QMESH, REFIN, SELF-ORGANIZING MESH GENERATION	SLA	6600 F 172
MA	P	I	\$SLADE-3, FINITE ELEMENT DYNAMIC SHELL RESPONSE	SLA	6600 F4 98
MA	D	M	\$MAPPER, PREDICTING MANUFACTURING REQUIREMENTS	GFPI	GETS BASIC 96
MA	D	M	\$MIRROR, INFORMATION RETRIEVAL & REPORTS SYSTEM	MLMD	360 PL/I R120
MA	D	M	\$SPIRAL, FULL-TEXT STORAGE, SEARCH & RETRIEVAL	SLA	1108 F+BAL R 99
MA	P	P	\$FWND, FOCAL-69 WRITE NULL CHARACTERS OVERLAY	MHSM	PDP8 MACH 234
MA	D	P	\$GFARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	360 F4 228
MA	D	P	\$GFARR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	6600 F4 228
MA	D	P	\$LATIN SQ, LATIN SQUARE ANALYSIS OF VARIANCE	MLMD	360 F4 203
MA	D	P	\$SETS, SET EQUATION TRANSFORMATION SYSTEM	SLA	6600 FTN R101
MA	D	P	\$STRIDE/COLODE, COLLOCATION SOLN OF STIFF ODE'S	SLA	6600 F 187
MA	D	C	\$ISOTAB, PU POWER CALCULATION OF MIXED ISOTOPES	MLMD	360 F4 R100
MA	D	P	\$STATPAC, HYDROLOGIC DATA STATISTICAL PACKAGE	NYOO	6400 F S183
MA	P	T	\$LCRU, INDUCTANCE-CAPACITANCE-RESONANCE CALC	MHSM	PDP8 FOCAL 235
MA	P	T	\$PCOL, PIPE COLUMN DESIGN COMPUTATION	MHSM	PDP8 FOCAL 239
MA	D	T	\$TOES, AUDIO TRANSFORMER DESIGN COMPUTATION	MHSM	PDP8 FOCAL 236
MA	P	U	\$DEWP, PRESSURE DEW POINT TABLE GENERATION	MHSM	PDP8 FOCAL 237
MA	P	U	\$VOW, VAN DER WALL'S EQUATION OF STATE OF GASES	MHSM	PDP8 FOCAL 238
MA	P	W	\$CALOR, WAVE NUMBERS DERIVED FROM LEVEL VALUES	LASL	6600 F4 104
MA	P	W	\$LEVEL, ATOMIC-ENERGY-LEVEL VALUES CALCULATION	LASL	6600 F4 103
MA	U	A	\$MULTI, R-MATRIX LEAST-SQUARES CROSS SECTIONS	LASL	7600 F4 119
MA	U	R	\$MCN, NEUTRON TRANSPORT MONTE CARLO CODE	LASL	7600 F4 81
MA	U	C	\$MORSE-L, MONTE CARLO MULTIGROUP TRANSPORT CODE	LLL	6600 CHAT R142
MA	U	C	\$ISOGFN, RADIOACTIVE DECAY GROWTH OF NUCLIDES	REF	360 F4 R 1
MA	U	G	\$BKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	360 F4 84
MA	U	G	\$BKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	7600 F4 84
MA	U	G	\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	360 F4 80
MA	U	G	\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	6600 F4 80
MA	U	F	\$RAYTRAC, ACOUSTIC RAY TRACING UNSTEADY FLOW	LASL	6600 F4 199
MA	U	H	\$SANPIC, PARTICLE-IN-CELL PROGRAM	SLA	6600 F+COM R 49
MA	U	H	\$STRNCO, CALCULATION OF TRANSIENT GAS FLOW	LLL	7600 F 213
MA	U	F	\$SMAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	LASL	6600 F4 79
MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	3600 F4 R 37
MA	U	F	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	6600 F4 R 37
MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600 F4 R 37
MA	U	H	\$YAQUIT, LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	7600 F4 94
MA	U	I	\$CHILES, LINEAR ELASTIC FINITE ELEMENT ANALYSIS	SLA	6600 F4 110
MA	U	I	\$CRACK, 2-DIMENSIONAL PLANE-STRAIN CALCULATION	LLL	6600 F 181
MA	U	I	\$DETECTR, COMPRESSION MOLD DESIGN FOR DEFECTORS	LASL	7600 F4 209
MA	U	I	\$GNATS, MESH2, GPRINT, NONLINEAR FINITE ELEMENT	SLA	6600 F+COM 208

MA				MA			
MA	U	I	\$SLADE, STATIC ANALYSIS OF THIN SHELLS	SLA	6600	F+COM	R 2
MA	U	J	\$MCG, GAMMA TRANSPORT MONTE CARLO CODE	LASL	7600	F4	82
MA	U	J	\$MCP, PHOTON TRANSPORT MONTE CARLO CODE	LASL	7600	F4	83
MA	U	M	\$BECOM, AEC PURCHASE VERSUS LEASE ANALYSIS	SLA	360	COBOL	R 4
MA	U	M	\$BECOM, AEC PURCHASE VERSUS LEASE ANALYSIS	SLA	1108	COBOL	R 4
MA	U	M	\$GE MEDICAL INSURANCE REIMBURSEMENT SYSTEM	GEP I	435	COBOL	R 39
MA	U	M	\$HVL, EXHAUST HOOD VELOCITY MEASUREMENT REPORT	LASL	6600	F	198
MA	U	M	\$MAXI, NADS DATA BASE STORAGE & RETRIEVAL	EGEG	PD10	F+MAC	R194
MA	U	M	\$MPR PRODUCT RECORD FILE SYSTEM	MHSM	360	C+BAL	R 43
MA	U	M	\$PBP, U.S. PAYROLL, BUDGET, & PERSONNEL SYSTEM	NVOO	6400	COBOL	182
MA	U	M	\$RADSAFE, RADIATION SCIENCES PERSONNEL DATA	REEC	6400	COBOL	180
MA	U	M	\$RALCRTPH, RESOURCE ALLOCATION BY CRITICAL PATH	MLMO	360	F+C+R	R 3
MA	U	M	\$RND424RQ, RANDOM SAMPLING TABLE NON-BIAS ORDER	MLMO	360	F4	190
MA	U	M	\$SAFETY REPORTING & COST SYSTEM	REEC	6400	COBOL	195
MA	U	M	\$STRAMP, TAPE LIBRARY MANAGEMENT PROGRAM	ALOO	8283	COBOL	R 40
MA	U	M	\$TRUMP/XB2, THERMAL PROPERTY DATA COMPILATION	LLL	6600	F+LRL	R 38
MA	U	N	\$SHEMP, HEMP PROGRAM 2D GRID PROCESSING ROUTINE	LLL	7600	CHAT	134
MA	U	O	\$CONFOLD, UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL	6600	F4	95
MA	U	C	\$NEWPIO/PERMEA, PERMEABILITY MEASUREMENTS	LLL	PDP9	FOCAL	138
MA	U	O	\$PVTCLAL, PVT CALIBRATION SYSTEM DATA ANALYSIS	MLMO	PDP8	FOCAL	212
MA	U	O	\$VEL, CYLINDER WALL VELOCITY DETERMINATION CALC	LASL	6600	F	197
MA	U	P	\$ARITHMETIC SUBROUTINES CATEGORY A	LASL	6600	F4	61
MA	U	P	\$AVINT, INTEGRATION OF TABULATED DATA	SLA	3600	F63	R 50
MA	U	P	\$AVINT, INTEGRATION OF TABULATED DATA	SLA	6600	F4	R 50
MA	U	P	\$BEGINMAP, PROGRAM PERFORMANCE ANALYSIS ROUTINE	LLL	7600	LRL	R214
MA	U	P	\$CONVERSION FROM PAPER TAPE TO CARD OR DISK	RFD	360	F+BAL	R 8
MA	U	P	\$DATA HANDLING & SORTING SUBROUTINES CATEGORY M	LASL	6600	F4	71
MA	U	P	\$D301, TRUNCATED BUNEMAN POISSON EQUATION SOLVR	LASL	6600	F	64
MA	U	P	\$EGG GENERAL PLOT SYSTEM FOR GRAPHICAL OUTPUT	EGEG	6400	COM	R178
MA	U	P	\$EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY F2	LASL	6600	F4	68
MA	U	P	\$ELEMENTARY FUNCTION SUBROUTINES CATEGORY B	LASL	6600	COM	62
MA	U	P	\$ERF,ERFC, ERROR & COMPLEMENTARY ERROR FUNCTION	SLA	6600	F4	R 51
MA	U	P	\$FILE CODE GENERATOR, 6-CHARACTER ALPHANUMERIC	BKCD	360	F4	R 73
MA	U	P	\$FINDMAP, COMPLEX GREEN'S FUNCTION SUBROUTINE	LASL	6600	F+COM	56
MA	U	P	\$FLOF, LLL OPERATING SYSTEM FOR THE CDC7600	LLL	7600	LRL	223
MA	U	P	\$GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC	BKCD	360	F4	76
MA	U	P	\$GROUPS COMPARISON, QUALITY CONTROL PROGRAM	BKCD	360	F4	R 75
MA	U	P	\$HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE	BKCD	360	F4	74
MA	U	P	\$INTERACTIVE MONITOR TELEMETRY PLAYBACK SYSTEM	SLA	3100	COM	R 13
MA	U	P	\$I401, LOAD FORTRAN FORMAT-FREE INPUT DATA	LASL	6600	F4	59
MA	U	P	\$LEAST SQUARES & SMOOTHING ROUTINES CATEGORY F2	LASL	6600	F4	66
MA	U	P	\$MODCOMP TEKTRONIX 4010 PLOTTING ROUTINES	LLL	MOCH	F+ASM	141
MA	U	P	\$MTRAN, A STRUCTURED FORTRAN MACRO LANGUAGE	LLL	7600	MTRAN	207
MA	U	P	\$NON-H LINEAR LEAST SQUARES FITTING OF FUNCTIONS	RFD	400	F4	R 7
MA	U	P	\$N103, ERROR TERMINATION MESSAGE W/COUNT CONTRL	LASL	6600	F4	72
MA	U	P	\$ODT, OCTAL DEBUGGING FOR THE MCS-80 COMPUTER	LLL	MC80	ASM	201
MA	U	P	\$PDFONE, NONLINEAR PARTIAL DIFFERENTIAL FOR AID	LLL		ANSIF	159
MA	U	P	\$PDP-RE, INTERACTIVE SIMULATOR ON THE CDC7600	LLL	7600	PUTT	143
MA	U	P	\$PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	F4	97
MA	U	P	\$PLOT, AUTOMATIC PLOTTING FOR THE GERBER 2000	RFD	360	F4	R 14
MA	U	P	\$PLOTR, 2-D CONTOUR AND AREA CALCULATION	SLA	6600	F4	R 5
MA	U	P	\$POLYNOMIAL CURVE FIT BY LEAST SQUARES ANALYSIS	RFD	360	F4	R 10
MA	U	P	\$PROM, READ-ONLY MEMORY PROGRAMMING LANGUAGE	LLL	MCS8	ASM	117
MA	U	P	\$Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER	LASL	6600	F4	60
MA	U	P	\$REFR, FIBONACCI RANDOM-NUMBER GENERATION	LLL		ANSIF	177
MA	U	P	\$SANDIA SCOPE USERS' MANUAL FOR THE CDC6600	SLA	6600	FTN	R 6
MA	U	P	\$SEVP, SYMMETRIC MATRIX EIGENVALUES & VECTORS	SLA	6600	F4	R 48
MA	U	P	\$SIMULTANEOUS LINEAR SYSTEMS CATEGORY F4	LASL	6600	F4	69
MA	U	P	\$SPECTRAL ANALYSIS OF TIME SERIES CATEGORY G6	LASL	6600	F4	70
MA	U	P	\$SUB/STACKLIB, FORTRAN VECTOR FUNCTION ROUTINES	LLL	7600	F+COM	116
MA	U	P	\$SUBROUTINES FOR INTERPOLATION CATEGORY F1	LASL	6600	F4	65
MA	U	P	\$SUBROUTINES FOR SPECIAL FUNCTIONS CATEGORY C	LASL	6600	F4	63
MA	U	P	\$SURFACE AREA & VOLUME OF A SOLID OF REVOLUTION	RFD	400	F	R 9
MA	U	P	\$TIC-TAC-TOE, STRUCTURED PROGRAMMING IN ALA76	LLL	7600	ALA76	133
MA	U	P	\$VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1	LASL	6600	F4	67
MA	U	C	\$CALCULATION OF CRYSTALLOGRAPHIC FUNCTIONS	RFD	360	F4	R 18

PA		MAN-REM							
MA	U Q	\$HP9830 MOLE WGT, VOL, & DETONATION VELOCITY	LLL	9830	BASIC		229		
MA	U Q	\$INDEX, X-RAY POWDER PATTERN CRYSTAL INDEXING	RFD	360	F+BAL	R	17		
MA	U Q	\$INDEX, X-RAY POWDER PATTERN INDEXING	LASL	6600	F4		57		
MA	U Q	\$MASS DETERMINATION BY TRANPOSITION METHOD	MHSM	360	F4	R	42		
MA	U Q	\$SIMULATION OF STRESS CORROSION CRACKING	SLA	6600	F	R	15		
MA	U Q	\$SURFACE FILM ELLIPSONETER MEASUREMENT ANALYSIS	RFD	360	F4	R	16		
MA	U Q	\$UNFOLD, X-RAY DIFFRACTION PROFILE ANALYSIS	LASL	6600	F4		91		
MA	U Q	\$UNIVERSAL DENSITY CONTROL PROGRAM	MHSM	360	F4	R	44		
MA	U Q	\$XOTRAP, GAS DIFFUSION WITH TRAPPING	DP	360	F4		148		
MA	U R	\$MODEL-B, FALL AND DISPERSION OF PARTICLES	SLA	3600	F36	R	19		
MA	U S	\$SATLOC, SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	3600	F36	R	23		
MA	U S	\$SWAP9, STRESS WAVE ANALYSIS PROGRAM	SLA	6600	F4	R	22		
MA	U S	\$STONDY2, 2-DIMENSIONAL WAVE PROPAGATION PROGRAM	SLA	3600	F36	R	47		
MA	U S	\$WONDY34, 1-D WAVE PROPAGATION CALCULATION	SLA	6600	F4	R	21		
MA	U T	\$ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	1108	F4	R	27		
MA	U T	\$ACCEL(MOD2), DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	6600	F4	R	27		
MA	U T	\$ACDFS, A CODE TO DESIGN A PYROTECHNIC ACTUATOR	LLL	6600	F		188		
MA	U T	\$CALIBRATION OF SURFACE PLATES	MHBR	360	F4	R	28		
MA	U T	\$ODHUM, STRAIGHT, JOINT, FOCUSNF, CRT TESTING	LLL	7600	F		215		
MA	U T	\$ELEMENTAL MOMENT OF INERTIA CALCULATION	MHSM	360	F4	R	41		
MA	U T	\$FFERS, LAPLACE EQUATION SIMULATION STUDY	SLA	6600	F4	R	29		
MA	U T	\$PVTCLC, PVT CALIBRATION SYSTEM CONTROL CODE	MLMD	PDP8	FOCAL		211		
MA	U T	\$SOL-HOL CONE, CONICAL MONOPOL ANTENNA CALC	LLL	6600	F	R	124		
MA	U T	\$WHEATSTONE BRIDGE RESISTANCE CALIBRATION	MHSM	360	F4	R	45		
MA	U T	\$WT-MBA/LLL18, ELECTROMAGNETIC RESPONSE CALC	LLL	7600	F4		156		
MA	U U	\$CHEMICAL DIFFUSIVITIES BY BOLTZMAN-MATANO	RFD	400	BASIC	R	34		
MA	U U	\$DYNAMIC ANALYSIS OF GASES BY MASS SPECTROMETRY	RFD	400	F	R	33		
MA	U U	\$ERLF, SPECTROPHOTOMETRIC REACTION KINETICS	RFD	360	F4	R	30		
MA	U U	\$GAMANAL LIBRARY AND AUXILIARY ROUTINES	LLL	6600	LRL		164		
MA	U U	\$GAMANAL, INTERPRETATION OF GAMMA-RAY SPECTRA	LLL	6600	LRL		163		
MA	U U	\$GAS-GAS & GAS-SOLID REACTION DATA REDUCTION	RFD	360	F4	R	32		
MA	U U	\$RADF-2, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	360	F4	R	31		
MA	U U	\$RADF, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	210	F2	R	31		
MA	U U	\$RECOG, PATTERN RECOGNITION ANALYSES	LLL	6600	F		146		
MA	U U	\$STICKING PROBABILITY OF GASES ON SOLID SURFACE	RFD	360	F4	R	35		
MA	U U	\$THREACT, CHEMICAL REACTOR ANALYSIS PROGRAM	MHSM	360	F4	R	46		
MA	U U	\$TDF-A, COMPUTING THERMODYNAMIC FUNCTIONS	LASL	6600	F+COM		55		
MA	U U	\$UNICALB, PDP-11 BASIC SPECTROCHEMICAL ANALYSIS	LASL	PD11	BASIC		122		
MA	U W	\$APW, ENERGY BANDS VIA AUGMENTED PLANE WAVES	LASL	6600	F+COM		111		
MA	U W	\$CORCOUP, NILSSON CORIOLIS COUPLING PROGRAM	LASL	6600	F4		88		
MA	U W	\$DEGAA, POLYNOMIAL SOLN OF SCHRRODINGER EQUATION	LASL	7600	F4		89		
MA	U W	\$HANJON, ELECTRON ENERGY DISTRIBUTION CALC	LASL	7600	F4		86		
MA	U W	\$HEIGAS, ELECTRON & PROTON SCATTERING BY HELIUM	LASL	6600	F4		92		
MA	U W	\$HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	6600	F4		93		
MA	U W	\$HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	7600	F4		93		
MA	U W	\$IT, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	6600	F4		105		
MA	U W	\$LASL LENS DESIGN PROGRAM VERSION 2.2	LASL	6600	F+COM		58		
MA	U W	\$MAR, SATURATION SPECTROSCOPY DATA REDUCTION	LLL	7600	F4		135		
MA	U W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	6600	F4		112		
MA	U W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	7600	F4		112		
MA	U W	\$TKOR, THIN PLASMA X-RAY SPECTRUM CALCULATION	LLL	7600	F		S202		
MA	U X	\$CRMEXP, CO2 GAS LASER AMPLIFICATION STUDIES	LASL	7600	F4		85		
MA	U X	\$HII, CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL	7600	F4		87		
MA	U Y	\$BIGAIL3, ANTIBODY PRODUCTION SIMULATION	LASL	6600	F4		90		
MA	U Y	\$BIOTA2, BIOME POPULATION INTERACTION MODELING	LASL	1108	F4		78		
MA	U Y	\$BIOTA2, BIOME POPULATION INTERACTION MODELING	LASL	6600	F4		78		
MA	U W	\$MAR, SATURATION SPECTROSCOPY DATA REDUCTION	LLL	7600	F4	MA	U W	\$	135
MACH	MA P P	\$FWNO, FOCAL-69 WRITE NULL CHARACTERS OVERLAY	MHSM	PDP8					234
MACRO CTR	U T	\$MEMSEG, BANK BY BANK MEMORY DIAGNOSTIC OR TEST	UCND	PD11					204
MACRO LANGUAGE	LLL	7600 MTRAN	MA	U P	\$MTRAN, A STRUCTURED FORTRAN				207
MACRO-BASED STRUCTURED FORTRAN	SLAC	ANSIF R P P	\$MORTAN2, A						221
MAG TAPE R/W	SLAC	360 F+BAL R	U P	\$IBM360 UTILITY AND PDP9/15 ASCII					11
MAGNETIC TAPE RESERVATION SYSTEM	CSCN	6600 F+COM	RIO	U M	\$RLTRS, RL				125
MAN FROM REACTOR GAS RELEASES	BNWL	1108 BASIC	RS	U G	\$GRONK, DOSE TO				106
MAN FROM REACTOR LIQUID RELEASE	BNWL	1108 BASIC	RS	U G	\$ARRRG, DOSE TO				108
MAN-REM DENSE FROM ATMOSPHERIC TRANSPORT	DP	360 F4	PMM	C R	\$MARC,				130

MANAGEMENT

MODULES

MANAGEMENT PROGRAM	ALOO 8283	COBOL	MA	U	M	\$TRAMP, TAPE LIBRARY	R 40
MANAGEMENT PROGRAM	DP 360 F4	PMM	U	M	\$STAFI, RADIOACTIVE WASTE	175	
MANAGEMENT SYSTEM	LASL 7600 F4	MA	D	M	\$FUELPIN, FUEL PIN DATA	113	
MANUAL FOR THE CDC6600	SLA 6600 FTN	MA	U	P	\$SANDIA SCOPE USERS'	R 6	
MANUFACTURING REQUIREMENTS	GEPI GETS BASIC	MA	P	M	\$MAPPER, PREDICTING	96	
MAPPER, PREDICTING MANUFACTURING REQUIREMENTS	GEPI GETS BASIC	MA	P	M	\$	96	
MARC, MAN-REM DOSE FROM ATMOSPHERIC TRANSPORT	DP 360 F4	PMM	C	R	\$	130	
MASS DETERMINATION BY TRANSPOSITION METHOD	MHSM 360 F4	MA	U	Q	\$	R 42	
MASS SPECTROMETRY RFD	400 F	MA	U	U	\$DYNAMIC ANALYSIS OF GASES BY	R 33	
MATRIX EIGENVALUES & VECTORS	SLA 6600 F4	MA	U	P	\$SEVER, SYMMETRIC	R 48	
MATRIX OPERATION ROUTINES CATEGORY F1	LASL 6600 F4	MA	U	P	\$VECTOR C	67	
MAXI, NAOS DATA BASE STORAGE & RETRIEVAL	EGGG PD10 F+MAC	MA	U	M	\$	R194	
MCG, GAMMA TRANSPORT MONTE CARLO CODE	LASL 7600 F4	MA	U	J	\$	82	
MEN, NEUTRON TRANSPORT MONTE CARLO CODE	LASL 7600 F4	MA	U	B	\$	81	
MCP, PHOTON TRANSPORT MONTE CARLO CODE	LASL 7600 F4	MA	U	J	\$	83	
MCS-8 LLL MCS9 INT	ARP U T \$LIL8, LIST-INTERPRETIVE LANGUAGE FOR THE					230	
MCS-80 COMPUTER LLL MC80 ASM	MA U P \$OOT, OCTAL DEBUGGING FOR THE					201	
MCS4 ASM DBE U T	\$ALARM, REMOTE ALARM SENSOR MONITORING PROGRAM	LLL				136	
MCS9 ASM MA U P	\$PROM, READ-ONLY MEMORY PROGRAMMING LANGUAGE	LLL				117	
MCS9 INT ARP U T	\$LIL8, LIST-INTERPRETIVE LANGUAGE FOR THE MCS-8	LLL				230	
MC80 ASM MA U P	\$OOT, OCTAL DEBUGGING FOR THE MCS-80 COMPUTER	LLL				201	
MDCM ASM LLL U P	\$MODCOMP RCD CHARACTER CODE CONVERSION FACILITY	LLL				140	
MDCM F+ASM MA U P	\$MODCOMP TEKTRONIX 4010 PLOTTING ROUTINES	LLL				141	
MEDICAL INSURANCE REIMBURSEMENT SYSTEM	GEPI 435 COBOL MA U M	\$GE				R 39	
MEMORY DIAGNOSTIC OR TEST UCND PD11	MACRO CTR U T \$MEMSEG, BANK BY BANK					204	
MEMORY PROGRAMMING LANGUAGE LLL MCS8 ASM	MA U P \$PROM, READ-ONLY					117	
MEMSEG, BANK BY BANK MEMORY DIAGNOSTIC OR TEST UCND PD11	MACRO CTR U T					204	
MESH GENERATION SLA 6600 F	MA P I \$OMESH, RENUM, SELF-ORGANIZING					172	
MESH MULTI-GP TRANSPORT	LASL 360 F	RRD U C	\$	STRIPLET, TRIANGULAR		77	
MESH MULTI-GP TRANSPORT	LASL 6600 F	RRD U C	\$	STRIPLET, TRIANGULAR		77	
MESH MULTI-GP TRANSPORT	LASL 7600 F	RRD U C	\$	STRIPLET, TRIANGULAR		77	
MESH2, GPRINT, NONLINEAR FINITE ELEMENT	SLA 6600 F+CCM	MA U I	\$	GNATS,		208	
MESSAGE W/COUNT CONTRL	LASL 6600 F4	MA U P	\$	NI03, ERROR TERMINATION		72	
MIRP 360 F4	MA U T	\$	CALIBRATION OF SURFACE PLATES			R 28	
MHSM 360 C+BAL	MA U M	\$	MPP PRODUCT RECORD FILE SYSTEM			R 43	
MHSM 360 F4	MA U Q	\$	MASS DETERMINATION BY TRANSPOSITION METHOD			R 42	
MHSM 360 F4	MA U Q	\$	UNIVERSAL DENSITY CONTROL PROGRAM			R 44	
MHSM 360 F4	MA U T	\$	ELEMENTAL MOMENT OF INERTIA CALCULATION			R 41	
MHSM 360 F4	MA U T	\$	WHEATSTONE BRIDGE RESISTANCE CALIBRATION			R 45	
MHSM 360 F4	MA U U	\$	TCHEACT, CHEMICAL REACTOR ANALYSIS PROGRAM			R 46	
MHSM 0008 FOCAL	MA P T	\$	PCOL, PIPE COLUMN DESIGN COMPUTATION			239	
MHSM 0008 FOCAL	MA P T	\$	TDES, AUDIO TRANSFORMER DESIGN COMPUTATION			236	
MHSM 0008 FOCAL	MA P U	\$	DEWP, PRESSURE DEW POINT TABLE GENERATION			237	
MHSM 0008 FOCAL	MA P U	\$	VOW, VAN DER WALL'S EQUATION OF STATE OF GASES			238	
MHSM 0008 FOCAL	MA P P	\$	FWNO, FOCAL-69 WRITE NULL CHARACTERS OVERLAY			234	
MIRROR, INFORMATION RETRIEVAL & REPORTS SYSTEM	MLMO 360 PL/1	MA P M	\$			R120	
MIXED ISOTOPIES	MLMO 360 F4	MA P Q	\$	ISOTAB, PU POWER CALCULATION OF		R100	
MLMO 360 F+C+R	MA U M	\$	RALCRTPH, RESOURCE ALLOCATION BY CRITICAL PATH			R 3	
MLMO 360 F4	MA P P	\$	LATIN SQ, LATIN SQUARE ANALYSIS OF VARIANCE			203	
MLMO 360 F4	MA P Q	\$	ISOTAB, PU POWER CALCULATION OF MIXED ISOTOPIES			R100	
MLMO 360 F4	MA U M	\$	RND424RQ, RANDOM SAMPLING TABLE NON-BIAS ORDER			190	
MLMO 360 PL/1	MA P M	\$	MIRROR, INFORMATION RETRIEVAL & REPORTS SYSTEM			R120	
MLMO 0008 FOCAL	MA U O	\$	PVTCAL, PVT CALIBRATION SYSTEM DATA ANALYSIS			212	
MLMO 0008 FOCAL	MA U T	\$	PVTCALC, PVT CALIBRATION SYSTEM CONTROL CODE			211	
MODCOMP RCD CHARACTER CODE CONVERSION FACILITY	LLL MDCM ASM	LLL U P	\$			140	
MODCOMP TEKTRONIX 4010 PLOTTING ROUTINES	LLL MDCM F+ASM	MA U P	\$			141	
MODEL-B, FALL AND DISPERSION OF PARTICLES	SLA 3600 F36	MA U R	\$			R 19	
MODELING	LASL 1108 F4	MA U Y	\$	BIOTA2, BIOME POPULATION INTERACTION		78	
MODELING	LASL 6600 F4	MA U Y	\$	BIOTA2, BIOME POPULATION INTERACTION		78	
MODELS	DP 360 F4	DBE C R	\$	NST, 2-1/2 DIMENSION PREDICTION		126	
MODIFICATIONS	DP 360 F4	PMM U N	\$	RIFLF, JOSHUA RESONANCE INTEGRAL		154	
MODULE	DP 360 F4	PMM U F	\$	SWIFT, JOSHUA POINT-KINETICS SOLUTION		152	
MODULES	DP 360 F4	PMM U F	\$	SCRAM/WIGLE, 1D TRANSIENT NEUTRONICS		151	
MODULES	DP 360 F4	PMM U F	\$	DISC., JOSHUA 2D SPACE-TIME FLUX CALC		153	
MODULES, JOSHUA PRINTED EDIT FACILITIES	DP 360 F4	PMM U N	\$	EDIT		155	

MOLD

ORDERING

MOLD DESIGN FOR DETECTORS	LASL	7600	F4	MA	U	I	\$CFTECTR, COMPRESSION	209
MOLD WGT, VOL, & DETONATION VELOCITY	LLL	9930	BASIC	MA	U	Q	\$HP9630	229
MOMENT OF INERTIA CALCULATION	MHSM	360	F4	MA	U	T	\$ELEMENTAL	R 41
MONITOR TELEMETRY PLAYBACK SYSTEM	SLA	3100	COM	MA	U	P	\$INTERACTIVE	R 13
MONITORING PROGRAM	LLL	MCS4	ASM	ORE	U	T	\$ALARM, REMOTE ALARM SENSOR	136
MONOPOL ANTENNA CALC	LLL	6600	F	MA	U	T	\$SOL-HOL CONE, CONICAL	R124
MONTE CARLO CODE	LASL	7600	F4	MA	U	J	\$MCG, GAMMA TRANSPORT	82
MONTE CARLO CODE	LASL	7600	F4	MA	U	J	\$MCP, PHOTON TRANSPORT	83
MONTE CARLO CODE	LASL	7600	F4	MA	U	B	\$MCN, NEUTRON TRANSPORT	81
MONTE CARLO FAULT TREE SIMULATION	UNI	1108	F+SLE	RRD	P	G	\$SAFTAC,	193
MONTE CARLO MULTIGROUP TRANSPORT CODE	LLL	6600	CHAT	MA	U	C	\$MORSE-L,	R142
MORSE-L, MONTE CARLO MULTIGROUP TRANSPORT CODE	LLL	6600	CHAT	MA	U	C	\$	R142
MORTRAN2, A MACRO-BASED STRUCTURED FORTRAN	SLAC			ANSIF	R	P	\$	221
MPO PRODUCT RECORD FILE SYSTEM	MHSM	360	C+BAL	MA	U	M	\$	R 43
MTRAN MA U P \$MTRAN, A STRUCTURED FORTRAN MACRO LANGUAGE	LLL	7600						207
MTRAN, A STRUCTURED FORTRAN MACRO LANGUAGE	LLL	7600	MTRAN	MA	U	P	\$	207
MULTI-GP FAST CONSTANTS RESONANCE	ANC	360	F4	RRD	U	B	\$SCRABLE,	170
MULTI-GP SN NEUTRON TRANSPORT CODE	ANC	360	F4	RRD	U	C	\$SCAMP,	171
MULTI-GP TRANSPORT	LASL	360	F	RRD	U	C	\$TRIPLT, TRIANGULAR MESH	77
MULTI-GP TRANSPORT	LASL	6600	F	RRD	U	C	\$TRIPLT, TRIANGULAR MESH	77
MULTI-GP TRANSPORT	LASL	7600	F	RRD	U	C	\$TRIPLT, TRIANGULAR MESH	77
MULTI-GP X-SECTIONS FAST SPECTRUM CALC	ANC	360	F4	RRD	U	B	\$PHRG2,	168
MULTI, R-MATRIX LEAST-SQUARES CROSS SECTIONS	LASL	7600	F4	MA	U	A	\$	119
MULTIGROUP TRANSPORT CODE	LLL	6600	CHAT	MA	U	C	\$MORSE-L, MONTE CARLO	R142
MULTIPLE REVOLUTION REENTRY	SLA	1108	F4	SNS	U	S	\$HRS017,	R 20
MULTIPLE REVOLUTION REENTRY	SLA	3600	F4	SNS	U	S	\$HRS017,	R 20
MULTIPLE REVOLUTION REENTRY	SLA	6600	F4	SNS	U	S	\$HRS017,	R 20
MULTIPLE REVOLUTION REENTRY	SLA	7040	QUIK	SNS	U	S	\$HRS017,	R 20
MULTISPECIES FOMKER-PLANCK CODE	LLL	7600	F	CTR	U	X	\$HYBRID-II, 2-D	179
NADS DATA BASE STORAGE & RETRIEVAL	FG&G	PD10	F+MAC	MA	U	M	\$MAXI,	R194
NEUTRON TRANSPORT CODE	ANC	360	F4	RRD	U	C	\$SCAMP, MULTI-GP SN	171
NEUTRON TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	B	\$MCK,	81
NEUTRONICS MODULES	DP	360	F4	PHM	U	F	\$SCRAM/WIGLE, 1D TRANSIENT	151
NEWPIC/PERMEA, PERMEABILITY MEASUREMENTS	LLL	PDP9	FOCAL	MA	U	D	\$	138
NILSSON CORIOLIS COUPLING PROGRAM	LASL	6600	F4	MA	U	W	\$CORCOUP,	88
NON-BIAS ORDER MIMO	360	F4	MA	U	M	\$RND424RD, RANDOM SAMPLING TABLE	190	
NON-LINEAR LEAST SQUARES FITTING OF FUNCTIONS	RFD	400	F4	MA	U	P	\$	R 7
NONLINEAR FINITE ELEMENT	SLA	6600	F+COM	MA	U	I	\$GNATS, MESH2, GPRINT,	208
NONLINEAR PARTIAL DIFFERENTIAL EQN AID	LLL			ANSIF	MA	U	\$PDEONE,	159
NRTS-TGS GRAPHICS SOFTWARE FOR III FR-80 COM	ANC	360	F+BAL	RRD	U	P	\$	135
NST, 2-1/2 DIMENSION PREDICTION MODELS	DP	360	F4	DBF	C	R	\$	126
NUBOW, STRUCTURAL ANALYSIS BOWED REACTOR CORES	ANL	360	F4	RRD	U	I	\$	176
NUCLEAR FUEL CYCLE ECONOMICS	UILL	360	F4	P	D	\$GEN, ANALYSIS OF	102	
NUCLEAR FUEL REQUIREMENTS FORECAST	ERDA	360	F4	PA	U	D	\$NUFUEL,	189
NUCLIDES	RFD	360	F4	MA	U	D	\$ISOGEN, RADIOACTIVE DECAY GROWTH OF	R 1
NUFUEL, NUCLEAR FUEL REQUIREMENTS FORECAST	ERDA	360	F4	PA	U	D	\$	189
NULL CHARACTERS OVERLAY	MHSM	PDP8	MACH	MA	P	P	\$FWND, FOCAL-69 WRITE	234
NUMBERS DERIVED FROM LEVEL VALUES	LASL	6600	F4	MA	P	W	\$CALOR, WAVE	304
NVO U M \$SKILLS INVENTORY, PERSONNEL DATA SYSTEM	HENN	6400	F4					G216
NVOD 6400 COROL MA U M \$PBP, U.S. PAYROLL, BUDGET, & PERSONNEL SYSTEM								182
NVOD 6400 F MA P R \$STATPAC, HYDROLOGIC DATA STATISTICAL PACKAGE								S183
N103, ERROR TERMINATION MESSAGE W/COUNT CONTRL	LASL	6600	F4	MA	U	P	\$	72
OBJECT RECONSTRUCTION PROGRAM	LLL	7600	LRL	DBE	U	Y	\$FLATLAND, A 3-D	S225
OCTAL DEBUGGING FOR THE MCS-80 COMPUTER	LLL	MC80	ASM	MA	U	P	\$OOT,	201
ODE INTEGRATION ROUTINE	SLA	6600	F+COM	MA	D	P	\$RUNKUT, RUNGE-KUTTA	R 26
ODE'S	SLA			ANSIF	U	P	\$DE/STEP/INTRP, ADAMS INTEGRATOR FOR	158
ODE'S	SLA	6600	F	MA	P	P	\$STFODE/COLODE, COLLOCATION SOLN OF STIFF	187
ODT, OCTAL DEBUGGING FOR THE MCS-80 COMPUTER	LLL	MC80	ASM	MA	U	P	\$	201
ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	360	F4	MA	U	G	\$SIN,	80
ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	6600	F4	MA	U	G	\$SIN,	80
OPERATING SYSTEM	LLL	PD11	ASM	ARP	D	P	\$RATS, RISNS/ARPA PDP-11	161
OPERATING SYSTEM FOR THE CDC7600	LLL	7600	LRL	MA	U	P	\$FLOE, LLL	223
OPERATION ROUTINES CATEGORY F1	LASL	6600	F4	MA	U	P	\$VECTOR & MATRIX	67
OPTIMAL DISK DATA SET RE-ORDERING	DP	360	F+BAL	PHM	U	P	\$DYNSDK,	115
ORDER MIMO	360	F4	MA	U	M	\$RND424RD, RANDOM SAMPLING TABLE NON-BIAS	190	
ORDERING PROGRAM	ANL	360	P+BAL	ANL	U	M	\$RENUP/RENORD, LIBRARY JOURNAL	157

ORDINARY

PLASMA

ORDINARY DIFFERENTIAL EQUATIONS	LLL	360	F4	MA	P	P	\$GEARB, SOLN OF	228			
ORDINARY DIFFERENTIAL EQUATIONS	LLL	6600	F4	MA	P	P	\$GEARB, SOLN OF	228			
ORGANISMS	BNWL	1108	BASIC	RS	U	G	\$CRITR, INTERNAL INGESTION DOSE TO	107			
OUTPUT	EGGG	6400	COM	MA	U	P	\$EGG GENERAL PLOT SYSTEM FOR GRAPHICAL	R178			
OVERLAY	MHSM	PDP8	MACH	MA	P	P	\$FWND, FOCAL-69 WRITE NULL CHARACTERS	234			
P+RIL ANL	U	M	\$RENU/RENDR, LIBRARY JOURNAL ORDERING PROGRAM	ANL	360			157			
PA	U	C	\$NUFUEL, NUCLEAR FUEL REQUIREMENTS FORECAST	ERDA	360	F4		189			
PAL3	LLL	U	T	\$RTSX SYSTEM EXECUTIVE FOR USE WITH FOCAL-X	LLL	PDP8		\$231			
PAPER TAPE TO CARD OR DISK	REF	360	F+BAL	MA	U	P	\$CONVERSION FROM	R 8			
PARTIAL DIFFERENTIAL EQN AID	LLL			ANSIF	MA	U	P	\$PDEONE, NONLINEAR	159		
PARTICLE BEAMS	SLAC	370	F4	R	P	V	\$TRANSPORT, DESIGN OF CHARGED	220			
PARTICLE-IN-CELL PROGRAM				SLA	6600	F+COM	MA	U	H	\$SANPIC,	R 49
PARTICLES	SLA	3600	F36	MA	U	R	\$MODEL-R, FALL AND DISPERSION OF	R 19			
PATH	MLMC	360	F+COM	MA	U	M	\$PALCRTPH, RESOURCE ALLOCATION BY CRITICAL	R 3			
PATTERN CRYSTAL INDEXING	REF	360	F+RAL	MA	U	Q	\$INDEX, X-RAY POWDER	R 17			
PATTERN INDEXING	LASL	6600	F4	MA	U	Q	\$INDEX, X-RAY POWDER	57			
PATTERN RECOGNITION ANALYSES	LLL	6600	F	MA	U	U	\$PRECOG,	146			
PAVE, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	360	F4	LLL	U	R	\$	137			
PAVE, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	6600	F4	LLL	U	R	\$	137			
PAYROLL & PERSONNEL ACCOUNTING SYSTEM	CSCN	6600	COBOL	RPD	U	M	\$CUP,	218			
PAYROLL, BUDGET, & PERSONNEL SYSTEM	NVOD	6400	COBOL	MA	U	M	\$PBP, U.S.	182			
PRP, U.S. PAYROLL, BUDGET, & PERSONNEL SYSTEM	NVOD	6400	COBOL	MA	U	M	\$	182			
PCOL, PIPE COLUMN DESIGN COMPUTATION	MHSM	PDP8	FOCAL	MA	P	T	\$	239			
PDEONE, NONLINEAR PARTIAL DIFFERENTIAL EQN AID	LLL			ANSIF	MA	U	P	\$	159		
PDP-11 BASIC SPECTROCHEMICAL ANALYSIS	LASL	PDI1	BASIC	MA	U	U	\$UNICALB,	122			
PDP-11 OPERATING SYSTEM	LLL	PDI1	ASM	ARP	D	P	\$RATS, RISOS/ARPA	161			
PDP-REF, INTERACTIVE SIMULATOR ON THE CDC7600	LLL	7600	PUTT	MA	U	P	\$	143			
PDP8 FOCAL	MA	P	T	\$LCPU, INDUCTANCE-CAPACITANCE-RESONANCE CALC	MHSM			235			
PDP8 FOCAL	MA	P	T	\$PCOL, PIPE COLUMN DESIGN COMPUTATION	MHSM			239			
PDP8 FOCAL	MA	P	T	\$TDES, AUDIO TRANSFORMER DESIGN COMPUTATION	MHSM			236			
PDP8 FOCAL	MA	P	U	\$DEWP, PRESSURE DEW POINT TABLE GENERATION	MHSM			237			
PDP8 FOCAL	MA	P	U	\$VDW, VAN DER WALL'S EQUATION OF STATE OF GASES	MHSM			238			
PDP8 FOCAL	MA	U	Q	\$PVTCLAL, PVT CALIBRATION SYSTEM DATA ANALYSIS	MLMC			212			
PDP8 FOCAL	MA	U	T	\$PVTCLAL, PVT CALIBRATION SYSTEM CONTROL CODE	MLMC			211			
PDP8 MACH	MA	P	P	\$FWND, FOCAL-69 WRITE NULL CHARACTERS OVERLAY	MHSM			234			
PDP8 PALP	LLL	U	T	\$RTSX SYSTEM EXECUTIVE FOR USE WITH FOCAL-X	LLL			\$231			
PDP8 FOCAL	MA	U	Q	\$NEWPIO/PERMEA, PERMEABILITY MEASUREMENTS	LLL			138			
PDP9/15 ASCII MAG TAPE R/W	SLAC	360	F+PAL	R	U	P	\$IRM360 UTILITY AND	11			
PDI1 F+MAC	MA	U	M	\$MAXI, NADS DATA BASE STORAGE & RETRIEVAL	EGGG			R194			
PDI1 F4	MA	D	P	\$GERRER SERIES 1200 & 2000 PLOTTING PACKAGE	SLA			R 52			
PDI1 ASM	APP	D	P	\$RATS, RISOS/ARPA PDP-11 OPERATING SYSTEM	LLL			161			
PDI1 BASIC	LLL	U	Q	\$LIF/PLT, LITHIUM FLUORIDE SPECTRUM PLOTTING	LLL			145			
PDI1 BASIC	MA	U	U	\$UNICALB, PDP-11 BASIC SPECTROCHEMICAL ANALYSIS	LASL			122			
PDI1 MACRO CTR	U	T	\$MEMSEG, BANK BY BANK MEMORY DIAGNOSTIC OR TEST UCND					204			
PERFORMANCE ANALYSIS ROUTINE	LLL	7600	LPL	MA	U	P	\$BEGINMAP, PROGRAM	R214			
PERMEABILITY MEASUREMENTS	LLL	PDP8	FOCAL	MA	U	Q	\$NEWPIO/PERMEA,	138			
PERSONAL INJURY ANALYSIS	REFC	6400	C+F	MA	C	M	\$PIORHYTHM SYSTEM FOR	196			
PERSONNEL ACCOUNTING SYSTEM	CSCN	6600	COBOL	RPD	U	M	\$CUP, PAYROLL &	218			
PERSONNEL DATA	REFC	6400	COBOL	MA	U	M	\$RADSAFE, RADIATION SCIENCES	180			
PERSONNEL DATA SYSTEM	HENN	6400	F4	NVC	U	M	\$SKILLS INVENTORY,	G216			
PERSONNEL SYSTEM	NVOD	6400	COBOL	MA	U	M	\$PRP, U.S. PAYROLL, BUDGET, &	182			
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PHASE RADICLYSIS DATA REDUCTION	REF	360	F4	MA	U	U	\$RADE-2, GAS	R 31			
PHOTON TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	J	\$MCP,	83			
PHOTOG, MULTI-GP X-SECTIONS FAST SPECTRUM CALC	ANC	360	F4	RRC	U	R	\$	168			
PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	F4	MA	U	P	\$	97			
PIN DATA MANAGEMENT SYSTEM	LASL	7600	F4	MA	D	M	\$FUELPI, FUEL	113			
PIPE COLUMN DESIGN COMPUTATION	MHSM	PDP8	FOCAL	MA	P	T	\$PCOL,	239			
PIPING EVALUATION	WARD	7600	F	RPD	U	I	\$ELTEMP, ELVATED TEMPERATURE	R222			
PL/1	MA	P	M	\$MIRROP, INFORMATION RETRIEVAL & REPORTS SYSTEM	MLMC	360		R120			
PL/1	P	U	V	\$SLAC ELECTRON GUN DESIGN PROGRAM	SLAC	360		36			
PLANE WAVES	LASL	6600	F+COM	MA	U	M	\$APW, ENERGY BANDS VIA AUGMENTED	111			
PLANE-STRAIN CALCULATION	LLL	6600	F	MA	U	I	\$CRACK, 2-DIMENSIONAL	181			
PLANT CYCLIC CALC	BKY	7600	F4	GEO	D	D	\$GEOTHM, GEOTHERMAL POWER	217			
PLANT SIMULATION	LLL	6600	F+GSP	R	D	M	\$RODFAS, FUEL ROD FABRICATION	S200			
PLASMA	LASL	7600	F4	MA	U	X	\$HII, CONTINUITY EQUATION SOLN IN DENSE	87			

PLASMA

PROJECT ION

PLASMA X-RAY SPECTRUM CALCULATION	LLL	7600	F	MA	U	W	\$TKOR, THIN	S202
PLAYERS	MHBR	360	F4	MA	U	T	\$CALIBRATION OF SURFACE	R 28
PLAYBACK SYSTEM	SLA	3100	COM	MA	U	P	\$INTERACTIVE MONITOR TELEMETRY	R 13
PLOT SYSTEM FOR GRAPHICAL OUTPUT	EGGG	6400	COM	MA	U	P	\$EGG GENERAL	R178
PLOT, AUTOMATIC PLOTTING FOR THE GERBER 2000	RFD	360	F4	MA	U	P	\$	R 14
PLOTR, 2-D CONTOUR AND AREA CALCULATION	SLA	6600	F4	MA	U	P	\$	R 5
PLOTTING	LLL	PD11	BASIC	LLL	U	O	\$LIF/PLOT, LITHIUM FLUORIDE SPECTRUM	145
PLOTTING FOR THE GERBER 2000	RFD	360	F4	MA	U	P	\$PLOT, AUTOMATIC	R 14
PLOTTING PACKAGE	SLA	PD10	F4	MA	D	P	\$GERBER SERIES 1200 & 2000	R 52
PLOTTING PACKAGE	SLA	1108	F4	MA	D	P	\$GERBER SERIES 1200 & 2000	R 52
PLOTTING PACKAGE	SLA	6600	F4	MA	D	P	\$GERBER SERIES 1200 & 2000	R 52
PLOTTING ROUTINES	LLL	MDCM	F+ASM	MA	U	P	\$MDCOMP TEKTRONIX 4010	141
PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	F4	MA	U	P	\$PICTURE, 30	97
PMM C K	\$GRASS, THE JOSHUA REACTOR ANALYSIS SUBSYSTEM	DP	360	F4				150
PMM C R	\$MARC, MAN-REM DOSE FROM ATMOSPHERIC TRANSPORT	DP	360	F4				130
PMM C P	\$STRAD, STREAM TRANSPORT DIFFUSION COEF CALC	DP	360	F4				129
PMM C R	\$TRAJCLIM, SINGLE TOWER DISPERSION CLIMATOLOGY	DP	360	F4				132
PMM D R	\$LODIPS, STREAM-RIVER POLLUTANT PREDICTION	DP	360	F4				131
PMM U C	\$INTERACT, INTERACTION OF FISSILE UNITS	DP	360	F4				173
PMM U D	\$GOSPEL, ACTININE PRODUCTION & DEPLETION STUDY	DP	360	F4				210
PMM U F	\$SHIFT, JOSHUA POINT-KINETICS SOLUTION MODULE	DP	360	F4				152
PMM U F	\$DISC., JOSHUA 2D SPACE-TIME FLUX CALC MODULES	DP	360	F4				153
PMM U F	\$SCRAM/WIGLE, 1D TRANSIENT NEUTRONICS MODULES	DP	360	F4				151
PMM U G	\$COMBACK, WHOLE BODY & CHEST RADIOACTIVITY CALC	DP	812	BASC				114
PMM U M	\$ADAM, LARGE DYNAMIC FILES DATA ACCESS METHOD	DP	360	F4				185
PMM U M	\$COMPUTER PROGRAM FOR LIBRARY BOOK CONTROL	DP	360	COBOL				174
PMM U M	\$TAFI, RADIOACTIVE WASTE MANAGEMENT PROGRAM	DP	360	F4				175
PMM U N	\$EDIT MODULES, JOSHUA PRINTED EDIT FACILITIES	DP	360	F4				155
PMM U N	\$RIFL, JOSHUA RESONANCE INTEGRAL MODIFICATIONS	DP	360	F4				154
PMM U O	\$OYNSDK, OPTIMAL DISK DATA SET RE-ORDERING	DP	360	F+BAL				115
PMM U P	\$LINEAR LEAST SQUARES FIT WITH STATISTICS	DP	360	F4				147
PMM U Z	\$GAMTAR, RADIOACTIVE DECAY GAMMA RAY CATALOG	DP	360	FBCDI				139
POINT SOURCE 2D WIND TRAJECTORY PROGRAM	DP	360	F4	OBE	C	R	\$TRJ,	127
POINT TABLE GENERATION	MHSM PDPR	FOCAL	MA	P	U		\$DEWP, PRESSURE DEW	237
POINT-KINETICS SOLUTION MODULE	DP	360	F4	PMM	U	E	\$SHIFT, JOSHUA	152
POISSON EQUATION SOLVR	LASL	6600	F	MA	U	P	\$D301, TRUNCATED BUNEMAN	64
POLLUTANT EMISSION PROJECTION	LLL	360	F4	LLL	U	R	\$PAVE, VEHICULAR	137
POLLUTANT EMISSION PROJECTION	LLL	6600	F4	LLL	U	R	\$PAVE, VEHICULAR	137
POLLUTANT PREDICTION	DP	360	F4	PMM	D	R	\$LODIPS, STREAM-RIVER	131
POLLUTANT SPREAD IN TORNADOIC STORM	DP	360	F4	OBE	U	R	\$TORNADO,	219
POLYNOMIAL CURVE FIT BY LEAST SQUARES ANALYSIS	RFD	360	F4	MA	U	P	\$	R 10
POLYNOMIAL SOLN OF SCHRODINGER EQUATION	LASL	7600	F4	MA	U	W	\$DEGAA,	89
POPULATION INTERACTION MODELING	LASL	1108	F4	MA	U	Y	\$BIOTA2, BIOME	78
POPULATION INTERACTION MODELING	LASL	6600	F4	MA	U	Y	\$BIOTA2, BIOME	78
POSITIONING	SLA	3600	F36	MA	U	S	\$SATLOC, SATFLLITE GEOGRAPHIC EVENT	R 23
POWDER PATTERN CRYSTAL INDEXING	RFD	360	F+BAL	MA	U	Q	\$INDEX, X-RAY	R 17
POWDER PATTERN INDEXING	LASL	6600	F4	MA	U	Q	\$INDEX, X-RAY	57
POWER CALCULATION OF MIXED ISOTOPES	MLMD	360	F4	MA	P	Q	\$ISOTAB, PU	R100
POWER PLANT CYCLE CALC	PKY	7600	F4	GEC	D	D	\$GENTHM, GEOTHERMAL	217
PREDICTING MANUFACTURING REQUIREMENTS	GFPI	GETS	BASIC	MA	P	W	\$MAPPER,	96
PREDICTION	DP	360	F4	PMM	D	R	\$LODIPS, STREAM-RIVER POLLUTANT	131
PREDICTION MODELS	DP	360	F4	OBE	C	P	\$NST, 2-1/2 DIMENSION	126
PRESSURE DEW POINT TABLE GENERATION	MHSM PDPR	FOCAL	MA	P	U		\$DEWP,	237
PRINTED EDIT FACILITIES	DP	360	F4	PMM	U	N	\$EDIT MODULES, JOSHUA	155
PRINTED-CIRCUIT BOARDS	SLA	1108	F4	MA	U	T	\$ACCFL(MOD2), DESIGN OF	R 27
PRINTED-CIRCUIT BOARDS	SLA	6600	F4	MA	U	T	\$ACCFL(MOD2), DESIGN OF	R 27
PROBABILITY OF GASES ON SOLID SURFACE	RFD	360	F4	MA	U	U	\$STICKING	R 35
PROCESSING PROGRAM	\$IAC	360	F4	P	U	P	\$FORMAT, A TEXT	12
PROCESSING ROUTINE	LLL	7600	CHAT	MA	U	N	\$SHEMP, HEMP PROGRAM 2D GRID	134
PROFILE ANALYSIS	LASL	6600	F4	MA	U	Q	\$UNFOLD, X-RAY DIFFRACTION	91
PROGRAMMING IN ALA76	LLL	7600	ALA76	MA	U	P	\$TIC-TAC-TOE, STRUCTURED	133
PROGRAMMING LANGUAGE	LLL	MCSP	ASM	MA	U	P	\$PROM, READ-ONLY MEMORY	117
PROGRAMMING SOLUTION	LLL	7600	LRL	CTR	U	P	\$SIMPLEX, GENERAL LINEAR	232
PROJECTION	LLL	360	F4	LLL	U	R	\$PAVE, VEHICULAR POLLUTANT EMISSION	137
PROJECTION	LLL	6600	F4	LLL	U	R	\$PAVE, VEHICULAR POLLUTANT EMISSION	137
PROJECTION & TEST IMAGE DATA GENERATOR	LLL	7600	LRL	OBE	U	Y	\$TESTIM,	S226

FROM

REDUCTION

FROM, READ-ONLY MEMORY PROGRAMMING LANGUAGE	LLL	MCS8	ASM	MA	U	P	\$	117
PROPAGATION CALCULATION	SLA	6600	F4	MA	U	S	\$MONDY3A, 1-D WAVE	R 21
PROPAGATION PROGRAM	SLA	3600	F36	MA	U	S	\$TOODY2, 2-DIMENSIONAL WAVE	R 47
PROPAGATION SIMULATION	LLL	7600	F	AT	U	R	\$SOC, 1-DIMENSIONAL WAVE	184
PROPERTIES OF EXPLOSIVES	LASL	360	F4	MA	U	G	\$BKW, DETONATION	84
PROPERTIES OF EXPLOSIVES	LASL	7600	F4	MA	U	G	\$BKW, DETONATION	84
PROPERTY DATA COMPILATION	LLL	6600	F+LRL	MA	U	M	\$TRUMP/XB2, THERMAL	R 38
PROPERTY INVENTORY & ACCOUNTING SYSTEM	CSCN	6600	COBOL	RLO	U	M	\$CUE,	162
PROTON SCATTERING BY HELIUM	LASL	6600	F4	MA	U	M	\$SHEL GAS, ELECTRON &	92
PII POWER CALCULATION OF MIXED ISOTOPES	MLMO	360	F4	MA	P	Q	\$ISOTAB,	R100
PURCHASE VERSUS LEASE ANALYSIS	SLA	360	COBOL	MA	U	M	\$BECOM, AEC	R 4
PURCHASE VERSUS LEASE ANALYSIS	SLA	1108	COBOL	MA	U	M	\$BECOM, AEC	R 4
PUTT MA U P \$PDP-RE, INTERACTIVE SIMULATOR ON THE CDC7600	LLL	7600						143
PVT CALIBRATION SYSTEM CONTROL CODE	MLMO	PDP8	FOCAL	MA	U	T	\$PVTALC,	211
PVT CALIBRATION SYSTEM DATA ANALYSIS	MLMO	PDP8	FOCAL	MA	U	O	\$PVTALC,	212
PVTALC, PVT CALIBRATION SYSTEM DATA ANALYSIS	MLMO	PDP8	FOCAL	MA	U	O	\$	212
PVTALC, PVT CALIBRATION SYSTEM CONTROL CODE	MLMO	PDP8	FOCAL	MA	U	T	\$	211
PYROTECHNIC ACTUATOR	LLL	6600	F	MA	U	T	\$ACDES, A CODE TO DESIGN A	188
QMESHPNUM, SELF-ORGANIZING MESH GENERATION	SLA	6600	F	MA	P	I	\$	172
QUALITY ASSURANCE STATISTICAL CODE	BKCD	360	F4	MA	U	P	\$HISTOGRAMS,	74
QUALITY CONTROL PROGRAM	BKCD	360	F4	MA	U	P	\$GROUPS COMPARISON,	R 75
QUIK SNS U S \$HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	7044						R 24
QUIK SNS U S \$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	7040						R 25
QUIK SNS U S \$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	7040						R 20
Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER	LASL	6600	F4	MA	U	P	\$	60
R D M \$RODFAS, FUEL ROD FABRICATION PLANT SIMULATION	LLL	6600	F+GSP					\$200
R P P \$SHORTANO, A MACRO-BASED STRUCTURED FORTRAN	SLAC		ANSIF					221
R P V \$TRANSPORT, DESIGN OF CHARGE PARTICLE BEAMS	SLAC	370	F4					220
R U P \$RABP, TEXT-FORMATTING PROGRAM DOCUMENTING AID	BKY	6600	F+COM					191
R U P \$FORMAT, A TEXT PROCESSING PROGRAM	SLAC	360	F4					12
R U C \$IAMB360 UTILITY AND PDP9/15 ASCII MAG TAPE R/W	SLAC	360	F+RAL					11
R U V \$SLAC ELECTRON GUN DESIGN PROGRAM	SLAC	360	PL/1					36
R-MATRIX FAST-SQUARES CROSS SECTIONS	LASL	7600	F4	MA	U	A	\$MULTI,	119
R/W SLAC 360 F+RAL R U C \$IAMB360 UTILITY AND PDP9/15 ASCII MAG TAPE								11
RADF-2, GAS PHASE RADIOLYSIS DATA REDUCTION	REF	360	F4	MA	U	U	\$	R 31
RADF, GAS PHASE RADIOLYSIS DATA REDUCTION	REF	210	F2	MA	U	U	\$	P 31
RADIATION SCIENCES PERSONNEL DATA	REEC	6400	COBOL	MA	U	M	\$RADSAFE,	180
RADIOACTIVE DECAY GAMMA RAY CATALOG	DP	360	ERCD	PMM	U	Z	\$GAMTAB,	139
RADIOACTIVE DECAY GROWTH OF NUCLEI	REF	360	F4	MA	U	O	\$ISOGEN,	R 1
RADIOACTIVE WASTE MANAGEMENT PROGRAM	DP	360	F4	PMM	U	M	\$TAFF,	175
RADIOACTIVITY CALC DP P12 RASC PMM U G \$COWBACP, WHOLE BODY & CHEST								114
RADIOLYSIS DATA REDUCTION	REF	210	F2	MA	U	U	\$RADF, GAS PHASE	R 31
RADIOLYSIS DATA REDUCTION	REF	360	F4	MA	U	U	\$RADF-2, GAS PHASE	R 31
RADIUS UPPER AIR STUDY	DP	360	F4	DBE	C	P	\$VARSCN, VARIABLE SCAN	128
RADSAFE, RADIATION SCIENCES PERSONNEL DATA	REEC	6400	COBOL	MA	U	M	\$	180
RALCRON, RESOURCE ALLOCATION BY CRITICAL PATH	MLMO	360	F+C+P	MA	U	M	\$	R 3
RANDOM SAMPLING TABLE NON-BIAS ORDER	MLMO	360	F4	MA	U	M	\$RND424RQ,	190
RANDOM-NUMBER GENERATION	LLL		ANSIF	MA	U	P	\$RFIR, FIBONACCI	177
RATS, DISOS/ARPA PDP-11 OPERATING SYSTEM	LLL	PDI1	ASM	ARD	D	P	\$	181
RAY CATALOG	DP	360	ERCD	PMM	U	Z	\$GAMTAB, RADIOACTIVE DECAY GAMMA	139
RAY TRACING UNSTEADY FLOW	LASL	6600	F4	MA	U	H	\$RAYTRACE, ACOUSTIC	199
RAYTRACE, ACOUSTIC RAY TRACING UNSTEADY FLOW	LASL	6600	F4	MA	U	H	\$	199
RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	6600	F4	MA	U	M	\$	112
RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	7600	F4	MA	U	M	\$	112
RT-ORDERING	DP	360	F+RAL	PMM	U	P	\$DYNSCK, OPTIMAL DISK DATA SET	115
REACTION DATA REDUCTION	REF	360	F4	MA	U	U	\$GAS-GAS & GAS-SOLID	R 32
REACTION KINETICS	REF	360	F4	MA	U		\$ERLF, SPECTROPHOTOMETRIC	R 30
READ-ONLY MEMORY PROGRAMMING LANGUAGE	LLL	MCS8	ACI	MA	U	P	\$FROM,	117
REALLY, GAS TURBINE HTGR TRANSIENT MODEL	GA	110	F5	RND	D	K	\$	121
RECNG, PATTERN RECOGNITION ANALYSIS	LLL	6600	F	MA	U	U	\$	146
RECOGNITION ANALYSIS	LLL	6600	F	MA	U	U	\$RECNG, PATTERN	146
RECOMPUTATION PROGRAM	LLL	7600	LPL	DRE	U		\$FLATLAND, A 3-D OBJECT	\$225
RECORD FILE SYSTEM	MHSM	360	C+RAL	MA	U	M	\$MPR PRODUCT	R 43
REDUCTION	REF	210	F2	MA	U	U	\$RADF, GAS PHASE RADIOLYSIS DATA	R 31
REDUCTION	LLL	7600	F4	MA	J	U	\$MAB, SATURATION SPECTROSCOPY DATA	135
REDUCTION	REF	360	F4	MA	U	U	\$GAS-GAS & GAS-SOLID REACTION DATA	R 32

REDUCTION

ROD

REDUCTION	RFD	360	F4	MA	U	U	\$RADF-2, GAS PHASE RADIOLYSIS DATA	R 31
REFC 6400	C+F	MA	C	M			\$BIOHYTHM SYSTEM FOR PERSONAL INJURY ANALYSIS	196
REFC 6400	COBOL	MA	U	M			\$RADSAFE, RADIATION SCIENCES PERSONNEL DATA	180
REFC 6400	COBOL	MA	U	M			\$SAFETY REPORTING & COST SYSTEM	195
REFENTRY		SLA	1108	F4	SNS	U	\$HRS017, MULTIPLE REVOLUTION	R 20
REFENTRY		SLA	3600	F4	SNS	U	\$HRS017, MULTIPLE REVOLUTION	R 20
REFENTRY		SLA	6600	F4	SNS	U	\$HRS017, MULTIPLE REVOLUTION	R 20
REFENTRY		SLA	7040	QUIK	SNS	U	\$HRS017, MULTIPLE REVOLUTION	R 20
REFENTRY PARAMETERS OF DECAYING OBJECTS		SLA	1108	F4	SNS	U	\$HRS004,	R 24
REFENTRY PARAMETERS OF DECAYING OBJECTS		SLA	3600	F36	SNS	U	\$HRS004,	R 24
REFENTRY PARAMETERS OF DECAYING OBJECTS		SLA	6600	F4	SNS	U	\$HRS004,	R 24
REFENTRY PARAMETERS OF DECAYING OBJECTS		SLA	7044	QUIK	SNS	U	\$HRS004,	R 24
REFLOODING RATE CALCULATION ECC		ANC	360	F4	RSR	U	\$FLOOD, CORE	167
REGRESSION & CONFIDENCE INTERVAL CALC		BKCD	360	F4	MA	U	\$GRAPH,	76
REIMBURSEMENT SYSTEM		GEPI	435	COBOL	MA	U	\$GE MEDICAL INSURANCE	R 39
RELEASE PNWL 1108 BASIC RS		U	G	\$ARRRG, DOSE TO MAN FROM REACTOR LIQUID				108
RELEASES PNWL 1108 BASIC RS		U	G	\$GRONK, DOSE TO MAN FROM REACTOR GAS				106
REMOTE ALARM SENSOR MONITORING PROGRAM		LLL	MC54	ASM	DBE	U	\$ALARM,	136
REMOVED LASL 6600 F4		MA	U	P	\$PICTURE, 3D PLOTTING WITH HIDDEN LINES			97
RENUM, SELF-ORGANIZING MESH GENERATION		SLA	6600	F	MA	P	\$OMESH,	172
RENUP/RENRD, LIBRARY JOURNAL ORDERING PROGRAM		ANL	360	P+BAL	ANL	U	\$	157
REPORT LASL 6600 F		MA	U	M	\$HVL, EXHAUST HOOD VELOCITY MEASUREMENT			198
REPORTING & COST SYSTEM		PEEC	6400	COBOL	MA	U	\$SAFETY	195
REPORTS SYSTEM MLMO 360 PL/1		MA	P	M	\$MIRROR, INFORMATION RETRIEVAL &			R120
RESERVATION SYSTEM		CSCN	6600	F+COM	RLO	U	\$RLTRS, RL MAGNETIC TAPE	125
RESISTANCE CALIBRATION		MHSM	360	F4	MA	U	\$WHEATSTONE BRIDGE	R 45
RESONANCE		ANC	360	F4	RRO	U	\$SCRABLE, MULTI-GP FAST CONSTANTS	170
RESONANCE INTEGRAL MODIFICATIONS DP		360	F4	PMM	U	N	\$RIFLE, JOSHUA	154
RESOURCE ALLOCATION BY CRITICAL PATH MLMO 360		F+C+P	MA	U	M	\$RALCRTPH,	R 3	
RESPONSE LLL 6600 F4		LLL	U	N	\$LIF/RESPONSE, LITHIUM FLOURIDE GAMMA			144
RESPONSE SLA 6600 F4		MA	P	I	\$SLADE-D, FINITE ELEMENT DYNAMIC SHELL			98
RESPONSE CALC LLL 7600 F4		MA	U	T	\$WT-MRA/LLL1B, ELECTROMAGNETIC			156
RETRIEVAL		FGEG	PD10	F+MAC	MA	U	\$MAXI, NADS DATA BASE STORAGE &	R194
RETRIEVAL SLA 1108 F+BAL		MA	P	M	\$SPIRAL, FULL-TEXT STORAGE, SEARCH &			R 99
RETRIEVAL & REPORTS SYSTEM MLMO 360 PL/1		MA	P	M	\$MIPROR, INFORMATION			R120
REVOLUTION RFD 400 F		MA	U	P	\$SURFACE AREA & VOLUME OF A SOLID OF			R 9
REVOLUTION REENTRY		SLA	1108	F4	SNS	U	\$HRS017, MULTIPLE	R 20
REVOLUTION REENTRY		SLA	3600	F4	SNS	U	\$HRS017, MULTIPLE	R 20
REVOLUTION REENTRY		SLA	6600	F4	SNS	U	\$HRS017, MULTIPLE	R 20
REVOLUTION REENTRY		SLA	7040	QUIK	SNS	U	\$HRS017, MULTIPLE	R 20
RFD 210 F2		MA	U	U	\$RADF, GAS PHASE RADIOLYSIS DATA REDUCTION			R 31
RFD 360 F+BAL		MA	U	P	\$CONVERSION FROM PAPER TAPE TO CARD OR DISK			R 8
RFD 360 F+BAL		MA	U	Q	\$INDEX, X-RAY POWDER PATTERN CRYSTAL INDEXING			R 17
RFD 360 F4		MA	U	P	\$ISOGN, RADIOACTIVE DECAY GROWTH OF NUCLIDES			R 1
RFD 360 F4		MA	U	P	\$PLOT, AUTOMATIC PLOTTING FOR THE GERRER 2000			R 14
RFD 360 F4		MA	U	P	\$POLYNOMIAL CURVE FIT BY LEAST SQUARES ANALYSIS			R 10
RFD 360 F4		MA	U	Q	\$CALCULATION OF CRYSTALLOGRAPHIC FUNCTIONS			R 18
RFD 360 F4		MA	U	Q	\$SURFACE FILM ELLIPSOMETER MEASUREMENT ANALYSIS			R 16
RFD 360 F4		MA	U	U	\$SERF, SPECTROPHOTOMETRIC REACTION KINETICS			R 30
RFD 360 F4		MA	U	U	\$GAS-GAS & GAS-SOLID REACTION DATA REDUCTION			R 32
RFD 360 F4		MA	U	U	\$RADF-2, GAS PHASE RADIOLYSIS DATA REDUCTION			R 31
RFD 360 F4		MA	U	U	\$STICKING PROBABILITY OF GASES ON SOLID SURFACE			R 35
RFD 400 BASIC		MA	U	U	\$CHEMICAL DIFFUSIVITIES BY BOLTZMAN-MATANO			R 34
RFD 400 F		MA	U	P	\$SURFACE AREA & VOLUME OF A SOLID OF REVOLUTION			R 9
RFD 400 F		MA	U	U	\$DYNAMIC ANALYSIS OF GASES BY MASS SPECTROMETRY			R 33
RFD 400 F4		MA	U	P	\$NON-LINEAR LEAST SQUARES FITTING OF FUNCTIONS			R 7
REIR, FIBONACCI RANDOM-NUMBER GENERATION		LLL		ANSIF	MA	U	\$	177
RIFLE, JOSHUA RESONANCE INTEGRAL MODIFICATIONS DP		360	F4	PMM	U	N	\$	154
RISOS/ARPA PDP-11 OPERATING SYSTEM		LLL	PD11	ASM	ARP	D	\$RATS,	161
RL MAGNETIC TAPE RESERVATION SYSTEM		CSCN	6600	F+COM	RLO	U	\$RLTRS,	125
RLO U M		\$CIF, PROPERTY INVENTORY & ACCOUNTING SYSTEM		CSCN	6600	COBOL		162
RLO U M		\$JORSHP, JOBSHOP ENVIRONMENT SCHEDULING SYSTEM		CSCN	6600	FTN		160
RLO U M		\$PLTRS, RL MAGNETIC TAPE RESERVATION SYSTEM		CSCN	6600	F+COM		125
RLTRS, RL MAGNETIC TAPE RESERVATION SYSTEM		CSCN	6600	F+COM	RLO	U	\$	125
RND42420, RANDOM SAMPLING TABLE NON-BIAS ORDER		MLMO	360	F4	MA	U	\$	190
ROD FABRICATION PLANT SIMULATION		LLL	6600	F+GSP	R	D	\$RODFAS, FUEL	S200

RODFAB

SKILLS

RODFAB, FUEL ROD FABRICATION PLANT SIMULATION	LLL	6600	F+GSP	R	D	M	\$	S200
RRD D K \$REALLY, GAS TURBINE HTGR TRANSIENT MODEL	GA	1108	F5					121
RRD P G \$SAFTAC, MONTE CARLO FAULT TREE SIMULATION	UNI	1108	F+SLE					193
RRD P I \$AXICPP, FINITE ELEMENT CODE FOR CREEP ANALYSIS	HEOL	6500	F					206
PRD U B \$PHRNG2, MULTI-GP X-SECTIONS FAST SPECTRUM CALC	ANC	360	F4					168
RRD U B \$SCRABLE, MULTI-GP FAST CONSTANTS RESONANCE	ANC	360	F4					170
RRD U C \$DISNFI, DIFFUSION SOLUTION 19 ENERGY LEVELS	ANC	360	F4					166
RRD U C \$SCAMP, MULTI-GP SN NEUTRON TRANSPORT CODE	ANC	360	F4					171
RRD U C \$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	360	F					77
RRD U C \$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	6600	F					77
RRD U C \$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	7600	F					77
RRD U I \$ELTEMP, ELEVATED TEMPERATURE PIPING EVALUATION	WARD	7600	F					R222
RRD U I \$NUROW, STRUCTURAL ANALYSIS BOWED REACTOR CORES	ANL	360	F4					176
RRD U M \$CUP, PAYROLL & PERSONNEL ACCOUNTING SYSTEM	CSCN	6600	COBOL					218
RRD U P \$NRTS-IGS GRAPHICS SOFTWARE FOR III FR-80 COM	ANC	360	F+BAL					165
RRD U Z \$NCRITE LIBRARY, THERMAL X-SECTIONS FNDF/R DATA	ANC	360	91N					169
RS U G \$ARRPG, DOSE TO MAN FROM REACTOR LIQUID RELEASE	BNWL	1108	BASIC					108
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RS U G \$GRONK, DOSE TO MAN FROM REACTOR GAS RELEASES	BNWL	1108	BASIC					106
RRP U F \$FLOOD, CORE FLOODING RATE CALCULATION FCC	ANC	360	F4					167
RTSX SYSTEM EXECUTIVE FOR USE WITH FOCAL-X	LLL	PDP8	PAL8	LLL	U	T	\$	S231
RUNGE-KUTTA ODE INTEGRATION ROUTINE	SLA	6600	F+COM	MA	D	P	\$PUNKUT,	R 26
PUNKUT, RUNGE-KUTTA ODE INTEGRATION ROUTINE	SLA	6600	F+COM	MA	D	P	\$	R 26
SAFTY REPORTING F COST SYSTEM	REFC	6400	COBOL	MA	U	M	\$	195
SAFTAC, MONTE CARLO FAULT TREE SIMULATION	UNI	1108	F+SLE	RRD	P	G	\$	193
SAMPLING TABLE NON-BIAS ORDER MCMC	360	F4	MA	U	M	\$RND424RQ, RANDOM		190
SANDIA SCOPE USERS' MANUAL FOR THE CDC6600	SLA	6600	FTN	MA	U	P	\$	R 6
SANPIC, PARTICLE-IN-CELL PROGRAM	SLA	6600	F+COM	MA	U	H	\$	R 49
SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	3600	F36	MA	U	S	\$SATLOC,	R 23
SATLOC, SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	3600	F36	MA	U	S	\$	R 23
SATURATION SPECTROSCOPY DATA REDUCTION	LLL	7600	F4	MA	U	W	\$MAB,	135
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SCAN RADIUS UPPER AIR STUDY	DP	360	F4	DBE	C	R	\$VARCON, VARIABLE	128
SCATTERING BY HELIUM	LASL	6600	F4	MA	U	W	\$HEL GAS, ELECTRON & PROTON	92
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SCHRODINGER EQUATION	LASL	7600	F4	MA	U	W	\$DEGAA, POLYNOMIAL SOLN OF	89
SCIENCES PERSONNEL DATA	REFC	6400	COBOL	MA	U	M	\$RADSAFE, RADIATION	180
SCOPE USERS' MANUAL FOR THE CDC6600	SLA	6600	FTN	MA	U	P	\$SANDIA	R 6
SCRABLE, MULTI-GP FAST CONSTANTS RESONANCE	ANC	360	F4	RRD	U	B	\$	170
SCRAMWIGLE, 1D TRANSIENT NEUTRONICS MODULES	DP	360	F4	PMM	U	F	\$	151
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SHELL RESPONSE	SLA	6600	F4	MA	P	I	\$SLADE-D, FINITE ELEMENT DYNAMIC	98
SHELLS	SLA	6600	F+COM	MA	U	I	\$SLADE, STATIC ANALYSIS OF THIN	R 2
SHEMP, HEMP PROGRAM 2D GRID PROCESSING ROUTINE	LLL	7600	CHAT	MA	U	N	\$	134
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SIGMA-1, FNDF/R X-SEC DATA DOPPLER-BROADENING	LLL	7600	F4	MA	D	B	\$	227
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SIMULATION	UNI	1108	F+SLE	RRD	P	G	\$SAFTAC, MONTE CARLO FAULT TREE	193
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SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	6600	F4	MA	U	G	\$	80
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SLA	1108	F4	SNS	U	\$HR5015, BALLISTIC COEFFICIENT COMPUTATION	R 25
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SLA	3600	F4	SNS	U	\$HR5017, MULTIPLE REVOLUTION REENTRY	R 20
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SLA	6600	F4	SNS	U	\$HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	R 24
SLA	6600	F4	SNS	U	\$HR5015, BALLISTIC COEFFICIENT COMPUTATION	R 25
SLA	6600	F4	SNS	U	\$HR5017, MULTIPLE REVOLUTION REENTRY	R 20
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SLADE, STATIC ANALYSIS OF THIN SHELLS	SLA	6600	F4	MA	P	I \$
SMAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	SLA	6600	F+COM	MA	U	I \$
SMOOTH CONTINUOUS SPECTRA	LASL	6600	F4	MA	U	D \$
SMOOTHING ROUTINES CATEGORY F2	LASL	6600	F4	MA	U	P \$
SN NEUTRON TRANSPORT CODE	ANC	360	F4	RRD	U	C \$
SNS U \$	\$HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	1108	F4		R 24
SNS U \$	\$HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	3600	F36		R 24
SNS U \$	\$HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	3600	F4		R 24
SNS U \$	\$HR5004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	7044	QUIK		R 24
SNS U \$	\$HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	1108	F4		R 25
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SNS U \$	\$HR5015, BALLISTIC COEFFICIENT COMPUTATION	SLA	6600	F4		R 25
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SUBSYSTEM

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SNS U S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	3600 F4	R 20
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STEADY-STATE FLUID FLOW	LLL 6600 F4	MA U H	\$TRUMP, TRANSIENT AND	R 37
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TABULATED DATA	SLA	6600	F4	MA	U	P	\$AVINT, INTEGRATION OF R 50
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TESTIM, PROJECTION & TEST IMAGE DATA GENERATOR	LLL	7600	LRL	DBE	U	Y	\$ S226
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TIC-TAC-TOE, STRUCTURED PROGRAMMING IN ALA76	LLL	7600	ALA76	MA	U	P	\$ 133
TIME SERIES CATEGORY C6	LASL	6600	F4	MA	U	P	\$SPECTRAL ANALYSIS OF 70
TKOR, THIN PLASMA X-RAY SPECTRUM CALCULATION	LLL	7600	F	MA	U	W	\$ S202
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TORNADIC, POLLUTANT SPREAD IN TORNADIC STORM	DP	360	F4	DRE	U	R	\$ 219
TOWER DISPERSION CLIMATOLOGY	DP	360	F4	PMM	C	R	\$ STRAJCLIM, SINGLE 132
TRACING UNSTEADY FLOW	LASL	6600	F4	MA	U	H	\$RAYTRACE, ACOUSTIC RAY 199
TRAJCLIM, SINGLE TOWER DISPERSION CLIMATOLOGY	DP	360	F4	PMM	C	R	\$ 132
TRAJECTORIES	LLL	7600	F400	CTR	U	X	\$TIBRO-GENERAL, CHARGED-PARTICLE 118
TRAJECTORY PROGRAM	DP	360	F4	DBE	C	R	\$TRJ, POINT SOURCE 2D WIND 127
TRAMP, TAPE LIBRARY MANAGEMENT PROGRAM	ALOC	B283	COBOL	MA	U	M	\$ R 40
TRANSFER	LASL	6600	F4	MA	U	P	\$Q409, EXTENDED COPE STORAGE I/O DATA 60
TRANSFORMATION SYSTEM	SLA	6600	FTN	MA	P	P	\$SETS, SET EQUATION R101
TRANSFORMER DESIGN COMPUTATION	MHSM	PDPR	F0CAL	MA	P	T	\$TDES, AUDIO 236
TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	3600	F4	MA	U	H	\$TRUMP, R 37
TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	6600	F4	MA	U	H	\$TRUMP, R 37
TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600	F4	MA	U	H	\$TRUMP, R 37
TRANSIENT GAS FLOW	LLL	7600	F	MA	U	H	\$STROCCO, CALCULATION OF 213
TRANSIENT MODEL	GA	1108	F5	RDD	D	K	\$REALLY, GAS TURBINE MTGR 121
TRANSIENT NEUTRONICS MODULES	DP	360	F4	PMM	U	F	\$SCRAM/WIGLE, 1D 151
TRANSPORT	LASI	360	F	RDD	U	C	\$TRIPLT, TRIANGULAR MESH MULTI-GP 77
TRANSPORT	LASI	6600	F	RDD	U	C	\$TRIPLT, TRIANGULAR MESH MULTI-GP 77
TRANSPORT	LASI	7600	F	RDD	U	C	\$TRIPLT, TRIANGULAR MESH MULTI-GP 77
TRANSPORT	DP	360	F4	PMM	C	R	\$MARC, MAN-RFM DOSE FROM ATMOSPHERIC 130
TRANSPORT CODE	ANC	360	F4	RDD	U	C	\$SCAMP, MULTI-GP SN NEUTRON 171
TRANSPORT CODE	LLL	6600	CHAT	MA	U	C	\$MORSE-L, MONTE CARLO MULTIGROUP R142
TRANSPORT DIFFUSION COEF CALC	DP	360	F4	PMM	C	R	\$TETRAD, STREAM 129
TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	J	\$MCG, GAMMA 82

TRANSPORT

WAVES

TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	J	\$MCP, PHOTON	83
TRANSPORT MONTE CARLO CODE	LASL	7600	F4	MA	U	R	\$MCN, NEUTRON	81
TRANSPORT, DESIGN OF CHARGED PARTICLE BEAMS	SLAC	370	F4	R	P	V	\$	220
TRANSPPOSITION METHOD	MHSM	360	F4	MA	U	Q	\$MASS DETERMINATION BY	R 42
TRAPPING	DP	360	F4	MA	U	Q	\$XOTRAP, GAS DIFFUSION WITH	148
TREE SIMULATION	UNI	1108	F+SLF	RRD	P	G	\$SAFTAC, MONTE CARLO FAULT	193
TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	360	F	RRD	U	C	\$TRIPLET,	77
TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	6600	F	RRD	U	C	\$TRIPLET,	77
TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	7600	F	RRD	U	C	\$TRIPLET,	77
TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	360	F	RRD	U	C	\$	77
TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	6600	F	RRD	U	C	\$	77
TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	7600	F	RRD	U	C	\$	77
TRJ, POINT SOURCE 2D WIND TRAJECTORY PROGRAM	DP	360	F4	DBE	C	R	\$	127
TRUMP/HR2, THERMAL PROPERTY DATA COMPILATION	LLL	6600	F+RL	MA	U	H	\$	R 38
TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	3600	F4	MA	U	H	\$	R 37
TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	6600	F4	MA	U	H	\$	R 37
TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	7600	F4	MA	U	H	\$	R 37
TRUNCATED RUNEMAN POISSON EQUATION SOLVR	LASL	6600	F	MA	U	P	\$D301,	64
TURBINE HTGR TRANSIENT MODEL	GA	1108	F5	RRD	O	K	\$REALLY, GAS	121
UEND PD11 MACRO CTR U T	\$MEMSEG, BANK BY BANK MEMORY DIAGNOSTIC OR TEST							204
UILL 760 F4	P D	\$GEM, ANALYSIS OF NUCLEAR FUEL CYCLE ECONOMICS						102
UNFOLD, X-RAY DIFFRACTION PROFILE ANALYSIS	LASL	6600	F4	MA	U	Q	\$	91
UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL	6600	F4	MA	U	D	\$CONFOLD,	95
UNI 1108 F+SLF PRD P G	\$SAFTAC, MONTE CARLO FAULT TREE SIMULATION							193
UNICALR, PDP-11 BASIC SPECTROCHEMICAL ANALYSIS	LASL	PD11	BASIC	MA	U	U	\$	122
UNITS	DP	360	F4	PMM	U	C	\$INTERACT, INTERACTION OF FISSION	173
UNIVERSAL DENSITY CONTROL PROGRAM	MHSM	360	F4	MA	U	Q	\$	R 44
UNSTEADY FLOW	LASL	6600	F4	MA	U	H	\$RAYTRACF, ACOUSTIC RAY TRACING	199
UPPER AIR STUDY	DP	360	F4	DBE	C	R	\$VARSCN, VARIABLE SCAN RADIUS	128
USE WITH FOCAL-X	LLL	PDP8	PAL8	LLL	U	T	\$PTX SYSTEM EXECUTIVE FOR	S231
USER'S MANUAL FOR THE CDC6600	SLA	6600	FTN	MA	U	P	\$SANDIA SCOPE	R 6
UTILITY AND PDP9/15 ASCII MAG TAPE R/W	SLAC	760	F+BAL	R	U	P	\$IBM360	11
VALUE CALC	LASL	6600	F4	MA	U	W	\$IT, ITERATIVE ATOMIC-ENERGY-LEVEL	105
VALUES	LASL	6600	F4	MA	P	W	\$CALOP, WAVE NUMBERS DERIVED FROM LEVEL	104
VALUES CALCULATION	LASL	6600	F4	MA	P	W	\$LEVEL, ATOMIC-ENERGY-LEVEL	103
VAN DER WALL'S EQUATION OF STATE OF GASES	MHSM	PDP8	FOCAL	MA	P	U	\$VOW,	238
VARIABLE SCAN RADIUS UPPER AIR STUDY	DP	360	F4	DBE	C	R	\$VARSCN,	128
VARIANCE	MLMD	360	F4	MA	P	P	\$LATIN SQ, LATIN SQUARE ANALYSIS OF	203
VARSCN, VARIABLE SCAN RADIUS UPPER AIR STUDY	DP	360	F4	DBE	C	R	\$	128
VOW, VAN DER WALL'S EQUATION OF STATE OF GASES	MHSM	PDP8	FOCAL	MA	P	U	\$	238
VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1	LASL	6600	F4	MA	U	P	\$	67
VECTOR FUNCTION ROUTINES	LLL	7600	F+CCM	MA	U	P	\$SUR/STACKLIB, FORTRAN	116
VECTORS	SLA	6600	F4	MA	U	P	\$SEVER, SYMMETRIC MATRIX EIGENVALUES &	R 48
VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	360	F4	LLL	U	R	\$PAVE,	137
VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	6600	F4	LLL	U	R	\$PAVE,	137
VFL, CYLINDER WALL VELOCITY DETERMINATION CALC	LASL	6600	F	MA	U	O	\$	197
VELOCITY	LLL	9830	BASIC	MA	U	Q	\$HP9830 MOLE WGT, VOL, & DETONATION	229
VELOCITY DETERMINATION CALC	LASL	6600	F	MA	U	D	\$VEL, CYLINDER WALL	197
VELOCITY MEASUREMENT REPORT	LASL	6600	F	MA	U	M	\$HVL, EXHAUST HOOD	198
VENT, EXHAUST VENTILATION SIZING & BALANCING	LLL	7600	F4	LLL	U	T	\$	205
VENTILATION SIZING & BALANCING	LLL	7600	F4	LLL	U	T	\$VENT, EXHAUST	205
VERSSON 2.2	LASL	6600	F+CCM	MA	U	W	\$LASL LENS DESIGN PROGRAM	58
VIA AUGMENTED PLANE WAVES	LASL	6600	F+CCM	MA	U	W	\$APW, ENERGY BANDS	111
VOL, & DETONATION VELOCITY	LLL	9830	BASIC	MA	U	Q	\$HP9830 MOLE WGT,	229
VOLUME OF A SOLID OF REVOLUTION	RFD	400	F	MA	U	P	\$SURFACE AREA &	R 9
W/COUNT CONTROL	LASL	6600	F4	MA	U	P	\$N103, ERROR TERMINATION MESSAGE	72
WALL VELOCITY DETERMINATION CALC	LASL	6600	F	MA	U	O	\$VEL, CYLINDER	197
WALL'S EQUATION OF STATE OF GASES	MHSM	PDP8	FOCAL	MA	P	U	\$VOW, VAN DER	238
WARD 7600 F	RRD	U	I	SELTEMP, ELEVATED TEMPERATURE PIPING EVALUATION				R222
WASTE MANAGEMENT PROGRAM	DP	360	F4	PMM	U	M	\$TAFI, RADIOACTIVE	175
WAVE ANALYSIS PROGRAM	SLA	6600	F4	MA	U	S	\$SWAP9, STRESS	R 22
WAVE NUMBERS DERIVED FROM LEVEL VALUES	LASL	6600	F4	MA	P	W	\$CALOP,	104
WAVE PROPAGATION CALCULATION	SLA	6600	F4	MA	U	S	\$WNOY3A, 1-D	R 21
WAVE PROPAGATION PROGRAM	SLA	3600	F36	MA	U	S	\$TOODY2, 2-DIMENSIONAL	R 47
WAVE PROPAGATION SIMULATION	LLL	7600	F	AT	U	R	\$SIC, 1-DIMENSIONAL	184
WAVES	LASL	6600	F+CCM	MA	U	W	\$APW, ENERGY BANDS VIA AUGMENTED PLANE	111

WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN	LLL	7600	LRL	LLL	U	T	\$	233
WGHT, VOL, & DETONATION VELOCITY	LLL	9830	BASIC	MA	U	O	\$HP9830 MOLE	229
WHEATSTONE BRIDGE RESISTANCE CALIBRATION			MHSM	360	F4		MA U T	R 45
WHOLE BODY & CHEST RADIOACTIVITY CALC	DP	812	BASC	PMM	U	G	\$COWBACR,	114
WIND TRAJECTORY PROGRAM	DP	360	F4	OBE	C	R	\$TRJ, POINT SOURCE 2D	127
WIRE CONFIGURATION, FREQUENCY DOMAIN	LLL	7600	LRL	LLL	U	T	\$WF-LLL2A,	233
WONDY3A, 1-D WAVE PROPAGATION CALCULATION		SLA	6600	F4		MA	U S	R 21
WRITE NULL CHARACTERS OVERLAY	MHSM	PDP8	MACH	MA	P	P	\$FWNO, FOCAL-69	234
WT-MBA/LLL18, ELECTROMAGNETIC RESPONSE CALC		LLL	7600	F4			MA U T	156
X-RAY DIFFRACTION PROFILE ANALYSIS	LASL	6600	F4		MA	U	Q \$UNFOLD,	91
X-RAY POWDER PATTERN CRYSTAL INDEXING	RFD	360	F+BAL		MA	U	Q \$INDEX,	R 17
X-RAY POWDER PATTERN INDEXING	LASL	6600	F4		MA	U	Q \$INDX,	57
X-RAY SPECTRUM CALCULATION	LLL	7600	F		MA	U	W \$TKOR, THIN PLASMA	S202
X-SFC DATA DOPPLER-BROADENING	LLL	360	F4		MA	D	B \$SIGMA-1, ENDF/B	227
X-SFC DATA DOPPLER-BROADENING	LLL	7600	F4		MA	D	B \$SIGMA-1, ENDF/B	227
X-SECTIONS ENDF/B DATA AND	360	BIN	RRD	U	Z		\$INCITE LIBRARY, THERMAL	169
X-SECTIONS FAST SPECTRUM CALC AND	360	F4	RRD	U	B		\$PHRNG2, MULTI-GP	168
XOTRAP, GAS DIFFUSION WITH TRAPPING		DP	360	F4		MA	U Q	\$
YAQUI, LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	7600	F4		MA	U	H	\$
1-D WAVE PROPAGATION CALCULATION	SLA	6600	F4		MA	U	S \$WONDY3A,	R 21
1-DIMENSIONAL WAVE PROPAGATION SIMULATION	LLL	7600	F			AT	U R \$SOC,	184
1D TRANSIENT NEUTRONICS MODULES	DP	360	F4		PMM	U	F \$SCRAM/WIGLE,	151
1108 BASIC RS U G \$ARRRG, DOSE TO MAN FROM REACTOR LIQUID RELEASE							BNWL	108
1108 BASIC RS U G \$SCRTR, INTERNAL INGESTION DOSE TO ORGANISMS							BNWL	107
1108 BASIC RS U G \$GRONK, DOSE TO MAN FROM REACTOR GAS RELEASES							BNWL	106
1109 COROL MA U M \$BRCOM, AEC PURCHASE VERSUS LEASE ANALYSIS							SLA	R 4
1109 F+BAI MA P M \$SPIRAL, FULL-TEXT STORAGE, SEARCH & RETRIEVAL							SLA	R 99
1109 F+SIE RRD P G \$SAFTAC, MONTE CARLO FAULT TREE SIMULATION							UNT	193
1109 F4 MA D P \$GFRBR, MONTE CARLO FAULT TREE SIMULATION							SLA	R 52
1108 F4 MA U T \$ACCEL(MON2), DESIGN OF PRINTED-CIRCUIT BOARDS							SLA	R 27
1109 F4 MA U Y \$BIOTA2, BIOME POPULATION INTERACTION MODELING							LASL	78
1109 F4 SNS U S \$HRS004, REFENTRY PARAMETERS OF DECAYING OBJECTS							SLA	R 24
1108 F4 SNS U S \$HRS015, BALLISTIC COEFFICIENT COMPUTATION							SLA	R 25
1109 F4 SNS U S \$HRS017, MULTIPLE REVOLUTION REFENTRY							SLA	R 20
1108 F5 RRD D K \$RFALLY, GAS TURBINE HTGR TRANSIENT MODEL							GA	121
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1200 & 2000 PLOTTING PACKAGE	SLA	1108	F4		MA	D	P \$GERBER SERIES	R 52
1200 & 2000 PLOTTING PACKAGE	SLA	6600	F4		MA	D	P \$GERBER SERIES	R 52
1D ENERGY LEVELS AND	360	F4	RRD	U	C		\$DISNEL, DIFFUSION SOLUTION	166
2-D CONTOUR AND AREA CALCULATION	SLA	6600	F4		MA	U	P \$PLOT,	R 5
2-D MULTISPECIES FOKKER-PLANCK CODE	LLL	7600	F		CTR	U	X \$HYBRID-II,	179
2-DIMENSIONAL PLANE-STRAIN CALCULATION	LLL	6600	F		MA	U	I \$CRACK,	181
2-DIMENSIONAL WAVE PROPAGATION PROGRAM	SLA	3600	F36		MA	U	S \$TNDY2,	R 47
2-1/2 DIMENSION PREDICTION MODELS	DP	360	F4		OBE	C	R \$NST,	126
2RPUF, ATMOSPHERIC DISPERSION OF LARGE CLOUDS	LLL	7600	F			AT	U R	\$
2D GRID PROCESSING ROUTINE	LLL	7600	CHAT		MA	U	N \$SHFMP, HFMP PROGRAM	134
2D SPACE-TIME FLUX CALC MODULES	DP	360	F4		PMM	U	F \$DISC., JOSHUA	153
2D WIND TRAJECTORY PROGRAM	DP	360	F4		OBE	C	R \$TRJ, POINT SOURCE	127
2000 RFD 360 F4 MA U P \$PLOT, AUTOMATIC PLOTTING FOR THE GERBER								R 14
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2000 PLOTTING PACKAGE	SLA	1108	F4		MA	D	P \$GERBER SERIES 1200 &	R 52
2000 PLOTTING PACKAGE	SLA	6600	F4		MA	D	P \$GERBER SERIES 1200 &	R 52
210 F2 MA U U \$RADF, GAS PHASE RADIOLYSIS DATA REDUCTION							RFD	R 31
3-D OBJECT RECONSTRUCTION PROGRAM	LLL	7600	LRL		OBE	U	Y \$FLATLAND, A	S225
3D PLOTTING WITH HIDDEN LINES REMOVED	LASL	6600	F4		MA	U	P \$PICTURE,	97
3100 COM MA U P \$INTERACTIVE MONITOR TELEMETRY PLAYBACK SYSTEM							SLA	R 13
360 RIN RRD U Z \$INCITE LIBRARY, THERMAL X-SECTIONS ENDF/B DATA							ANC	169
360 C+PAL MA U M \$MPR PRODUCT RECORD FILE SYSTEM							MHSM	R 43
360 COROL MA U M \$BRCOM, AEC PURCHASE VERSUS LEASE ANALYSIS							SLA	R 4
360 COROL PMM U M \$COMPUTER PROGRAM FOR LIBRARY BOOK CONTROL							DP	174
360 ERCCI PMM U Z \$GAMTA, RADIOACTIVE DECAY GAMMA RAY CATALOG							DP	139
360 F 360 U C \$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT							LASL	77
360 F+PAL MA U P \$CONVERSION FROM PAPER TAPE TO CARD OR DISK							RFD	R 8
360 F+RAI MA U Q \$INDEX, X-RAY POWDER PATTERN CRYSTAL INDEXING							RFD	R 17
360 F+PAL PMM U P \$OYNSK, OPTIMAL DISK DATA SET RE-CREPEING							DP	115
360 F+RAI R U P \$IRM360 UTILITY AND PDP8/15 ASCII MAG TAPE P/W							SLAC	11

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3600

360	F+BAL	RRO	U	P	\$NRTS-IGS GRAPHICS SOFTWARE FOR III FR-80 COM	ANC	165
360	F+C+R	MA	U	M	\$RACRTPH, RESOURCE ALLOCATION BY CRITICAL PATH	MLMO	R 3
360	F4		P	D	\$GEM, ANALYSIS OF NUCLEAR FUEL CYCLE ECONOMICS	UILL	102
360	F4	DBE	C	R	\$NST, 2-1/2 DIMENSION PREDICTION MODELS	DP	126
360	F4	DBE	C	R	\$TRJ, POINT SOURCE 2D WIND TRAJECTORY PROGRAM	DP	127
360	F4	DBE	C	R	\$VARSCN, VARIABLE SCAN RADIUS UPPER AIR STUDY	DP	128
360	F4	DBE	U	P	\$TORNADO, POLLUTANT SPREAD IN TROPICAL STORM	DP	219
360	F4	I	P	H	\$KILFR, CORE HEATUP CODE FOR BWR/6 ANALYSIS	EI	123
360	F4	LLL	U	R	\$PAVE, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	137
360	F4	MA	D	R	\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	227
360	F4	MA	P	P	\$GEAR, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	228
360	F4	MA	P	P	\$LATIN SQ, LATIN SQUARE ANALYSIS OF VARIANCE	MLMO	203
360	F4	MA	P	Q	\$ISOTAB, PU POWER CALCULATION OF MIXED ISOTOPES	MLMO	R100
360	F4	MA	U	D	\$ISOGEN, RADIOACTIVE DECAY GROWTH OF NUCLIDES	RFD	R 1
360	F4	MA	U	G	\$BKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	84
360	F4	MA	U	G	\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	80
360	F4	MA	U	M	\$RND424RQ, RANDOM SAMPLING TABLE NON-BIAS ORCEP	MLMO	190
360	F4	MA	U	P	\$FILE CODE GENERATOR, 6-CHARACTER ALPHANUMERIC	BKCD	R 73
360	F4	MA	U	P	\$GRAPH, REGRESSION & CONFIDENCE INTERVAL CALC	BKCD	76
360	F4	MA	U	P	\$GROUPS COMPARISON, QUALITY CONTROL PROGRAM	BKCD	R 75
360	F4	MA	U	P	\$HISTOGRAMS, QUALITY ASSURANCE STATISTICAL CODE	BKCD	74
360	F4	MA	U	P	\$PLOT, AUTOMATIC PLOTTING FOR THE GEPHER 2000	RFD	R 14
360	F4	MA	U	P	\$POLYNOMIAL CURVE FIT BY LEAST SQUARES ANALYSIS	RFD	R 10
360	F4	MA	U	Q	\$CALCULATION OF CRYSTALLOGRAPHIC FUNCTIONS	RFD	R 18
360	F4	MA	U	Q	\$MASS DETERMINATION BY TRANSDUCTION MFTCC	MHSM	R 42
360	F4	MA	U	Q	\$SURFACE FILM ELLIPSONETER MEASUREMENT ANALYSIS	RFD	R 16
360	F4	MA	U	Q	\$UNIVERSAL DENSITY CONTROL PROGRAM	MHSM	R 44
360	F4	MA	U	Q	\$XOTRAP, GAS DIFFUSION WITH TRAPPING	DP	148
360	F4	MA	U	T	\$CALIBRATION OF SURFACE PLATES	MHR	R 28
360	F4	MA	U	T	\$ELEMENTAL MOMENT OF INERTIA CALCULATION	MHSM	R 41
360	F4	MA	U	T	\$WHFATSTONE BRIDGE RESISTANCE CALIBRATION	MHSM	R 45
360	F4	MA	U	J	\$SWIF, SPECTROPHOTOMETRIC REACTION KINETICS	RFD	R 30
360	F4	MA	U	U	\$GAS-GAS & GAS-SOLID REACTION DATA REDUCTION	RFD	R 32
360	F4	MA	U	U	\$RADF-2, GAS PHASE RADIOLYSIS DATA REDUCTION	RFD	R 31
360	F4	MA	U	U	\$STICKING PROBABILITY OF GASES ON SOLID SURFACE	RFD	R 35
360	F4	MA	U	U	\$TCHREACT, CHEMICAL REACTOR ANALYSIS PROGRAM	MHSM	R 46
360	F4	MA	U	D	\$NUFUEL, NUCLEAR FUEL REQUIREMENTS FORECAST	ERDA	149
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360	F4	PMM	C	P	\$TETRAD, STREAM TRANSPORT DIFFUSION COEF CALC	DP	129
360	F4	PMM	C	R	\$TRAJCLIM, SINGLE TOWER DISPERSION CLIMATOLOGY	DP	132
360	F4	PMM	D	R	\$LOODIPS, STREAM-RIVER POLLUTANT PREDICTION	DP	131
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360	F4	PMM	U	F	\$DISC., JOSHUA 2D SPACE-TIME FLUX CALC MODULES	DP	153
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360	F4	PMM	U	M	\$ADAM, LARGE DYNAMIC FILES DATA ACCESS METHOD	DP	185
360	F4	PMM	U	M	\$TAFI, RADIOACTIVE WASTE MANAGEMENT PROGRAM	DP	175
360	F4	PMM	U	N	\$EDIT MODULES, JOSHUA PRINTED EDIT FACILITIES	DP	155
360	F4	PMM	U	N	\$RIEFL, JOSHUA RESONANCE INTEGRAL MODIFICATIONS	DP	154
360	F4	PMM	U	P	\$LINEAR LEAST SQUARES FIT WITH STATISTICS	DP	147
360	F4	P	U	P	\$FORMAT, A TEXT PROCESSING PROGRAM	SLAC	12
360	F4	RRO	U	B	\$PHRNG2, MULTI-GP X-SECTIONS FAST SPECTRUM CALC	ANC	168
360	F4	RRO	U	B	\$SCPARLE, MULTI-GP FAST CONSTANTS RESONANCE	ANC	170
360	F4	RRO	U	C	\$DISNEL, DIFFUSION SOLUTION IN ENERGY LEVELS	ANC	166
360	F4	RRO	U	C	\$SCAMP, MULTI-GP SN NEUTRON TRANSPORT CODE	ANC	171
360	F4	RRO	U	I	\$NUBOW, STRUCTURAL ANALYSIS BOWED REACTOR CORES	ANL	176
360	F4	RSR	U	H	\$FLOOD, CORE REFLOODING RATE CALCULATION ECC	ANC	167
360	F+RAL	ANL	U	M	\$RFNUP/RENUP, LIBRARY JOURNAL ORDERING PROGRAM	ANL	157
360	PL/1	MA	P	M	\$MTPRR, INFORMATION RETRIEVAL & REPORTS SYSTEM	MLMO	R120
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3600	F36	MA	U	S	\$SATLOC, SATELLITE GEOGRAPHIC EVENT POSITIONING	SLA	R 23
3600	F36	MA	U	S	\$TODDY2, 2-DIMENSIONAL WAVE PROPAGATION PROGRAM	SLA	R 47
3600	F36	SNS	U	S	\$HRSD04, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	R 24

3600				6600			
3600	F36	SNS	U S	\$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	R 25	
3600	F4	MA	U H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	R 37	
3600	F4	SNS	U S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	R 20	
3600	F63	MA	U P	\$SAVINT, INTEGRATION OF TABULATED DATA	SLA	R 50	
370	F4	R	P V	\$TRANSPORT, DESIGN OF CHARGED PARTICLE BEAMS	SLAC	220	
400	BASIC	MA	U U	\$CHEMICAL DIFFUSIVITIES BY BOLTZMAN-MATANO	RFD	R 34	
420	F	MA	U P	\$SURFACE AREA & VOLUME OF A SOLID OF REVOLUTION	RFD	R 9	
400	F	MA	U U	\$DYNAMIC ANALYSIS OF GASES BY MASS SPECTROMETRY	RFD	R 33	
400	F4	MA	U P	\$NON-LINEAR LEAST SQUARES FITTING OF FUNCTIONS	RFD	R 7	
4010	PLOTTING ROUTINES	LLL	MDCM F+ASM MA U P	\$MODCOMP TEKTRONIX		141	
435	COROL	MA	U M	\$GE MEDICAL INSURANCE REIMBURSEMENT SYSTEM	GEPI	R 39	
6-CHARACTER	ALPHANUMERIC	BKCD	360 F4 MA U P	\$FILE CODE GENERATOR,		R 73	
6KILFR, CODE	HEATUP CODE	FOR BWR/6 ANALYSIS	EI 360 F4 L P H	\$		123	
6400	C+F	MA	C M	\$BIORHYTHM SYSTEM FOR PERSONAL INJURY ANALYSIS	REEC	196	
6400	COROL	MA	U M	\$PBP, U.S. PAYROLL, BUDGET, & PERSONNEL SYSTEM	NVOC	182	
6400	COROL	MA	U M	\$RADSAFE, RADIATION SCIENCES PERSONNEL DATA	REEC	180	
6400	COROL	MA	U M	\$SAFETY REPORTING & COST SYSTEM	REEC	195	
6400	COM	MA	U P	\$EGG GENERAL PLOT SYSTEM FOR GRAPHICAL OUTPUT	EG&G	R178	
6400	F	MA	P R	\$STATPAC, HYDROLOGIC DATA STATISTICAL PACKAGE	NVOC	S183	
6400	F4	NVOC	U M	\$SKILLS INVENTORY, PERSONNEL DATA SYSTEM	HENN	G216	
6500	F	RFD	P I	\$AXICRP, FINITE ELEMENT CODE FOR CREEP ANALYSIS	HFDL	206	
6600	CHAT	MA	U C	\$MORSE-L, MONTE CARLO MULTIGROUP TRANSPORT CODE	LLL	R142	
6600	COROL	RLO	U M	\$CUE, PROPERTY INVENTORY & ACCOUNTING SYSTEM	CSCN	162	
6600	COROL	RFD	U M	\$CUP, PAYROLL & PERSONNEL ACCOUNTING SYSTEM	CSCN	218	
6500	COM	MA	U P	\$ELEMENTARY FUNCTION SUBROUTINES CATEGORY B	LASL	62	
6600	F	DBF	U Y	\$GENE, TETRAD GENETIC ANALYSIS PROGRAM	BKY	186	
6600	F	MA	P I	\$QMESH, RENUM, SELF-ORGANIZING MESH GENERATION	SLA	172	
6600	F	MA	P P	\$TFODE/COLODE, COLLOCATION SOLN OF STIFF ODE'S	SLA	187	
6600	F	MA	U I	\$CRACK, 2-DIMENSIONAL PLANE-STRAIN CALCULATION	LLL	181	
6600	F	MA	U M	\$HVL, EXHAUST HOOD VELOCITY MEASUREMENT REPORT	LASL	198	
6600	F	MA	U O	\$VFL, CYLINDER WALL VELOCITY DETERMINATION CALC	LASL	197	
6600	F	MA	U P	\$7301, TRUNCATED PUNEMAN PISCON EQUATION SOLVR	LASL	64	
6600	F	MA	U Q	\$SIMULATION OF STRESS CORROSION CRACKING	SLA	R 15	
6600	F	MA	U T	\$ACDES, A CODE TO DESIGN A PYROTECHNIC ACTUATOR	LLL	188	
6600	F	MA	U U	\$SOL-HOL CONE, CONICAL MONOPOLE ANTENNA CALC	LLL	R124	
6600	F	MA	U U	\$PFCOG, PATTERN RECOGNITION ANALYSES	LLL	146	
6600	F	RFD	U C	\$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	77	
6600	F+COM	MA	D P	\$ERRCHK, ERRGET, ERRSET, SYSTEM ERROR ROUTINES	SLA	R 54	
6600	F+COM	MA	D P	\$RIINKUT, RUNGE-KUTTA ODE INTEGRATION ROUTINE	SLA	R 26	
6500	F+COM	MA	U H	\$SANPIC, PARTICLE-IN-CELL PROGRAM	SLA	R 49	
6600	F+COM	MA	U I	\$GNATS, MESH2, GPRINT, NONLINEAR FINITE ELEMENT	SLA	208	
6600	F+COM	MA	U I	\$SLADF, STATIC ANALYSIS OF THIN SHELLS	SLA	R 2	
6600	F+COM	MA	U P	\$FINDMAP, COMPLEX GREEN'S FUNCTION SUBROUTINE	LASL	56	
6600	F+COM	MA	U U	\$TDF-A, COMPUTING THERMODYNAMIC FUNCTIONS	LASL	55	
6600	F+COM	MA	U W	\$APW, ENERGY BANDS VIA AUGMENTED PLANE WAVES	LASL	111	
6600	F+COM	MA	U W	\$LASL LENS DESIGN PROGRAM VERSION 2.2	LASL	58	
6600	F+COM	R	U P	\$BARB, TEXT-FORMATTING PROGRAM DOCUMENTING AID	BKY	191	
6600	F+COM	RLO	U M	\$RLTPS, RL MAGNETIC TAPE RESERVATION SYSTEM	CSCN	125	
6600	F+GSD	R	D M	\$RODFAS, FUEL ROD FABRICATION PLANT SIMULATION	LLL	S200	
6600	F+LRI	MA	U M	\$TRUMP/XB2, THERMAL PROPERTY DATA COMPILATION	LLL	R 38	
6600	FTN	MA	P P	\$SETS, SET EQUATION TRANSFORMATION SYSTEM	SLA	R101	
6600	FTN	MA	U P	\$SANDIA SCOPE USERS' MANUAL FOR THE CDC6600	SLA	R 6	
6600	FTN	RLO	U M	\$JOBSHOP, JOBSHOP ENVIRONMENT SCHEDULING SYSTEM	CSCN	160	
6600	F4	LLL	U O	\$LIF/RESPONSE, LITHIUM FLUORIDE GAMMA RESPONSE	LLL	144	
6600	F4	LLL	U R	\$PAVE, VEHICULAR POLLUTANT EMISSION PROJECTION	LLL	137	
6600	F4	MA	D P	\$HFS, CYLINDRICAL BESSEL FUNCTION EVALUATION	SLA	R 53	
6600	F4	MA	D P	\$GERBER SERIES 1200 & 2300 PLOTTING PACKAGE	SLA	R 52	
6600	F4	MA	P I	\$SLADF-D, FINITE ELEMENT DYNAMIC SHELL RESPONSE	SLA	98	
6600	F4	MA	P P	\$GEARB, SOLN OF ORDINARY DIFFERENTIAL EQUATIONS	LLL	228	
6600	F4	MA	P W	\$CALOP, WAVE NUMBERS DERIVED FROM LEVEL VALUES	LASL	104	
6600	F4	MA	P W	\$LEVEL, ATOMIC-ENERGY-LEVEL VALUES CALCULATION	LASL	103	
6600	F4	MA	U G	\$SIN, ONE-DIMENSIONAL HYDRODYNAMIC CALCULATIONS	LASL	80	
6600	F4	MA	U H	\$RAYTRACE, ACOUSTIC RAY TRACING UNSTEADY FLOW	LASL	199	
6600	F4	MA	U H	\$SMAC, INCOMPRESSIBLE FLUID FLOW CALCULATION	LASL	79	
6600	F4	MA	U H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	R 37	
6600	F4	MA	U I	\$CHILFS, LINEAR ELASTIC FINITE ELEMENT ANALYSIS	SLA	110	

6600

7600

6600	F4	MA	U	O	\$CONFOLD, UNFOLDING SMOOTH CONTINUOUS SPECTRA	LASL	95
6600	F4	MA	U	P	\$ARITHMETIC SUBROUTINES CATEGORY A	LASL	61
6600	F4	MA	U	P	\$AVINT, INTEGRATION OF TABULATED DATA	SLA	R 50
6600	F4	MA	U	P	\$DATA HANDLING & SORTING SUBROUTINES CATEGORY M	LASL	71
6600	F4	MA	U	P	\$EIGENVALUE & EIGENVECTOR ROUTINES CATEGORY F2	LASL	68
6600	F4	MA	U	P	\$ERF, ERFC, ERROR & COMPLEMENTARY ERROR FUNCTION	SLA	R 51
6600	F4	MA	U	P	\$I401, LOAD FORTRAN FORMAT-FREE INPUT DATA	LASL	59
6600	F4	MA	U	P	\$LEAST SQUARES & SMOOTHING ROUTINES CATEGORY E2	LASL	66
6600	F4	MA	U	P	\$N103, ERROR TERMINATION MESSAGE W/COUNT CONTRL	LASL	72
6600	F4	MA	U	P	\$PICTURE, 3D PLOTTING WITH HIDDEN LINES REMOVE	LASL	97
6600	F4	MA	U	P	\$PLOT, 2-D CONTOUR AND AREA CALCULATION	SLA	R 5
6600	F4	MA	U	P	\$Q409, EXTENDED CORE STORAGE I/O DATA TRANSFER	LASL	60
6600	F4	MA	U	P	\$SEVER, SYMMETRIC MATRIX EIGENVALUES & VECTORS	SLA	R 48
6600	F4	MA	U	P	\$SIMULTANEOUS LINEAR SYSTEMS CATEGORY F4	LASL	69
6600	F4	MA	U	P	\$SPECTRAL ANALYSIS OF TIME SERIES CATEGORY G6	LASL	70
6600	F4	MA	U	P	\$SUBROUTINES FOR INTERPOLATION CATEGORY E1	LASL	65
6600	F4	MA	U	P	\$SUBROUTINES FOR SPECIAL FUNCTIONS CATEGORY C	LASL	63
6600	F4	MA	U	P	\$VECTOR & MATRIX OPERATION ROUTINES CATEGORY F1	LASL	67
6600	F4	MA	U	Q	\$INDEX, X-RAY POWDER PATTERN INDEXING	LASL	57
6600	F4	MA	U	Q	\$UNFOLD, X-RAY DIFFRACTION PROFILE ANALYSIS	LASL	91
6600	F4	MA	U	S	\$SWAP9, STRESS WAVE ANALYSIS PROGRAM	SLA	R 22
6600	F4	MA	U	S	\$WONOV3A, 1-D WAVE PROPAGATION CALCULATION	SLA	R 21
6600	F4	MA	U	T	\$ACCELMOD2, DESIGN OF PRINTED-CIRCUIT BOARDS	SLA	R 27
6600	F4	MA	U	T	\$FFEARS, LAPLACE EQUATION SIMULATION STUDY	SLA	R 29
6600	F4	MA	U	W	\$CORCORP, NILSSON CORIOLIS COUPLING PROGRAM	LASL	88
6600	F4	MA	U	W	\$HFLGAS, ELECTRON & PROTON SCATTERING BY HELIUM	LASL	92
6600	F4	MA	U	W	\$HERSKL, HERMAN-SKILLMAN-ZARE ATOMIC STRUCTURE	LASL	93
6600	F4	MA	U	W	\$IT, ITERATIVE ATOMIC-ENERGY-LEVEL VALUE CALC	LASL	105
6600	F4	MA	U	W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	112
6600	F4	MA	U	Y	\$ARIGAIL3, ANTIBODY PRODUCTION SIMULATION	LASL	90
6600	F4	MA	U	Y	\$BIOTA2, RIME POPULATION INTERACTION MODELING	LASL	78
6600	F4	SNS	U	S	\$HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	R 24
6600	F4	SNS	U	S	\$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	R 25
6600	F4	SNS	U	S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	R 20
6600	F4	MA	U	J	\$GAMANAL LIBRARY AND AUXILIARY ROUTINES	LLL	164
6600	F4	MA	U	J	\$GAMANAL, INTERPRETATION OF GAMMA-RAY SPECTRA	LLL	163
7040	QUICK	SNS	U	S	\$HRS015, BALLISTIC COEFFICIENT COMPUTATION	SLA	R 25
7040	QUICK	SNS	U	S	\$HRS017, MULTIPLE REVOLUTION REENTRY	SLA	R 20
7040	QUICK	SNS	U	S	\$HRS004, REENTRY PARAMETERS OF DECAYING OBJECTS	SLA	R 24
7600	ALAT6	MA	U	P	\$TIC-YAC-TOP, STRUCTURED PROGRAMMING IN ALAT6	LLL	133
7600	CHAT	CTP	U	X	\$DART, FUSION REACTOR ENERGY CONVERTER MODEL	LLL	149
7600	CHAT	MA	U	N	\$SHEMP, HEMP PROGRAM 2D GRID PROCESSING ROUTINE	LLL	134
7600	F	AT	U	R	\$LEACH, KINETICS OF IN-PLACE LEACHING MODEL	LLL	R109
7600	F	AT	U	R	\$SDC, 1-DIMENSIONAL WAVE PROPAGATION SIMULATION	LLL	184
7600	F	AT	U	R	\$ZBLUF, ATMOSPHERIC DISPERSION OF LARGE CLOUDS	LLL	R224
7600	F	CTP	U	X	\$HYBRID-II, 2-D MULTISPECIES FOKKER-PLANCK CODE	LLL	179
7600	F	MA	U	R	\$FDS, ENVIRONMENTAL DATA STUDY GRAPHICS DISPLAY	LLL	S192
7600	F	MA	U	H	\$SIRROCO, CALCULATION OF TRANSIENT GAS FLOW	LLL	213
7600	F	MA	U	T	\$DDHUM, STRAIGHT, JOINT, FCCUSNF, CRT TESTING	LLL	215
7600	F	MA	U	W	\$TKOR, THIN PLASMA X-RAY SPECTRUM CALCULATION	LLL	S202
7600	F	RRD	U	C	\$TRIPLET, TRIANGULAR MESH MULTI-GP TRANSPORT	LASL	77
7600	F	PRD	U	I	\$ELTEMP, ELEVATED TEMPERATURE PIPING EVALUATION	WARD	R222
7600	F+COM	MA	U	P	\$SUB/STACKLIB, FORTRAN VECTOR FUNCTION ROUTINES	LLL	116
7600	F4	GEO	U	T	\$GEOTHM, GEOTHERMAL POWER PLANT CYCLE CALC	BRV	217
7600	F4	LLL	U	T	\$VENT, EXHAUST VENTILATION SIZING & BALANCING	LLL	205
7600	F4	MA	U	B	\$SIGMA-1, ENDF/B X-SEC DATA DOPPLER-BROADENING	LLL	227
7600	F4	MA	U	M	\$FUELPIN, FUEL PIN DATA MANAGEMENT SYSTEM	LASL	113
7600	F4	MA	U	A	\$MULTI, R-MATRIX LEAST-SQUARES CROSS SECTIONS	LASL	119
7600	F4	MA	U	B	\$MCN, NEUTRON TRANSPORT MONTE CARLO CODE	LASL	81
7600	F4	MA	U	G	\$BKW, DETONATION PROPERTIES OF EXPLOSIVES	LASL	84
7600	F4	MA	U	H	\$TRUMP, TRANSIENT AND STEADY-STATE FLUID FLOW	LLL	R 37
7600	F4	MA	U	H	\$YAQUI, LAGRANGIAN-EULERIAN FLUID DYNAMICS	LASL	94
7600	F4	MA	U	I	\$DETECTR, COMPRESSION MOLD DESIGN FOR DETECTORS	LASL	209
7600	F4	MA	U	J	\$MCG, GAMMA TRANSPORT MONTE CARLO CODE	LASL	82
7600	F4	MA	U	J	\$MCP, PHOTON TRANSPORT MONTE CARLO CODE	LASL	83
7600	F4	MA	U	T	\$WT-MBA/LLL1B, ELECTROMAGNETIC RESPONSE CALC	LLL	156

7600						9830	
7600	F4	MA	U	W	\$DEGAA, POLYNOMIAL SOLN OF SCHRODINGER EQUATION	LASL	89
7600	F4	MA	U	W	\$HANJON, ELECTRON ENERGY DISTRIBUTION CALC	LASL	86
7600	F4	MA	U	W	\$HERSKL, HERMAN-SKILLMAN-ZAPE ATOMIC STRUCTURE	LASL	93
7600	F4	MA	U	W	\$MAB, SATURATION SPECTROSCOPY DATA REDUCTION	LLL	135
7600	F4	MA	U	W	\$RCG, ATOMIC ENERGY LEVELS AND SPECTRA	LASL	112
7600	F4	MA	U	X	\$CBMEXP, CO2 GAS LASER AMPLIFICATION STUDIES	LASL	85
7600	F4	MA	U	X	\$HII, CONTINUITY EQUATION SOLN IN DENSE PLASMA	LASL	87
7600	F400	CTR	U	X	\$TIBRO-GENERAL, CHARGED-PARTICLE TRAJECTORIES	LLL	118
7600	LRL	CTR	U	P	\$SIMPLEX, GENERAL LINEAR PROGRAMMING SOLUTION	LLL	232
7600	LRL	DRF	U	Y	\$PLATLAND, A 3-D OBJECT RECONSTRUCTION PROGRAM	LLL	S225
7600	LRL	DRF	U	Y	\$TESTIM, PROJECTION & TEST IMAGE DATA GENERATOR	LLL	S226
7600	LRL	LLL	U	T	\$WF-LLL2A, WIRE CONFIGURATION, FREQUENCY DOMAIN	LLL	233
7600	LRL	MA	U	P	\$BEGINMAP, PROGRAM PERFORMANCE ANALYSIS ROUTINE	LLL	R214
7600	LRL	MA	U	P	\$FLOE, LLL OPERATING SYSTEM FOR THE CDC7600	LLL	223
7600	MTTRAN	MA	U	P	\$MTTRAN, A STRUCTURED FORTRAN MACRO LANGUAGE	LLL	207
7600	PUTT	MA	U	P	\$POP-8E, INTERACTIVE SIMULATOR ON THE CDC7600	LLL	143
912	BASC	PMM	U	G	\$COMBACR, WHOLE BODY & CHEST RADIOACTIVITY CALC	DP	114
9830	BASIC	MA	U	Q	\$HP9830 MOLE WGT, VOL. & DETONATION VELOCITY	LLL	229