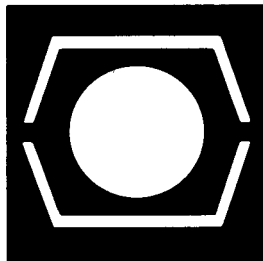


Microbial Physiology
Dept. Of Microbiology
Temple University School Of Medicine
Philadelphia, Pa. 19140



DECUS PROGRAM LIBRARY CATALOG

FOR

PDP-8, FOCAL8

Microbial Physiology
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JULY 1973

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY
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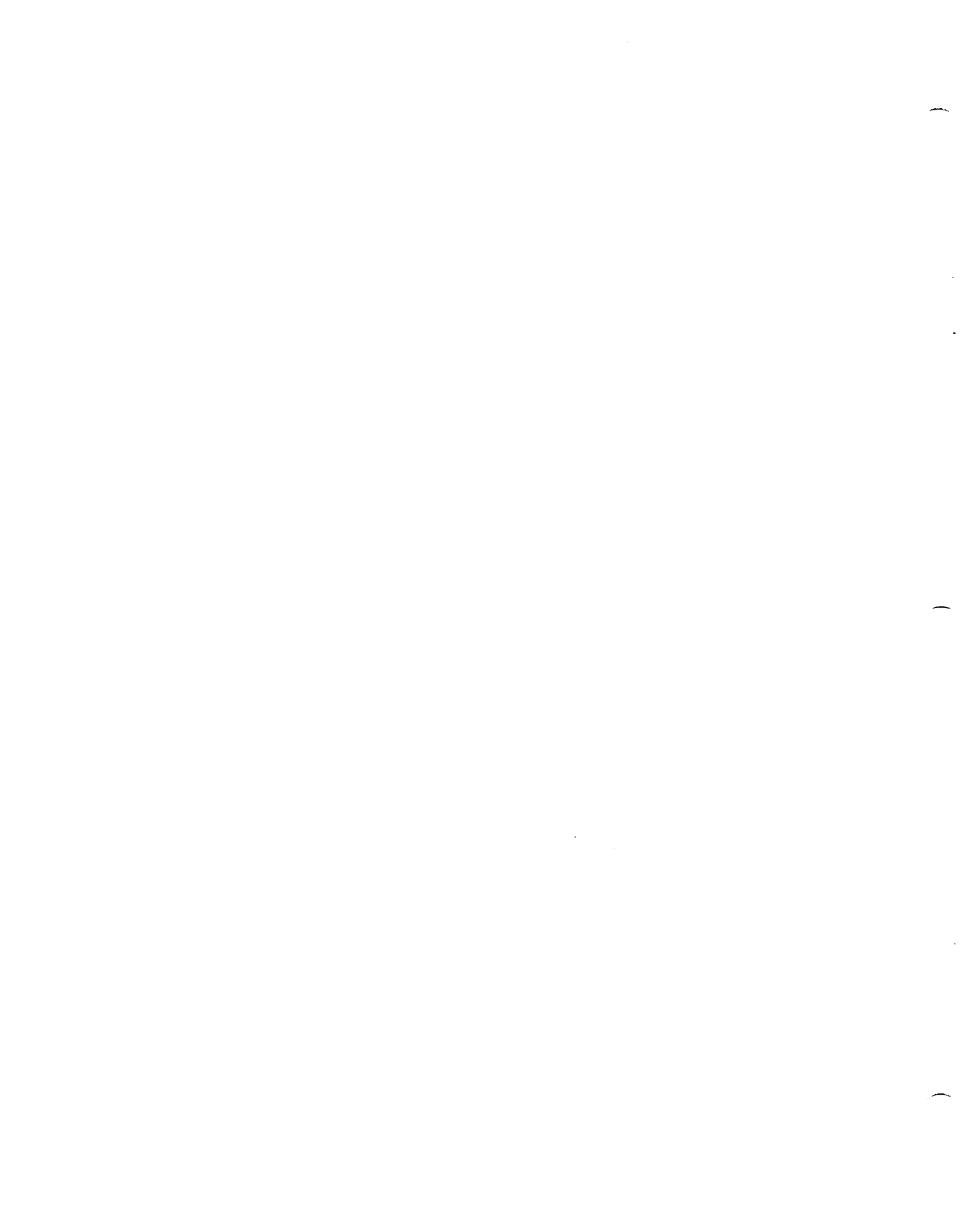
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When users find it necessary to call the DECUS Program Library for information, it helps to have the name of a specific person with whom they can speak. For your information we have compiled the following list:

Accounting or Pricing Information - Karen King X2447

PDP-10, PDP-12, PDP-15 and LINC orders and information - Cheryl Barber X2524

PDP-8 library orders and information - Jackie Page X2524

PDP-11, FOCAL and Educational Application orders and information - Stacia Taylor X2524

New or proposed library submissions, changes, etc., general library contents - Ferne Halley or Pat Davies X2524



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I. PROGRAMMING LANGUAGE, MONITOR,
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| | | 8-214 | DECI: A Subroutine to Type Outputs in Decimal |
| 5/8-7 | Decimal to Binary Conversion by Radix Deflation and Accelerated Radix Deflation | 8-218 | Interpreter of Constitution of Coding Tables |
| | | 8-220 | FRACPT and TRANS |
| 5/8-21 | Triple Precision Arithmetic Package | 8-221 | IFIX/FLOAT |
| 5/8-35 | BCD to Binary Conversion Subroutine and Binary to BCD Conversion Subroutine (Double Precision) | 8-248 | SABR - Coded Fast Fourier Transform Subroutine |
| | | 8-250 | Fast Fourier Transform (FFT) |
| 5/8-38 | FType-Fractional Type | 8-271 | LIP, LOGICAL "If" Package |
| 5/8-39 | DSdprint, DDtype - Double Precision Signed Decimal Input-Output | 8-278 | Single Length Floating Point Package |
| | | 8-288 | GRAYCONV (Gray Code to Binary Code Converter) |
| 5/8-43 | Unsigned Octal - Decimal Fraction Conversion | 8-302 | Overlay Modifications to the Floating-Point System Packages, DEC-08-YQYA |
| 8-44 | Modifications to the Fixed Point Output in the PDP-8 Floating Point Package (Digital-8-5-5) | 8-303 | Alterations of the Basic Floating-Point Package and Additional Subroutines |
| | | 8-304 | Pseudo-Noise (P-N) Sequence Test |
| 8-60 | Square Root Function by Subtraction Reduction (Uses EAE) | 8-350 | Wilcoxon-White Two Sample Rank Test |
| | | 8-363 | DATOUT: A Simple Routine for Printing Sequential Data as an Array |
| 8-61 | Improvement to Digital-8-9-F Square Root | | |
| 5/8-69 | LESQ29 and LESQ11 | 8-364 | Extended Memory Patch to the 3-word Floating Point Arithmetic Interpreter |
| 8-70 | EAE Routines for FORTRAN Operating System (DEC-08-CFA3) | 8-371 | Teletype Control of ND 50/50 Memory Unit (TYPED) |
| 8-72 | Matrix Inversion - Real Numbers | | |
| 8-73 | Matrix Inversion - Complex Numbers | 8-375A | 3 Page Floating Point Package |
| 8-74 | Solution of System of Linear Equations: AX=B, by Inverting Matrix A, then Multiplying the Inverse by Vector B | 8-375B | 3 Page Floating Point Package with Floating Output |
| | | 8-379a | Double Precision and Floating Point Interchanger |
| 8-75 | Matrix Multiplication - Including Conforming Rectangular Matrices | 8-399 | 8K FORTRAN Bit Manipulation Subroutines |
| 8-80 | Determination of Real Eigenvalues of a Real Matrix | 8-410 | Pseudo-Random Number Generator, EAE Version |
| 8-93 | CHEW - Convert Any BCD to Binary, Double Precision | 8-426 | Prime Number Generator |
| 8-96 | J Bessel Function (FORTRAN) | 8-428A | EAE - Modification to DECUS NO. 8-143, FFTS-R |
| 8-100 | Double Precision BCD Arithmetic Package (Incomplete) | 8-428B | EAE - Modification to DECUS NO. 8-144, FFTS-C |
| 8-103A | Four Word Floating Point Routines - Function Package | 8-432 | Triple Precision Integer Package |
| 8-103B | Four Word Floating Point Routines - Rudimentary Calculator | 8-436 | EAE - Simulator |
| 8-103C | Four Word Floating Point Output Controller with Rounding | 8-446 | A Patch to FFTS-R for Use Without the EAE |
| 8-103D | Additional Instructions for use with Four Word Floating Point Package | 8-447 | Roots of a Polynomial by Muller's Method |
| | | 8-449D | Buffered I/O Subroutine for the PDP-8 |
| 8-114a | Decimal Output Routine for PDP-8 FORTRAN | 8-452 | ANSAM (Analog Sampling) |
| 8-115a | Double Precision Interpretive Package | 8-453 | Rapid Alert Program (RAP) |
| 8-134 | LSQ (Least Squares Subroutine) | 8-480a | Two Subroutines for 8K FORTRAN |
| 8-136 | Fourier Transform Program | | |
| 8-143 | FFTS-R - A Fast Fourier Transform Subroutine for Real Valued Functions | 8-483 | 1. INPUT |
| | | 8-485 | 2. RANDU and GAUSS |
| 8-144 | FFTS-C - A Fast Fourier Transform Subroutine for Complex Data | | |
| | | 8-483 | GRFIT, A Simple Least Squares Routine |
| 8-157 | Square Root Patch | 8-491 | Geometric Data Truncation for Fourier Transform Programs |
| 8-186 | EAE FORTRAN Patch for the PDP-8 | | |
| 8-188 | Extended Memory Patch for 4 Word Floating Point Package (DEC-08-FMHA-8B) | 8-504C | Indexed Floating Point Math Subroutines for PDP-8/E |
| 8-199 | Accessing Data Arrays and Teletype Text Input/Output | 8-511 | ESI Demonstration Programs |
| | | 8-538 | FPAK-4 Interrupting Floating Point Package |
| 8-207 | Cube Root Subroutine | 8-550 | Integer IOH for FORTRAN Library |
| 8-211 | Matrix Manipulation System (MMS) for Real Numbers | 8-571 | Modified Matrix Inversion - Real Numbers |
| | | 8-575 | INPUT, OS/8 Version |
| | | 8-580 | EAE Overlay for Four-Word Floating Point Package Multiply |
| | | 8-582 | Decimal to Floating Point Conversion |
| | | | Random Number Generator Adapted for 8K FORTRAN/SABR |

VI. NUMERICAL FUNCTION, NUMERICAL INPUT-OUTPUT

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|--|
| 8-590 | Matrix Inversion |
| 8-594 | FP8 - Floating Point Arithmetic Software for DEC PDP-8 Series Computers |
| 8-596 | Multilength Routines |
| 8-597 | N.I.H. OS/8 Package |
| 8-607 | CALCUI |
| 8-615 | EAE Multiplication for 8K FORTRAN |

VI. NUMERICAL FUNCTION, NUMERICAL INPUT-OUTPUT

DECUS NO.

TITLE

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|------------------|---|
| | | 12-7 | DBLFLT - Double Float Mathematical Routines |
| | | 12-14 | MUL-2REG |
| FOCAL8-1 | A Pseudo Random Number Generator for the PDP-8 for use with FOCAL | 12-25 | Three Subroutines for QANDA - FRACUS, SCRMBL, QANDA-C |
| FOCAL8-11 | EAE Routines for FOCAL | 12-34 | STAP-12 |
| FOCAL8-18 | T-ASK | 12-41 | BLOODP - Blood Pressure Display Program |
| FOCAL8-33 | Square Matrix Multiple; Prime Number Generator; Least Common Multiple; Base to Base Integer Conversion; Repeating Decimal | 12-64 | Walsh Transform Subroutines, PWALSH and LWALSH |
| FOCAL8-34 | Simultaneous Equations; Abbreviated Simultaneous Equations; Curve Fittings | 12-67 | PPG FOCAL |
| FOCAL8-39 | Rectangular to Polar Conversion; Polar to Rectangular Conversion | 12-68 | A PDP-8 Floating Point Software Package Simulator Using a FPP-12 Floating Point Processor |
| FOCAL8-47 | Fourier Synthesis of a Square Wave | 12-88 | OCTALFPP |
| FOCAL8-49 | Constantine's Function | 12-89 | BUTFLTR |
| FOCAL8-64 | Newton-Raphson Method for Determination of Polynomial Roots | 12-90 | REPRSNT |
| FOCAL8-68 | Determination of Roots of a Polynomial | 12-109A, B, C | QNANSWER, QANDATYY, SUPRSHUF |
| FOCAL8-73 | Real Matrix Inversion | 12-116 | FPP-12/FOCAL-12 Reduction of Auto Analyzer Data for Pharmaceuticals |
| FOCAL8-74 | Linear Least Squares Fit | | |
| FOCAL8-82 | Physical Sine Curve Programs | | |
| FOCAL8-89 | The Recursive Evaluation of Functions | | |
| FOCAL8-91 | Multiplication of Rectangular Matrices | | |
| FOCAL8-100 | Additions to FOCAL W | | |
| FOCAL8-106 | FOCAL Traveling-Wave Sketches | | |
| FOCAL8-109 | Newton's Method of Approximating Real Roots of $P(x) \neq 0$, Where the Degree of $P(x)$ is 4 or less | | |
| FOCAL8-118 | Three Mathematical Routines 1. To Raise $A+B*1$ to the N Power 2. Complex Roots of Real Interpreters 3. Cube Root Finder | L-29 | DEC-BI |
| FOCAL8-120 | PFI - Product Form of the Inverse | L-35A&B | DF.INOUT; I.O. TAGS |
| FOCAL8-142 | Successive Powers of a Matrix | | |
| FOCAL8-143 | Repeated Matrix Multiplication | | |
| FOCAL8-151 | Fast Matrix Inversion for Real Numbers | L-49 | BINOC |
| FOCAL8-159A | Computer Programs in Use in the Water Qualities Division, Vol. 1 | L-50 | BINDEC |
| FOCAL8-159B | Computer Programs in Use in the Water Qualities Division, Vol. 2 | L-68 | DBLFLT 2 - A Multibank Configuration of DBLFLT |
| FOCAL8-159C | Computer Programs in Use in the Water Quality Division, Vol. 3 | L-93 | INTERP |
| FOCAL8-172 | XPON | L-98A&B | REDROOT and REDROOTM |
| FOCAL8-174 | SYNDIV 5 | L-101 | MUL-2REG |
| FOCAL8-182 | First Order Differential Equation: Initial Value Problem | L-114 | Pseudo-Random Number Generator, EAE Version (See 8-410) |
| FOCAL8-194 | Rectangular to Polar Coordination (German) | L-121B | FREC |
| FOCAL8-200 | SIMEQR-20 Simultaneous Equations in 8K FOCAL | | |
| FOCAL8-205 | Random Walk/Array | | |
| FOCAL8-209 | GRFIT, A Simple Least Squares Routine | | |
| FOCAL8-213 | FOCAL Random Number Generator | | |
| FOCAL8-216 | FARRAY, A FOCAL FNEW for Two Dimensional Arrays in 8K FOCAL | | |
| FOCAL8-231 | Extended Precision Sine and Cosine for 4-word FOCAL | | |
| FOCAL8-232 | Roots by Inverse Interpolation | | |
| FOCAL8-239 | DIV - Program for Division | | |
| FOCAL8-253 | Solution to Any Equation Involving One Variable | | |
| FOCAL8-255 | Repeating Decimal | | |
| FOCAL8-259 | High Speed Punch, High Speed Write, and FRAN Overlays to FOCAL 1969 | | |
| FOCAL8-260 | Arithmetic and Geometric Progressions | | |
| FOCAL8-263 | ROOTS, A Polynomial Root Finder | | |

VII. UTILITY

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 5/8-32a | A Program to Relocate and Pack Programs in Binary Format |
| 5-37 | Transfer II |
| 8-68a | LABEL Program |
| 8-85 | Set Memory Equal to Anything |
| 8-87 | XMAP |
| 8-106 | Readable Punch |
| 8-110 | Directory Print (DIREC) for the DEC PDP-8 Disk System |
| 8-120 | DISK/DECtape FAILSAFE |
| 8-135 | DNHELP, A Directory Assistor Program |
| 8-141 | SYSLUK |
| 8-153 | Tape/Disk Transfer Programs |
| 8-154 | SWAP |
| 8-172 | Octal Systems Edit |
| 8-177 | COPY |
| 8-189 | LKDN: Look into the Directory Name Block |
| 8-190 | PATCH Utility Program |
| 8-198 | SYSHLP - Monitor System Utility Program |
| 8-204a | PATCH - A PDP-8 Binary Paper Tape Patch Program |
| 8-205 | MTSAFE |
| 8-206 | DUMP |
| 8-210 | A Real-Time Multiple Task Executive Program with Built-in Console Utility Package for PDP-8/S and PDP-8 Computers |
| 8-217A | PALR |
| 8-217B | PALM |
| 8-217C | UTIL |
| 8-232 | TP1Ø |
| 8-235 | Octal Tape Dump for PDP-8/9/10 DECtapes |
| 8-239 | PAL III/Editor 8K Link Patch |
| 8-240 | END |
| 8-244 | BINSAVE |
| 8-245 | Dynamic Octal Disk Debugger |
| 8-247 | HELP: A Disk/DECtape Dialogue Program |
| 8-252 | PEEP - A Directory Search Program |
| 8-270a | Disk-DECtape Utility Program |
| 8-272 | IOPACK - A Message and Number I-O Utility Package |
| 8-294 | Lettering Program |
| 8-301 | STOR: A Store Instruction for the PDP-8 Disk Monitor |
| 8-309 | Patches and a Utility Program for LAB-8 |
| 8-310 | BIN Punch for Extended Memory |
| 8-356 | Page Printer |
| 8-357 | ISOMER - Interactive Study of Organic Molecules by Educational Reinforcement |
| 8-358 | Card Reader Patch |
| 8-365 | CARD |
| 8-366 | Modified Readable Punch |
| 8-370A | FBUILD |
| 8-370B | DISK |
| 8-373 | LISP Disk Array |
| 8-378 | Map Directory Information on KV8/I |
| 8-393 | Queing TCØ1/TU55 DECtape Routines |
| 8-398 | IMAGE |
| 8-413 | GROPE III/A and BINLOC |
| 8-414 | LIST |
| 8-435 | RECOVER |

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|--|
| 8-436 | EAE - Simulator |
| 8-438 | DF-32/Sykes Swap |
| 8-439 | MOVE |
| 8-440 | PIPL |
| 8-441 | DELETE |
| 8-444 | COREMAP |
| 8-449B | LPTQUE - A PTØ8 to A. B. Dick Line Printer Utility Program |
| 8-449C | TALK1Ø-A PDP-8/PDP-10 Utility-Loader |
| 8-449D | Buffered I/O Subroutines for the PDP-8 |
| 8-460 | TT89 - Tape Transfer PDP-8 to PDP-9 |
| 8-461 | COPY1Ø - PDP-10 DECtape Program for the PDP-8 |
| 8-466D | RL Monitor System Utilities |
| | P?S-08-1.1D |
| 8-466E | DECtape Utility Programs |
| | P?S-08-1.1E |
| 8-473 | Three Utility Routines for PS/8 |
| | 1. DTA and DECLAB |
| | 2. CHANGE and REMOVE |
| | 3. LIST |
| 8-474 | EXIT PS/8 |
| 8-475 | PIPQ |
| 8-477 | RIBIER - A Program for the PDP-8/I Enabling the Transition from the PS/8 System to the Paper Tape System |
| 8-482 | Patch to High ODT (DEC-08-COC2-PB) |
| 8-484 | REStore for the RKØ8 |
| 8-496 | UTR7: A 7-track Magnetic Tape Reading Utility |
| 8-506 | Load Areas |
| 8-508 | TSUTIL - A Utility-Diagnostic Program for TSS-8 |
| 8-522 | 'PAGEIT' |
| 8-540B | BPRINT |
| 8-541 | Cassette Utility Program and PALC |
| 8-545 | PIF (Program Interrupt Facility for 3 TTY/s) |
| 8-551 | COMBO |
| 8-563 | TAPE |
| 8-565 | RENUM - Renumbering Program for BASIC Tapes |
| 8-579 | LISTIT |
| 8-584 | PRECIS, A Program to Scan a Binary Tape |
| 8-586 | XDIREC, OS/8-PS/8 Selective Directory Listing |
| 8-588 | PEEK, A User Program to Look at the TSS-8 Monitor |
| 8-589 | BOOTST, Universal OS/8 (PS/8) Bootstrap |
| 8-597 | N.I.H. OS/8 Package |
| 8-599 | DIBILD.; Directory Rebuilder for PS/8 or OS/8 |
| 8-600 | EXPIP (Extensions PIP) |
| 8-602 A&B | The PDP-8 Cookbook, Volume 1 & 2 |
| 8-608 | FUTIL - OS/8 File Utility |
| 8-609 | OCOMP - Octal Compare and Dump |

VII. UTILITY

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|------------------|--|
| | | 12-2 | PDP-12 Utility and Data Reduction Programs |
| | | 12-8 | Teletype Conversion Routines |
| | | 12-9 | SLOWCREP |
| FOCAL8-10 | Patch to FOCAL W for LINC-8 A-D Converter | 12-13 | RDPEC: PEC Synchronous Tape Read Program |
| FOCAL8-44 | Magtape Analyser Using I/O FOCAL | 12-21 | Modified MAGSPY |
| FOCAL8-51 | FOCAL "WRITE" Patch | 12-24 | Overlays to FOCAL-12 |
| FOCAL8-59 | FOCAL Overlay Common Area for 4K Core Memory | | |
| FOCAL8-100 | Additions to FOCAL W | 12-31 | DCON-1Ø |
| FOCAL8-105A | LAB-8 Extended Functions for FOCAL (4K) | 12-56 | QANDA+ - Modified QANDA Subroutine |
| FOCAL8-105B | LAB-8 Extended Functions for FOCAL (8K) | 12-57 | SPY+ - Modified MAGSPY |
| FOCAL8-125a | Magtape Formatter for MTA Handler | 12-58 | FIFOCON |
| FOCAL8-129 | FOCAL Readable Punch | 12-66 | ADDINDX (LAP6-DIAL-MS Index Manipulator) |
| FOCAL8-150 | FRAN8 | | Modified ADTAPE |
| FOCAL8-191 | Reverse Overlay for FOCAL, 1969 | 12-79 | VR12 SCOPE HANDLER FOR OS/8 |
| FOCAL8-192 | Echo Change for FOCAL, 1969 | 12-81 | ONDISK-OFFDISK |
| FOCAL8-194 | Rectangular to Polar Coordination (German) | 12-87 | BUTFLTR |
| FOCAL8-195 | All Purpose Graphing Program | 12-89 | PDP8TO12 |
| FOCAL8-201 | FOCAL Patch for Function FP, Mod 4B | 12-92 | TRANS |
| FOCAL8-203 | Graph Sketching | 12-93 | PDP-12 PS/8 Utility Programs |
| FOCAL8-204 | Acid-Base Equilibria | 12-95 | AVUPTO8, AVUPTO8S |
| FOCAL8-206 | FOCAL Generates Binary Patches | 12-107 | QNANSWER, QANDATTY, SUPRSHUF |
| FOCAL8-210 | CHAIN and FCOM | 12-109A,B,C | ADFILE |
| FOCAL8-214 | FDSK, An Overlay for FOCAL to Read Data-Or-Program-Files from the PS/8 Systems Device | 12-111 | IDXRDD |
| | | 12-112 | IDXWT |
| FOCAL8-216 | FARRAY, A FOCAL FNEW for Two Dimensional Arrays in 8K FOCAL | 12-113 | TAPEDIT, A PDP-12 LINCTAPE EDITOR |
| | | 12-117 | Average Transient Advanced Programs |
| FOCAL8-245 | Executive and Utility Routines for FOCLX, 1972 | 12-118 | Neurone Spike Train Analysis Programs |
| | | 12-119 | PDP-12 User's Monitor Command |
| FOCAL8-247 | FNEWS Overlay to Use High Speed Punch with FOCAL Program | 12-122 | OS/8 VR12 Handler |
| | | 12-123 | |
| FOCAL8-252 | 12K Overlay for FOCAL | | |
| FOCAL8-254 | Patch to Allow Computed Line Numbers in FOCAL 1969 | | |
| FOCAL8-265 | LISTAL | | |
| | | L-36 | PRINTMSS |
| | | L-56 | FIDDLEX |
| | | L-59 | INDEX L4 |
| | | L-67 | TAPEIN |
| | | L-79 | MARK L8A (Adapted MARK L8) |
| | | L-88 | TAPE |
| | | L-94 | *TAPMARK |
| | | L-115 | MARK1600 |
| | | L-118 | ECHO Keyboard Subroutine |
| | | L-119 | Keyboard Subroutine |
| | | L-124B | LOADBIN |
| | | L-124C | DXCREATE |

VIII. DISPLAY

DECUS NO. TITLE

5/8-23A PDP-5/8 Oscilloscope Symbol Generator
(4X6 Matrix)
5/8-23B PDP-5/8 Oscilloscope Symbol Generator
(5X7 Matrix)
8-98 3D Draw for 338 Display
8-99A Kaleidoscope
8-99B Kaleidoscope - 338 Display
8-107 CHESSBOARD
8-108 Increment Mode Compiler (INCMOD)
8-109 SEETXT Subroutine
8-128 PDP-8 Oscilloscope Display of
Mathematical Functions
8-131 SRCD, Software Rapid Character Display
8-132 STRIP, A Data Display and Analysis
Program for the PDP-8, 8/1
8-149 Core Window
8-158 AX-Ø8 Symbol Generator
8-162 Demonstration Programs for the PDP-8
8-167 CIRCUITS
5/8-173 TIC 5/8
5/8-174 MEDIUM
8-175 Post Stimulus Interval Histogram for AX-Ø8
8-191 Fields
8-193 DISP
8-209 Editor-With-View
8-249 Oscilloscope Vector Generator
8-255 SCED: Scope Editor for the AXØ8
5-277 ICBM
8-289 "ULKA" The Ultimate Kaleidoscope
8-334 KVEDIT
8-373 LISP Disk Array
8-383A Scan and Analysis Program
8-383B Core Display Program
8-383C Drawing Applications Program
8-411 Mongoose Display System
8-418A&B VEKSEL and PAPT
8-423 Disk Editor With View for LAB-8
8-442 "The BYU Boob Tube"
8-450 PS/8 Editor with Display for KV8/1 (Overlay)
8-451 PS/8 Handler for KV/8 Vector Display
8-455 CRTPAC
8-486 SEGAR 7: A Seven Segment Array for
Alphanumeric Character Generation
8-514 Alpha-Numeric Display Program
8-547 Advanced Averager Program (Rotterdam
Version)
8-552 Storage Display Device Handler
8-573 EDITS - A PS/8 Editor for Non-storage
Scope Display
8-598 CRT: An OS/8 Handler for Tektronix 611
Storage Scope
8-614 Clock Calibration

DECUS NO.

TITLE

FOCAL8-6 FOCAL-8 Patch for LINC-8 Display
FOCAL8-7 STRIP FOCAL: Storage of Data Arrays in
FOCAL
FOCAL8-57 FOCAL Display on a 338
FOCAL8-58 A Patch to FOCAL W to use the LINC-8
Display
FOCAL8-154 8K FOCAL Display
FOCAL8-187 Display FOCAL
FOCAL8-264 MEMORY, A Children's Game

12-6 ANDIP - Analog Digital Interchange Program
12-21 Modified MAGSPY
12-33 KWANDA
12-37 ODCAD (Octal to Decimal Conversion and
Display)
12-39 QUANAT 1
12-41 BLOODP - Blood Pressure Display Program
12-51 MAGSPYD
12-57 SPY* - Modified MAGSPY
12-71 Snoopy Display Program
12-76 TAPELOOK; CORELOOK; SEARCH
12-103 \$HAPPY
12-109A,B,C QNANSWER, QANDATTY, SUPRSHUF
12-115 PLOT3D, Pseudo 3-Dimensional Perspective
Display for the PDP-12
12-123 OS/8 VR12 Handler
12-125 Waveform Analysis
12-126 WAVEFORM: Evoked Potential Analysis

L-4.1 IN HISTO
L-11 DATUM8
L-27 Q & A Subroutine (Modification for LAP6
Characters)
L-66 LAP6DISP
L-69 GRAPHAS
L-87a SNOOPY Display Program for the LINC-8
L-99A & B CON2PTS/TSTCON
L-102 OCDISMEM
L-112 FSUPLOT: X-Y Plotter Routine for GRAPHAS
L-113 PDIS - A PDP-8 Routine to Access the
LINCscope
L-125 Patch to OS/8 TECO for LINC-8 Display

IX. DATA MANAGEMENT, SYMBOL MANIPULATION,
SORTING

DECUS NO.

TITLE

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 5/8-51 | Character Packing and Unpacking Routine |
| 8-117 | A PDP-8 Interface for a Charged Particle Nuclear Physics Experiment |
| 8-137a | Programs for Storage, Manipulation and Calculation of Data Using DECTape |
| 8-224 | PALT: Patch for Improved Text Handling for PAL-D |
| 8-267 | DARIC - Data Reduction in Columns |
| 8-280 | General Sorting Program |
| 8-284 | ASCO - Numerical Sort in Ascending Order |
| 8-416a | Bibliographical Handling |
| 8-418A&B | VEKSEL and PAPT |
| 8-427 a | MEMO II - A Text Formatting Program |
| 8-435 | RECOVER |
| 8-440 | PIPL |
| 8-441 | DELETE |
| 8-445 | FYLHLP - PS/8 File Utility Program |
| 8-449D | Buffered I/O Subroutines for the PDP-8 |
| 8-454 | Radio Teletype to ASCII |
| 8-457 | DTFIX |
| 8-460 | TT89 - Tape Transfer PDP-8 to PDP-9 |
| 8-461 | COPY1Ø - PDP-10 DECTape Program for the PDP-8 |
| 8-469 | Top Secret |
| 8-472 | PS8IN, PS8OUT |
| 8-484 | RESTore for the RKØ8 |
| 8-485 | Geometric Data Truncation for Fourier Transform Programs |
| 8-488 | NEWPAGE |
| 8-493 | Line to Block Conversion |
| 8-495 | CORRELATION ANALYSIS |
| 8-496 | UTR7: A 7-track Magnetic Tape Reading Utility |
| 8-519 | MACRO-8 Pass 3 Output Format Patch |
| 8-547 | Advanced Averager Program (Rotterdam Version) |
| 8-550 | Modified Matrix Inversion - Real Numbers |
| 8-562 | DISORT |
| 8-595 | UPDATE, A Program to Make Corrections to a File Containing Records of Variable Length |
| 8-597 | N.I.H. OS/8 Package |
| 8-608 | FUTIL - OS/8 File Utility |
| 8-610 | INVENT-8 |
| 8-611 | SLED - Source and Listing Editor |
| 8-612 | ELAN - Elementary Linguistic Analysis |
| 8-613 | Interconversion Between A/D Floating Point and D/A Formats |

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|------------|--|
| FOCAL8-7 | STRIP FOCAL: Storage of Data Arrays in FOCAL |
| FOCAL8-180 | FOCAL-SORT |
| FOCAL8-210 | CHAIN and FCOM |
| FOCAL8-234 | Action Indicator Calculator |

| | |
|---------------|------------------------------|
| 12-12 | 8TO12 File Converter |
| 12-34 | STAP-12 |
| 12-46 | STRINGS |
| 12-47 | PIP-16ØØ |
| 12-80 | FOCAL - RT |
| 12-105 | DATAFILE and DFUPDATE |
| 12-109A, B, C | QNANSWER, QANDATTY, SUPRSHUF |
| 12-111 | ADFILE |
| 12-112 | IDXRDD |
| 12-113 | IDXWT |

| | |
|-------|---|
| L-53a | FIND 1 |
| L-105 | INVEN: Creation and Storage of an Inventory |

X. PROBABILITY, STATISTICS, CURVE-FITTING

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|------------------|---|
| | | 8-557 | CLUSTR Cluster Analysis Program |
| | | 8-558 | CORREL Correlation Program and PCOMP-VARMX Factor Analysis Program |
| 5/8-9 | Analysis of Variance - PDP-5/8 | 8-564 | A Statistical System in PS/8 |
| 5-25 | A Pseudo Random Number Generator for the PDP-5 Computer | 8-603 | PATPST: Patch for DEC-LAB-8/E Post-Stimulus-Time-Histogram Program |
| 5/8-69 | LESQ29 and LESQ11 | | |
| 8-118 | General Linear Regression | | |
| 5/8-126 | Cumulative Gaussian Distribution Curve Fitting | | |
| 8-134 | LSQ: Least Squares Subroutine | | |
| 8-137a | Programs for Storage, Manipulation and Calculation of Data Using DEctape | | |
| 8-243 | Amplitude Distribution | | |
| 8-283 | A.V.S.C. (Analysis of Variance, Single Classification) | | |
| 8-300 | Noise Generator | | |
| 8-316 | CORR (Compute Correlation Matrix) | | |
| 8-317 | EIG (Compute Eigenvalues and Eigenvectors) | | |
| 8-318 | PART (Partitioning of Treatment Sums of Squares) | | |
| 8-319 | RAND (Computation of Random Fractions) | | |
| 8-320 | MMMS (Calculation of Minimum, Mean, Maximum and Standard Deviation) | | |
| 8-321 | REG-2 (Curvilinear Regression) REG-4 (Linear Regression) | | |
| 8-322 | CCMP (Correlation of Components and CVAL (Computes Values of Principal Components) | FOCAL8-14 | Least Squares Fit to a Straight Line |
| 8-324 | TSP - Trend Surface Plotting | FOCAL8-15 | Least Squares Fit to a Cubic Polynomial |
| 8-327 | CLAN (Cluster Analysis) and GRMN (Calculate Group Means) | FOCAL8-16 | One-Sample Statistics; Two-Sample Statistics; Welch Procedure; One-Way Analysis of Variance; Scheffe's Contrast Between Means |
| 8-328 | NNAN (Nearest Neighbor Analysis) - OREG (Orthogonalized Regression Analysis) - OREH (Additional Orthogonal Regression Coefficients) | FOCAL8-19 | Least Squares Fit to an Exponential |
| 8-387 | Grade Point Correlation | FOCAL8-20 | MULTIPULSE |
| 8-406 | STATPAC Revisions for PDP-8/I and TSS/8 | FOCAL8-21 | MULTIPULSE-2 |
| 8-410 | Pseudo-Random Number Generator, EAE Version | FOCAL8-26 | Curve Fitting |
| 8-429 | Intercorrelation 37 | FOCAL8-28 | Column Width; Traverse; Least Square "Linear Fit;" Weight Flow; Filter Design; Ohm's Law |
| 8-431 | 8/I LAB Data System | FOCAL8-34 | Simultaneous Equations; Abbreviated Simultaneous Equations; Curve Fittings |
| 8-434 | Data System for Magnetic Scanning Mass Spectrometers | FOCAL8-37 | N-th Degree Polynomial Data Point Fitting Routine; N-th Degree Polynomial Data Point Fitting Routine with RMS Error |
| 8-434.1 | SCAN (DC34) Data Acquisition Routine | FOCAL8-40 | Simple Chi-Square Test |
| 8-434.2 | STD (TM36) Automatic Reference Identification Routine | FOCAL8-61 | Least Square Fit to a Polynomial |
| 8-434.3 | CONV (IR18) Interpolation (Time to Mass) Title | FOCAL8-63 | CURFIT |
| 8-434.4 | TIC (TI26) Total Ion Current Plot | FOCAL8-65 | Kruskal-Wallis One-Way Analysis of Variance by Ranks |
| 8-434.5 | TAB (PR33) Tabular Listing of Spectra | | "Quick Scan" - Using Scheffe's Calculation |
| 8-434.6 | HIST (DP35) Histogram Plot of Spectra | FOCAL8-66 | T-Test |
| 8-434.7 | TUNE (TU1) Tuning Routine | FOCAL8-67 | Analysis of Variance |
| 8-493 | Line to Block Conversion | FOCAL8-69 | Analysis of Variance Randomized Block "F" Test |
| 8-495 | CORRELATION ANALYSIS | FOCAL8-70 | General Least Squares Fit |
| 8-504C | ESI Demonstration Programs | FOCAL8-72 | Screening Regression |
| 8-520 | PEST/WALD/PINIT: Adaptive Psychophysics Testing Package | FOCAL8-76 | Dose-Response Routine |
| 8-547 | Advanced Averager Program (Rotterdam Version) | FOCAL8-93 | Statistics - Standard Deviation |
| 8-549 | Polynomial Least Squares Fit | FOCAL8-96 | Analysis of Variance for Two-Dimensional Material |
| 8-554 | ANOVA and DUNCAN | FOCAL8-108 | Newton's Method of Approximating Real Roots of $P(x)=0$, Where the Degree of $P(x)$ is 4 or Less |
| 8-555 | MULTC Multiple Correlation Program | FOCAL8-109 | |
| 8-556 | CHISQ Chi Square Program | | |

X. PROBABILITY, STATISTICS, CURVE FITTINGDECUS NO.TITLE

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|--------------------|---|------------------|---|
| FOCAL8-115 | Short Programs for Statistical Analysis Using FOCAL | 12-34 | STAP-12 |
| FOCAL8-117 | ED-50 | 12-38A | Histogram and One-Factor Analysis of Variance |
| FOCAL8-124 | Analysis of Variance Package | 12-38B | Histogram and Two-Factor Analysis of Variance |
| FOCAL8-128 | Probability (2P); From t ("Student") Distribution | 12-74 | *REGRES - Multiple Linear Regression |
| FOCAL8-130 | FLHSTO | 12-83 | \$ANOVARM - ONE WAY ANALYSIS OF VARIANCE FOR REPEATED MEASURES DESIGN |
| FOCAL8-131 | ZAREA | 12-99 | A Set of Spectral Programs |
| FOCAL8-137 | General Nth Order Regression | 12-109A,B,C | QNANSWER, QANDATTY, SUPRSHUF |
| FOCAL8-138 | WCXT: The Wilcoxon Matched-Pairs Signed-Ranks Test for Non Parametric Data | 12-118 | Average Transient Advanced Programs |
| FOCAL8-160 | Non-Parametrics: The Mann-Whitney U Test and the Wilcoxon Matched-Pairs Sign-Ranks Test | 12-119 | Neurone Spike Train Alanysis Programs |
| FOCAL8-165 | F- (Variance Ratio) Distribution Probability | | |
| FOCAL8-166A & 166B | First and Second Order Partial Correlations | | |
| FOCAL8-167 | Five Statistical Programs for the PDP-8 or PDP-12 | | |
| FOCAL8-170 | Saint Peter's College Statistical Package | | |
| FOCAL8-171 | Minnesota Sociology Statistics Programs | | |
| FOCAL8-193 | Anova, 2-way, Unsymmetrical | | |
| FOCAL8-196 | Fisher's Exact Text | | |
| FOCAL8-208 | A Normally Distributed Random Number Generator in FOCAL | | |
| FOCAL8-221 | LSQ Stern-Volmer: Least Squares Treatment of the General Stern-Volmer Equation | | |
| FOCAL8-236 | Polynomial Curve Fitting (Streamlined Programs) | | |
| FOCAL8-243 | Analysis of Variance for One-Two-and Three-Treatment Designs for a PDP-8 | L-13 | AVPROG |
| FOCAL8-250 | Six Curves: GMS037 | L-14 | MEAN |
| FOCAL8-261 | Chi Square Utility Package, CHISQR | L-64 | A Pseudo Random Number Generator for the LINC-8 Computer |
| FOCAL8-266 | STATPACK, An Interactive Statistical Package | L-114 | Pseudo-Random Number Generator, EAE Version |

XI. SCIENTIFIC APPLICATION, ENGINEERING APPLICATION

| DECUS NO. | TITLE | DECUS NO. | TITLE |
|-----------|---|-----------|--|
| 8-49 | Relativistic Dynamics | 8-434.2 | STD (TM36) Automatic Reference Identification Routine |
| 8-65 | A Programmed Associative Multichannel Analyser | 8-434.3 | CONV (IR18) Interpolation (Time To Mass) Title |
| 8-90 | Histogram on Teletype Subroutine | 8-434.4 | TIC(TI26) Total Ion Current Plot |
| 8-92 | Analysis of Pulse-Height Analyzer Test | 8-434.5 | TAB (PR33) Tabular Listing of Spectra |
| 8-117 | A PDP-8 Interface for a Charged Particle Nuclear Physics Experiment | 8-434.6 | HIST (DP35) Histogram Plot of Spectra |
| 8-118 | General Linear Regression | 8-434.7 | TUNE (TU1) Tuning Routine |
| 8-133 | First Order Kinetics | 8-446 | A Patch to FFTS-R for Use Without the EAE |
| 8-145 | Time-of-Flight Analyzer | 8-447 | Roots of a Polynomial by Muller's Method |
| 8-161 | EXPO - A Flexible PDP-8 Data Acquisition Program | 8-453 | Rapid Alert Program (RAP) |
| 8-167 | CIRCUITS | 8-459 | TAYEX - Taylor Expansion Equation Solver |
| 8-169 | Physical Oceanography Data Reduction Programs for the PDP-8 (11 Parts - See abstract) | 8-468 | DIPDUB, A Dual-Independent Parameter, Double-Precision Pulse-Height Analysis Code |
| 8-171 | Real-Time System for Behavioral Science Experiments | 8-483 | GRFIT, A Simple Least Squares Routine |
| 8-175 | Post Stimulus Interval Histogram for AX-Ø8 | 8-501 | Galactic Coordinates |
| 8-194 | NMR Simulator | 8-514 | Alpha-Numeric Display Program |
| 8-208 | Evaluating Determinants (from 2-17) | 8-520 | PEST/WALD/PINIT: Adaptive Psychophysics Testing Package |
| 8-223 | Power Spectrum | 8-524 | GRNDYE 1970 - A Program to Estimate Cardiac Output Off-line from an Indicator Dilution Curve |
| 8-237 | MADCAP IV, A Multiplex ADC and Analog Plotting Program | 8-525 | DAFFT/PAFFT/DAQUAN(EAE) |
| 8-238 | EPRSIM, An Electron Paramagnetic Resonance Simulator | 8-529 | OSCAR: An Operating System for Computerized Animal Research |
| 8-254 | Vector Algebra Package | 8-536 | Advanced Averager Improvement |
| 8-258 | NMRCAT-29: A Simplified Signal Averager Program | 8-542 | Radioactive Decay |
| 8-260 | TOFAST - Fast Direct and Inverse Discrete Fourier Transform Routines | 8-547 | Advanced Averager Program (Rotterdam Version) |
| 8-279 | Bar Chart Plotting Subroutine | 8-559 | CUBIC |
| 8-292 | Fast Fourier Transform and Fast Walsh-Fourier Transform | 8-566 | PARTL |
| 8-293 | Atomic Coordinate Program | 8-567 | EXPO |
| 8-299 | Latency Histogram and Calculation | 8-568 | CFI - Continued Fraction Inversion |
| 8-323 | CRC (Convert Peak Heights on an Auto-Analyzer Chart to PPM and Percentage) | 8-578 | Chromaticity Diagram |
| 8-325 | SBSM - Calculation of Duplicate Sub-Samples from Primary Data | 8-591 | Pulmonary Resistance |
| 8-326 | MLWI - Malawi Land Use Survey Analysis | 8-603 | PATPST: Patch for DEC-LAB-8/E Post-Stimulus-Time-Histogram Program |
| 8-339A | PST (Post Stimulus Time) and Latency Histogram for the LAB-8 | | |
| 8-339B | Time Interval Histogram Program | | |
| 8-340 | The Auto and Cross-Correlation Program for the LAB-8 | | |
| 8-342 | STAP-8; Spike Train Analysis Program | | |
| 8-347 | DUBAVG | | |
| 8-371 | Teletype Control of ND 50/50 Memory Unit (TYPED) | | |
| 8-396 | MTS-6/70 (Millisecond Time-Sharing System) | | |
| 8-419 | Nmr-Pulse for the Lab-8/1 | 8-143 | FFTS-R - A Fast Fourier Transform Subroutine for Real Valued Functions |
| 8-420 | LOGSIM-8 | 8-144 | FFTS-C - A Fast Fourier Transform Subroutine for Complex Data |
| 8-424 | Morse Code | | |
| 8-431 | 8/1 LAB Data System | | |
| 8-434 | Data System for Magnetic Scanning Mass Spectrometers | | |
| 8-434.1 | SCAN (DC34) Data Acquisition Routine | | |

XI. SCIENTIFIC APPLICATION, ENGINEERING APPLICATION

| DECUS NO. | TITLE | DECUS NO. | TITLE |
|------------|---|------------|---|
| FOCAL8-20 | MULTIPULSE | FOCAL8-217 | Hamming Algorithm to Solve Two Coupled Ordinary First Order Differential Equations With Given Initial Conditions |
| FOCAL8-21 | MULTIPULSE-2 | FOCAL8-220 | Individual Tablet Assay |
| FOCAL8-22 | Monte Carlo Solution to Neutron Penetration Problem | FOCAL8-221 | LSQ Stern-Volmer: Least Squares Treatment of the General Stern-Volmer Equation |
| FOCAL8-23 | Seismic Refraction Sloping Layer Program | FOCAL8-222 | Center of Gravity Calculations |
| FOCAL8-24 | GRADE: A Grade Averaging and Display Program | FOCAL8-226 | Frequency Transformation Program |
| FOCAL8-27 | Δ -Y Complex; Y - Δ Complex; Series Resonant Circuit Analysis | FOCAL8-227 | FOCL/F-An Extended Version of 8K FOCAL'69 |
| FOCAL8-28 | Column Width; Traverse; Least Square "Linear Fit," Nozzle Weight Flow; Filter Design; Ohm's Law | FOCAL8-228 | Great Circle Distance Between 2 Points |
| FOCAL8-29 | Second Order Differential Equation | FOCAL8-229 | H-800 Wiring Diagrams |
| FOCAL8-30 | One Line Routines; X^3 and Circle; Superposition; Circle | FOCAL8-233 | A FOCAL-Correlation Program for the LAB-8 System 1. Auto- and Cross-Correlation Program 2. Auto-Correlation Program |
| FOCAL8-31 | Sines; Factors; Figure Eight; Right Triangle Solutions | FOCAL8-235 | MPS Radiation Pattern Program |
| FOCAL8-35 | Rootfinder Program | FOCAL8-238 | Millikan Oil Drop Experiment |
| FOCAL8-36 | Determinot Program | FOCAL8-241 | Satellite Orbital Parameters |
| FOCAL8-38 | Magic Square Generator | FOCAL8-242 | Solution of Linear Equation Systems With Symmetrically Matrix |
| FOCAL8-48 | A FOCAL Program to Determine Low-Frequency Loudspeaker Parameters Experimentally | FOCAL8-258 | Hearing Loss Simulator |
| FOCAL8-50 | FOCAL Version of RC Active Filter | FOCAL8-262 | Protein Binding: PROBON 1 - Fraction Bound, PROBON 2 - Total Drug |
| FOCAL8-54 | Channel Information and Inverted Histogram Plot | FOCAL8-263 | ROOTS, A Polynomial Root Finder |
| FOCAL8-55 | Multichannel Analyzer | | |
| FOCAL8-62 | THE FOCAL TGH Clinical Package | | |
| FOCAL8-64 | Newton-Raphson Method for Determination of Polynomial Roots | | |
| FOCAL8-68 | Determination of Roots of a Polynomial | | |
| FOCAL8-83 | Gas Law Programs | 12-1 | EEG Data Collection (BNI Series) |
| FOCAL8-86 | KCF Temperature Conversion Table | 12-4 | IRDA |
| FOCAL8-88 | Atomic and Molecular Transition Probabilities in FOCAL | 12-15 | HISTO12 |
| FOCAL8-93 | Dose-Response Routine | 12-22 | PLOTFFT |
| FOCAL8-94 | Multidimensional Integration by Gaussian Quadrature | 12-23 | CFFT |
| FOCAL8-102 | Solution of Quadratic Equations with Complex Coefficients | 12-34 | STAP-12 |
| FOCAL8-113 | Acid-Base Titration Curves | 12-35 | Bioelectric Signal Sorter (JULIA) |
| FOCAL8-114 | Liquid Scintillation Data Processing Program | 12-41 | BLOOPD - Blood Pressure Display Program |
| FOCAL8-119 | CHEMS LAB 5 | 12-43 | PLOT3D |
| FOCAL8-132 | CIG-8 MARK II | 12-44 | AVERDT |
| FOCAL8-147 | Interaction Analysis | 12-53 | Liquid Scintillation Counting: Conversion of CPM to DPM in Double-label Experiments |
| FOCAL8-152 | Surface Plate Auto-Collimation | 12-55 | FFAESIM |
| FOCAL8-162 | Transistor H-Parameter Conversions | 12-62 | RUFUS |
| FOCAL8-163 | Erlang C Blocking Probability Programs | 12-63 | OLFFT1 and FETCHFFT |
| FOCAL8-175 | Modifications and Supplement to FOCAL8-50 | 12-65 | PISH - Poststimulus Time and Interspike-Interval Histogram |
| FOCAL8-176 | RC Filter Design and Plot and 3-Pole Butterworth Filters | 12-69 | An On-Line FOCAL-12 Program for Auto-Analyzers |
| FOCAL8-181 | Program for Producing Histograms from Clinical Data on Teletype | 12-72 | Four-Point Smoothing with FPP-12 |
| FOCAL8-198 | Filter Design | 12-73 | 8-Point Quadratic Smooth with FPP-12 |
| FOCAL8-204 | Michaelis-Menten Kinetics | 12-80 | FOCAL - RT |
| FOCAL8-207 | Acid-Base Equilibria | 12-89 | BUTFLTR |
| FOCAL8-209 | EAI/ASCII Converter and 'SLO-SYN' NC Program and Tape Generator | 12-94 | DATAN |
| | GRFIT, A Simple Least Squares Routine | 12-97 | An Off-Line FOCAL-12 Program for Auto Analyzers by TWX |

XI. SCIENTIFIC APPLICATION, ENGINEERING APPLICATION

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 12-98 | HERALD - Analog-Digital Average and Standard Error Program |
| 12-101 | OS/8 SKED |
| 12-104 | CORDATFP |
| 12-107 | AVUPTO8, AVUPTO8S |
| 12-109A, B, C | QNANSWER, QANDATTY, SUPRSHUF |
| 12-116 | FPP-12/FOCAL-12 Reduction of Auto Analyzer Data for Pharmaceuticals |
| 12-118 | Average Transient Advanced Programs |
| 12-119 | Neurone Spike Train Analysis Programs |
| 12-121 | Arrhythmia Detection and Categorization |
| 12-125 | Waveform Analysis |
| 12-126 | WAVEFORM: Evoked Potential Analysis |

DECUS NO.

TITLE

| | |
|--------|---|
| L-4.1 | IN HISTO |
| L-10 | LINC-8 Multianalyzer |
| L-11 | DATUM8 |
| L-25 | LINC Spectrum Program |
| L-33 | On-Line LABCOM System (Version 4) |
| L-40 | Averager System for the Classic LINC |
| L-82 | Root Solver - Real Coefficients |
| L-84 | SEPAN/Sequential Pattern Analysis |
| L-89 | ECGAV8 |
| L-90 | TDIST |
| L-91 | PROG 2 |
| L-92 | SPKDET |
| L-96 | SIGAVE1, SIGAVE2, SIGAVE3, SIGAVE4 and EVRANA |
| L-104A | JIH (Joint Interval Histogram) |
| L-104B | JIHE - Joint Interval Histogram (English Version) |
| L-113 | PDIS - A PDP-8 Routine to Access the LINCscope |

XII. HARDWARE CONTROL

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|--|------------------|---|
| 8-58 | One-Page DEctape Routine | 8-573 | EDITS - A PS/8 Editor for Non-storage Scope Display |
| 8-77 | PDP-8 Dual Process System | 8-574 | TD8E System Handler for 8K PS/8 |
| 8-82 | Library System for 580 Magnetic Tape (Preliminary Version) | 8-592 | Printer Test Program |
| 8-104 | Card Reader Subroutine for the PDP-8 FORTRAN Compiler | 8-597 | N.I.H. OS/8 Package |
| 8-121 | DEctape Handler | 8-598 | CRT: An OS/8 Handler for Tektronix 611 Storage Scope |
| 8-201 | DECSW | 8-614 | Clock Calibration |
| 8-224 | PALT: Patch for Improved Text Handling for PAL-D | | |
| 8-225 | CR8/I Overlay for PAL III Assembler | | |
| 8-229 | Card III Overlay | | |
| 8-246 | DF32 Disk Routines | | |
| 8-258 | NMRCAT-29: A Simplified Signal Averager Program | | |
| 8-264 | CLOK - AXØ8 RC Clock or External Clock Frequency or Period Measurement | FOCAL8-44 | Magtape Analyser Using I/O FOCAL |
| 8-285 | Teletype Input-Output Package | FOCAL8-45 | Universal I/O Handler for FOCAL |
| 8-287 | A PDP-8 Program to Provide Teletype Entry into the IBM JET System | FOCAL8-80 | Using the High Speed Punch with FOCAL |
| 8-312 | DEctape Emulator | FOCAL8-224 | SPASTIC - A System for Programming Angles, Scaler, and Timer by Internal Counting |
| 8-343 | Radial Interface Including Interrupt Mask for the PDP-8 or LINC-8 | FOCAL8-227 | FOCL/F-An Extended Version of 8K FOCAL'69 |
| 8-381 | Cardreader Subroutine for Disk Editor | FOCAL8-230 | CALCOMP Plotter FNEW PLOTX |
| 8-424 | Morse Code | | |
| 8-434 | Data System for Magnetic Scanning Mass Spectrometers | | |
| 8-434.1 | SCAN (DC34) Data Acquisition Routine | | |
| 8-434.2 | STD (TM36) Automatic Reference Identification Routine | | |
| 8-434.3 | CONV (IR18) Interpolation (Time To Mass) Title | 12-29 | LINC-10 |
| 8-434.4 | TIC (TI26) Total Ion Current Plot | 12-75 | FORTTRAN Subroutines for the PDP-12 |
| 8-434.5 | TAB (PR33) Tabular Listing of Spectra | 12-114 | FOCAL-PL |
| 8-434.6 | HIST (DP35) Histogram Plot of Spectra | | |
| 8-434.7 | TUNE (TUI) Tuning Routine | | |
| 8-449A | A Magtape Handler for the PDP-8/TU20 | | |
| 8-449B | LPTQUE - A PTØ8 to A. B. Dick Line Printer Utility Program | | |
| 8-450 | PS/8 Editor With Display for KV8/I (Overlay) | | |
| 8-451 | PS/8 Handler for KV/8 Vector Display | | |
| 8-452 | ANSAM (Analog Sampling) | L-6 | TRIGGR |
| 8-455 | CRTPAC | L-18 | BUFFER - Fully Buffered Teletype I/O |
| 8-457 | DTFIX | L-23 | Control to Designate Left or Right LINC-8 Tape Transports as Unit Zero |
| 8-458 | VW - Field Independent I/O Handler for Disk and TTY | | |
| 8-464 | TRØ2 Magnetic Tape Device Handler for PS/8 | L-70 | A LINC-8 Program to Provide for Entry Into the IBM JET System |
| 8-490 | Tape Alteration Program | L-85 | DPT-1 Real-Time Clock |
| 8-496 | UTR7: A 7-track Magnetic Tape Reading Utility | L-106 | Radial Interface Including Interrupt Mask for the PDP-8 or LINC-8 |
| 8-498 | Unencoded Incremental Plotter Subroutine | L-113 | PDIS - A PDP-8 Routine to Access the LINCscope |
| 8-499 | High-Speed Reader Patch for Lo-Speed Macro-8 | L-116 | TEXTOUT Subroutine |
| 8-509 | INTERRUPT - TEST | L-118 | ECHO Keyboard Subroutine |
| 8-537 | Talking Eights | L-119 | Keyboard Subroutine |
| 8-552 | Storage Display Device Handler | | |

XIII. GAME, DEMONSTRATION

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 5/8-14 | Dice Game for the PDP-5/8 |
| 5/8-15 | ATEPO (Auto Test in Elementary Programming and Operation of a PDP-5 Computer) |
| 5/8-54 | TIC-TAC-TOE Learning Program - T3 |
| 8-71 | Perpetual Calendar |
| 8-79 | TIC-TAC-TOE (Trinity College) |
| 8-94A | BLACKJACK |
| 8-94B | BLACKJACK "Overlays" |
| 8-98 | 3D Draw for 338 Display |
| 8-99A | Kaleidoscope |
| 8-99B | Kaleidoscope - 338 Display |
| 8-107 | CHESSBOARD |
| 8-108 | Increment Mode Compiler (INCMOD) |
| 8-112 | Sentence Generator |
| 8-119 | Off-Line TIC-TAC-TOE Program for the PDP-8 Computer |
| 8-151 | On-Line TIC TAC TOE |
| 8-152a | PDP-8 Music Programs |
| 8-162 | Demonstration Programs for the PDP-8 |
| 5/8-173 | TIC 5/8 |
| 5/8-174 | MEDIUM |
| 8-191 | Fields |
| 8-196 | DET - Detect Key Words |
| 8-215 | Hexapawn |
| 8-219 | LISS |
| 8-261 | QUBIC |
| 8-269 | Morse Code Trainer |
| 8-275 | Grade Compiler |
| 5-277 | ICBM |
| 8-289 | "ULKA" The Ultimate Kaleidoscope |
| 8-308 | PDP-8 Morse Code Sender |
| 8-331 | Roulette |
| 8-332 | The Civil War Game |
| 8-346 | Pollution Game |
| 8-353 | Disk Monitor Patch for BLACKJACK |
| 8-359 | Hi-Q Game Playing Program |
| 8-361 | Game of Chance |
| 8-388 | CALENDAR |
| 8-394 | BASIC MOO |
| 8-395 | Space War |
| 8-401 | Dice Game and TIC-TAC-TOE |
| 8-424 | Morse Code |
| 8-426 | Prime Number Generator |
| 8-430 | DECK: A Random Deck of Cards |
| 8-437 | Computer Dating Game |
| 8-442 | "The BYU Boob Tube" |
| 8-462 | INSTIN |
| 8-463 | Perpetual Calendar (BASIC Version) |
| 8-469 | Top Secret |
| 8-494 | Translate Arabic Into Roman Numerals |
| 8-504C | ESI Demonstration Programs |
| 8-517 | Bowling League Results, Standings and Averages Program |
| 8-521 | A CLOCK |
| 8-528 | TIC-TAC-TOE: Modifications to TIC 5/8, DECUS NO. 8-173 |
| 8-537 | Talking Eights |
| 8-545 | PIF (Program Interrupt Facility for 3 TTY's) |
| 8-560 | SAM-1 |
| 8-563 | TAPE |

DECUS NO.

TITLE

| | |
|------------|---|
| FOCAL8-5 | The Sumer Game |
| FOCAL8-9 | Hexapawn |
| FOCAL8-38 | Magic Square Generator |
| FOCAL8-41 | FRAN THE BARMAID |
| FOCAL8-42 | The Hangman Game |
| FOCAL8-46 | 4-DIGIT, 12-Bit Word Practice |
| FOCAL8-71 | FOCAL Golf Program for the PDP-8 (8K) Computer |
| FOCAL8-75 | Blackjack |
| FOCAL8-77 | MARX: A Grading Program |
| FOCAL8-78 | RACK-O |
| FOCAL8-79 | The Carnival Game |
| FOCAL8-81 | FOCAL Lunar Landing Simulation (APOLLO) |
| FOCAL8-92 | FOCAL Horserace for the PDP-8 (8K) Computer |
| FOCAL8-95 | One-Armed Bandit |
| FOCAL8-99 | 3 Dimensional TIC TAC TOE (3X3X3) |
| FOCAL8-101 | "HORSERACE" |
| FOCAL8-103 | TEACH |
| FOCAL8-104 | The Towers of Hanoi |
| FOCAL8-107 | NIM |
| FOCAL8-111 | Battle of Numbers Game (Newberry College Version) |
| FOCAL8-112 | TIC-TAC-TOE (FOCAL) |
| FOCAL8-121 | Play Golf With Arnold Palmer |
| FOCAL8-122 | Charge Account |
| FOCAL8-127 | FOCAL - SLOT |
| FOCAL8-134 | 1-20 Counting Game |
| FOCAL8-146 | Zeller's Congruence/Day of the Week |
| FOCAL8-149 | Checkers |
| FOCAL8-156 | Blackjack for FOCAL |
| FOCAL8-158 | Mileage Program |
| FOCAL8-168 | One-Armed Bandit - PDP-8 Style |
| FOCAL8-169 | FOCAL Version of the GE Basic Artillery Game |
| FOCAL8-173 | APOLLO II |
| FOCAL8-183 | DARTS |
| FOCAL8-185 | LIFE |
| FOCAL8-186 | SUMER (FRENCH) |
| FOCAL8-197 | Self-Teaching Program for FOCAL |
| FOCAL8-199 | Stock Market Game |
| FOCAL8-228 | Great Circle Distance Between 2 Points |
| FOCAL8-229 | H-800 Wiring Diagrams |
| FOCAL8-240 | Science Fiction Quiz |
| FOCAL8-244 | HANGMAN IV |
| FOCAL8-246 | Undefeatable FOCAL TIC-TAC-TOE |
| FOCAL8-251 | 12K Overlay for FOCAL |
| FOCAL8-257 | LIMERICK GENERATOR; RANDOM SENTENCE GENERATOR; LIFE SPAN SIMULATION PROGRAM |
| FOCAL8-264 | MEMORY, A Children's Game |
| FOCAL8-267 | BLACKJACK for FOCAL, 1969 |
| FOCAL8-270 | MONOPOLY |

XIII. GAME, DEMONSTRATION

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|------------------------|
| 12-21 | Modified MAGSPY |
| 12-36 | Hangman for PDP-12 |
| 12-60 | SUMER (French) |
| 12-71 | Snoopy Display Program |
| 12-85 | APOLLO 12 |
| 12-86 | ORGAN-AA and ORGAN+BA |
| 12-103 | \$HAPPY |

| | |
|--------|---------------------------------------|
| L-2.1 | Clock 1 for LINC; Clock 8 for LINC-8 |
| L-39 | SPCWAR |
| L-74 | NIM |
| L-87a | SNOOPY Display Program for the LINC-8 |
| L-121A | HISTOG |
| L-123 | Towers of Hanoi |

XIV. PLOTTING

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|--|------------------|--|
| 5-30 | GENPLOT - General Plotting Subroutine | 12-42 | CALCO12 |
| 5-31a | FORPLOT | 12-59 | FOCPLOT |
| 8-147 | Incremental Plotter Printout Subroutine | 12-70 | COMPLT |
| 8-148 | Plotter System | 12-78 | PUBPLOT |
| 8-168 | CalComp Plotting Package | 12-84 | AVERAGER |
| 8-202 | PLOT | 12-106 | \$PLOT |
| 8-203 | ALPHA | 12-107 | AVUPTO8, AVUPTO8S |
| 8-263 | XYPLOT - A Versatile Plot Routine for the D/A Converter | 12-114 | FOCAL-PL |
| 8-279 | Bar Chart Plotting Subroutine | | |
| 8-367 | Digital 8-12-U Modified | | |
| 8-498 | Unencoded Incremental Plotter Subroutine | | |
| FOCAL8-4 | PRIME PLOTS | L-9a | LINC-CalComp Plot Subroutine Package |
| FOCAL8-12 | QUIPI - Quick Plot in Quadrant 1 | L-24 | PLTKBD - Plotkeyboard |
| FOCAL8-13 | 3D PLOTTER | | |
| FOCAL8-84 | 2D Plotter for Serial Experimental Data | L-77 | Extended PROGOFOP to Drive An Inexpensive X-Y Plotter |
| FOCAL8-90 | X-Y Plotter for FOCAL '69 | | |
| FOCAL8-97 | Multiple Equation Graphing on a Teletype | L-78 | XY Plotter Maintenance Programs, XYSET and XYTEST |
| FOCAL8-126 | PLOTTER | L-81 | FOCDAT |
| FOCAL8-195 | All Purpose Graphing Program | L-107 | Digital 8-12-U Modified |
| | | L-112 | FSUPLOT: X-Y Plotter Routine for GRAPH |
| | | L-121A | HISTOG |

XV. DESK CALCULATOR, BUSINESS APPLICATIONDECUS NO. TITLE

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|--|
| 5-5 | Expanded Adding Machine |
| 8-122A | SNAP (Simplified Numerical Analysis) Without EAE |
| 8-122B | SNAP (Simplified Numerical Analysis) With EAE |
| 8-155 | HEP |
| 8-192 | T.A.L.C.: Taylor's Algebraic Linear Calculator |
| 8-231 | Data Processing on the PDP-8/S |
| 8-251 | A System for Production of Problem Sets with Individualized Data |
| 8-275 | Grade Compiler |
| 8-453 | Rapid Alert Program (RAP) |
| 8-504A | ESI (Engineering and Scientific Interpreter) |
| 8-504B | ESIX - Extended ESI |
| 8-595 | UPDATE, A Program to Make Corrections to a File Containing Records of Variable Length |
| 8-607 | CALCU1 |
| 8-610 | INVENT-8 |

| | |
|-------|--|
| L-105 | INVEN: Creation and Storage of an Inventory |
|-------|--|

| | |
|------------|---|
| FOCAL8-25 | Payroll Calculations (California, 1968) |
| FOCAL8-56 | Merchandise Price Tags |
| FOCAL8-60 | A System for Production of Problem Sets with Individualized Data |
| FOCAL8-122 | Charge Account |
| FOCAL8-184 | Manpower |
| FOCAL8-225 | Loan Amortization Schedule |
| FOCAL8-227 | FOCL/F-An Extended Version of 8K FOCAL'69 |
| FOCAL8-234 | Action Indicator Calculator |
| FOCAL8-237 | Bond Computations |
| FOCAL8-249 | Payroll Listings and Totals |

XVI. MAINTENANCE

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 5-10 | Paper Tape Reader Tester |
| 8-222 | Disk Memory Retention Test |
| 8-443 | Keyboard Test Tape for Hot Metal Linecaster with TTS |
| 8-444 | COREMAP |
| 8-509 | INTERRUPT - TEST |
| 8-608 | FUTIL - OS/8 File Utility |
| 8-614 | Clock Calibration |

12-16 MODCLK

L-26 RELTS8-1C

XVII. MISCELLANEOUS

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 8-362 | IOFMAG |
| 8-403 | Stereo - A 2 Channel Music Program |
| 8-443 | Keyboard Test Tape for Hot Metal Linecaster with TTS |
| 8-472 | PS8IN, PS8OUT |
| 8-540A | BRAILLE-8 |
| 8-540B | BPRINT |
| 8-548 | Links to Page Routine |
| 8-561 | Revised HELP Loader for High Speed Reader and New BIN Loader |
| 8-602 A&B | The PDP-8 Cookbook, Volume 1 & 2 |

| | |
|------------|---|
| FOCAL8-85 | Program Replication |
| FOCAL8-87 | Keyboard Readable Punch |
| FOCAL8-155 | FACTORS |
| FOCAL8-161 | Wilmot Grading Program |
| FOCAL8-178 | Motion Picture Package |
| FOCAL8-179 | Depth of Field Program for Still Camera Lenses |
| FOCAL8-254 | Patch to Allow Computed Line Numbers in FOCAL 1969 |
| FOCAL8-258 | Hearing Loss Simulator |

| | |
|--------|--|
| 12-5 | SERCHPRO |
| 12-40 | PDP-8 Disk Monitor - LAP6-DIAL Interface |
| 12-49 | Cold Start DR32 Disk Formatter for PS/8 on a PDP-12 |
| 12-52 | Student Test Analysis |
| 12-102 | A Manual for the PDP-12 Operator |

L-27 Q & A Subroutine (Modification for LAP6
Characters)

| | |
|--------|---|
| L-100 | LEAP or 8-Library Index Printer |
| L-113 | PDIS - A PDP-8 Routine to Access the LINCscope |
| L-117 | SEARCH Bibliography System |
| L-121C | FRACDISP |
| L-121D | KBDPNCH |

FUTURE SUBMISSIONS AND ANNOUNCEMENTS SHOULD BE CATEGORIZED USING THIS LIST

DECUS PROGRAM LIBRARY CATEGORY CODES*

00. Utility (External) Programs

- 0 Unclassified
- 1 Multiple Utility
- 2 Flowcharting
- 3 Magnetic Tape Handling
- 4 Paper Tape Handling
- 5 Disk Handling
- 6 Drum and Direct Data Devices
- 7 Graphic Display Devices
- 8 Remote Data Acquisition

01. Utility (Internal) Programs

- 0 Unclassified
- 1 Loading
- 2 Clear/Reset Memory
- 3 Check Sum Accumulative and Correction
- 4 Internal Housekeeping
- 5 Dump to Reload/Restore Operations
- 6 File Organization
- 7 Self Checking Digit
- 8 Packed Data Handlers
- 9 Duplicators/Verifiers

02. Diagnostics

- 0 Unclassified
- 1 Status Recorders
- 2 Hardware Maintenance

03. Programming Systems

- 0 Unclassified
- 1 Assemblers
- 2 Compilers
- 3 Interpretive Systems
- 4 Input/Output Control
- 5 Report Generators
- 6 Preprocessing and Editing
- 7 Macros and Macro Generators
- 8 Functions and Subroutines
- 9 Desk Calculators

04. Testing and Debugging

- 0 Unclassified
- 1 Dumping
- 2 Tracing
- 3 Test Data Preparation
- 4 Testing Systems
- 5 Break Point Printing
- 6 Memory Verification and Searching
- 7 On-Line (DDT Type) Debuggers

05. Executive Routines

- 0 Unclassified
- 1 Monitor
- 2 Supervisors
- 3 Disassembly and Derelativizing
- 4 Relativizing
- 5 Relocation

06. Data Handling

- 0 Unclassified
- 1 Sorts
- 2 Merges
- 3 Data Transmission
- 4 Table Operation
- 5 Conversion and/or Scaling
- 6 Character and Symbol Manipulation
- 7 Information Classification, Storage, and Retrieval
- 8 List Processing
- 9 Typesetting

07. Input/Output

- 0 Unclassified
- 1 Binary
- 2 Octal
- 3 Decimal
- 4 BCD
- 5 Hexadecimal
- 6 Composite
- 7 ASCII
- 8 Plotting
- 9 Display

10. Systems Analysis

- 0 Unclassified
- 1 Network Design
- 2 File and Core Requirement
- 3 System Design
- 4 Configuration

11. Simulation of Computers and Components

- 0 Unclassified
- 1 Computers
- 2 Peripheral Equipment
- 3 System Component or Feature
- 4 Pseudo-Computer

12. Conversion of Programs and Data

- 0 Unclassified
- 1 Data Conversion
- 2 Computer Language Translators

*These category (classification) codes have been adopted directly from those established by JUG (Joint User Group)

- 13. Statistical
 - 0 Unclassified
 - 1 Descriptive
 - 2 Univariate and Multivariate Parametric
 - 3 Non-Parametric
 - 4 Time Series and Auto Correlation
 - 5 Probability Distribution Sampling and Random Number Generators
 - 6 Correlation and Regression Analysis
 - 7 Analysis of Variance and Covariance
 - 8 Sequential Analysis
 - 9 Discriminant Analysis

- 15. Management Science/Operations Research
 - 0 Unclassified
 - 1 Simulations
 - 2 Linear Programming
 - 3 Non-Linear Programming
 - 4 Scheduling/Critical Path/PERT/LESS
 - 5 Games, Game-like Models and Game Theory
 - 6 General Problem Solvers
 - 7 Inventory Control

- 16. Engineering
 - 0 Unclassified
 - 1 Aeronautical
 - 2 Civil
 - 3 Chemical
 - 4 Electrical
 - 5 Mechanical and Hydraulic
 - 6 Petroleum
 - 7 Nuclear
 - 8 General
 - 9 Simulation

- 17. Sciences and Mathematics
 - 0 Unclassified
 - 1 General
 - 2 Nuclear Physics
 - 3 Chemistry
 - 4 Geology, Oceanography, Oceanology and Geophysics
 - 5 Biology
 - 6 Social and Behavior
 - 7 Astronomy and Celestial Navigation
 - 8 Simulation
 - 9 Pure Mathematics

- 18. Nuclear Codes
 - 0 Unclassified

- 19. Financial
 - 0 Unclassified
 - 1 Inverting and Borrowing
 - 2 Capital Stock
 - 3 Taxes
 - 4 Cash Custody and Forecasting
 - 5 General Accounting
 - 6 Auditing
 - 7 Banking Operations

- 20. Cost Accounting
 - 0 Unclassified
 - 1 Material Only
 - 2 Labor Only
 - 3 Work in Progress

- 21. Payroll and Benefits
 - 0 Unclassified
 - 1 Payroll
 - 2 Employee Benefits
 - 3 Profit Sharing
 - 4 Retirement
 - 5 Insurance
 - 6 Credit Union

- 22. Personnel
 - 0 Unclassified
 - 1 Recruiting and Hiring
 - 2 Inventorying Employees
 - 3 Training
 - 4 Performance Review
 - 5 Administering Wages and Salaries

- 23. Manufacturing
 - 0 Unclassified
 - 1 Scheduling/Loading
 - 2 Job Reporting
 - 3 Bill of Materials Processors
 - 4 Numerical Control
 - 5 Control Systems

- 24. Quality Assurance/Reliability
 - 0 Unclassified
 - 1 Testing
 - 2 Performance Analysis

- 25. Inventory
 - 0 Unclassified
 - 1 Stocking and Issuing
 - 2 Inventory Analysis
 - 3 Equipment and Tool Inventory and Maintenance

26. Purchasing

- 0 Unclassified
- 1 Preparing Purchase Orders
- 2 Matching Invoices
- 3 Accounts Payable
- 4 Purchase Analysis

27. Marketing

- 0 Unclassified
- 1 Sales and Billings Forecasting
- 2 Promotion and Advertising
- 3 Bid or Request Analysis
- 4 Distribution or Territory Analysis

28. Sales Entered and Billed

- 0 Unclassified
- 1 Order Entry and Scheduling
- 2 Invoicing
- 3 Accounts Receivable
- 4 Sales and Billing Analysis
- 5 Backlog Reporting

29. General Business Services

- 0 Unclassified
- 1 Records Retention
- 2 Forms Management
- 3 Transportation
- 4 Printing and Reproduction

30. Demonstrations and Games

- 0 Unclassified
- 1 Display
- 2 Participation

40. Arithmetic Routines

- 0 Unclassified
- 1 Real Numbers
- 2 Complex Numbers
- 3 Decimal
- 4 Floating Point

41. Elementary Functions

- 0 Unclassified
- 1 Trigonometric
- 2 Hyperbolic
- 3 Exponential and Logarithmic
- 4 Roots and Powers
- 5 Geometry
- 6 Logical and Rounded

42. Polynomials and Special Functions

- 0 Unclassified
- 1 Evaluation of Polynomials
- 2 Roots of Polynomials
- 3 Evaluation of Special Functions
- 4 Simultaneous Non-Linear Algebraic Equations
- 5 Simultaneous Transcendental Equations

43. Operations on Functions and Solutions of Differential Equations

- 0 Unclassified
- 1 Numerical Integrations
- 2 Numerical Solutions of Ordinary Differential Equations
- 3 Numerical Solutions of Partial Differential Equations
- 4 Numerical Differentiation

44. Interpolation and Approximations

- 0 Unclassified
- 1 Table Look-up and Interpolation
- 2 Curve Fitting
- 3 Smoothing

45. Operations on Matrices, Vectors and Simultaneous Linear Equations

- 0 Unclassified
- 1 Matrix Operations
- 2 Eigenvalues and Eigenvectors
- 3 Determinates
- 4 Simultaneous Linear Equations
- 5 Vector Analysis

50. Insurance

- 0 Unclassified
- 1 Life
- 2 Fire
- 3 Pension and Welfare

61. Education

- 0 Unclassified
- 1 Demonstrations
- 2 Problem Solving
- 3 Record Keeping

62. Literary Data Processing

- 0 Unclassified
- 1 General
- 2 Language and Literature
- 3 Linguistics
- 4 Language Translation
- 5 Concordances
- 6 Content Analysis
- 7 Text Editing
- 8 Bibliographic Analysis
- 9 Text Manipulation

63. Humanities

- 0 Unclassified
- 1 General
- 2 Music
- 3 History
- 4 Art

71. Hybrid Computing

- 0 Unclassified
- 1 Analog/Digital, Digital/Analog Conversion
- 2 Real Time Computing
- 3 Simulation

72. Time Sharing

- 0 Unclassified

99. Miscellaneous

- 0 Unclassified

PS/8 - OS/8 PROGRAMS

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|--|------------------|---|
| 8-334 | KVEDIT | 8-595 | UPDATE, A Program to Make Corrections to a File Containing Records of Variable Length |
| 8-370A | FBUILD | | |
| 8-370B | DISK | 8-597 | N.I.H. OS/8 Package |
| 8-391a | 7 or 9 Track MTA for PS-8 with TC-58/TU-20 | 8-598 | CRT: An OS/8 Handler for Tektronix 611 Storage Scope |
| 8-398 | IMAGE | | |
| 8-421 | Chain Load | 8-599 | DIBILD.; Directory Rebuilder for PS/8 or OS/8 |
| 8-425 | Block-Modify for PS/8 | | |
| 8-427a | MEMO II - A Text Formatting Program | 8-600 | EXPIP (Extensions PIP) |
| 8-439 | MOVE | 8-606 | PIPII |
| 8-440 | PIPL | 8-607 | CALCU1 |
| 8-441 | DELETE | 8-608 | FUTIL - OS/8 File Utility |
| 8-445 | FYLHLP - PS/8 File Utility Program | 8-609 | OCOMP - Octal Compare and Dump |
| 8-450 | PS/8 Editor with Display for KV8/I (Overlay) | 8-610 | INVENT-8 |
| 8-451 | PS/8 Handler for KV/8 Vector Display | | |
| 8-464 | TRØ2 Magnetic Tape Device Handler for PS/8 | | |
| 8-472 | PS8IN, PS8OUT | | |
| 8-473 | Three Utility Routines for PS/8 | | |
| | 1. DTA and DECLAB | | |
| | 2. CHANGE and REMOVE | | |
| | 3. LIST | | |
| 8-474 | EXIT PS/8 | | |
| 8-475 | PIPQ | | |
| 8-476 | Obsolete | | |
| 8-477 | RIBIER - A Program for the PDP-8/I Enabling the Transition from the PS/8 System to the Paper Tape System | | |
| 8-478 | Monitor Command Extensions in PS/8 | | |
| 8-497A.1 | 8BAL - PDP-8 Macro Language | | |
| 8-497B | 8BAL Source Documentation | | |
| 8-500 | DUMP8 | | |
| 8-516 | Self-Starting PS/8 Loader | | |
| 8-517 | Bowling League Results, Standings and Averages Program | | |
| 8-518 | PS/8 FORTRAN Alphabetical Sort | | |
| 8-530 | 8BALIB - 8BAL Macro Library Generator | | |
| 8-531B | 'TRIPLE' 8BAL Macros | | |
| 8-536 | Advanced Averager Improvement | | |
| 8-538 | Integer IOH for FORTRAN Library | | |
| 8-549 | Polynomial Least Squares Fit | | |
| 8-550 | Modified Matrix Inversion - Real Numbers | | |
| 8-552 | Storage Display Device Handler | | |
| 8-554 | ANOVA and DUNCAN | | |
| 8-555 | MULTC Multiple Correlation Program | | |
| 8-556 | CHISQ Chi Square Program | | |
| 8-557 | CLUSTR Cluster Analysis Program | | |
| 8-558 | CORREL Correlation Program and PCOMP-VARMX Factor Analysis Program | | |
| 8-562 | DISORT | | |
| 8-564 | A Statistical System in PS/8 | | |
| 8-570 | BIN4SV | | |
| 8-571 | INPUT, OS/8 Version | | |
| 8-573 | EDITS - A PS/8 Editor for Non-storage Scope Display | | |
| 8-574 | TD8E System Handler for 8K PS/8 | | |
| 8-576 | LOCAL PAL8: LPAL8.SV | | |
| 8-585 | FAC HANDLER | | |
| 8-586 | XDIREC, OS/8-PS/8 Selective Directory Listing | | |
| 8-589 | BOOTST, Universal OS/8 (PS/8) Bootstrap | | |
| 8-591 | Pulmonary Resistance | | |

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| FOCAL8-125a | MTA Formatter for TC-58/TU-20 with PS/8 |
| FOCAL8-148 | FOCL.S - An Expanded Language for Small Computers, Based on FOCAL |
| FOCAL8-227 | FOCL/F - An Extended Version of 8K FOCAL 69 |
| FOCAL8-265 | LISTAL |
| FOCAL8-266 | STATPACK, An Interactive Statistical Package |
| FOCAL8-268 | FX Function for Random Access Files |
| FOCAL8-269 | 4K FOCAL '69 Speed-Up Patches |
| FOCAL8-270 | MONOPOLY |
| | |
| 12-48 | PS/8 FORTRAN Library Routines |
| 12-49 | Cold Start DF32 Disk Formatter for PS/8 on a PDP-12 |
| 12-50 | EDIT-12 |
| 12-70 | COMPLT |
| 12-95 | PDP-12 PS/8 Utility Programs |
| 12-96 A&B | SCOPE and CNGMWA |
| 12-100 | MEMO III , A Text Formatting Program |
| 12-101 | OS/8 SKED |
| 12-111 | ADFILE |
| 12-112 | IDXRDD |
| 12-113 | IDXWT |
| 12-123 | OS/8 VR12 Handler |
| 12-124 | FR, FDIS and FADC for PDP-12 Input/Output |
| | |
| L-122 | LINC-8 OS/8 or PS/8 |
| L-125 | Patch to OS/8 TECO for LINC-8 Display |

PDP-8 NUMERICAL INDEX

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|--------------------|---|------------------|--|
| 5/8-1.1a | BPAK - A Binary Input/Output Package for the PDP-5 | 5-30 | GENPLOT - General Plotting Subroutine |
| 5/8-2.1a | OPAK - An On-Line Debugging Package | 5-31a | FORPLOT |
| 5-3 | Obsolete | 5/8-32a | A Program to Relocate and Pack Programs in Binary Format |
| 5-4 | Octal Typeout of Memory Area with Format Option | 5/8-33 | Tape to Memory Comparator |
| 5-5 | Expanded Adding Machine | 5-34 | Obsolete |
| 5-6 | Obsolete | 5/8-35 | BCD to Binary Conversion Subroutine and Binary to BCD Conversion Subroutine (Double Precision) |
| 5/8-7 | Decimal to Binary Conversion by Radix Deflation and Accelerated Radix Deflation | 5-36 | Obsolete |
| 5-8 | Obsolete | 5-37 | Transfer II |
| 5/8-9 | Analysis of Variance - PDP-5/8 | 5/8-38 | FType - Fractional Type |
| 5-10 | Paper Tape Reader Tester | 5/8-39 | DSdprint, DDtype - Double Precision Signed Decimal Input-Output |
| 5-11 through 5-13 | Obsolete | 5-40 | Obsolete |
| 5/8-14 | Dice Game for the PDP-5/8 | 5-41 | Break Point |
| 5/8-15 | ATEPO (Auto Test in Elementary Programming and Operation of a PDP-5 Computer) | 5-42 | Obsolete |
| 5-16 and 5-17 | Obsolete | 5/8-43 | Unsigned Octal - Decimal Fraction Conversion |
| 5/8-18A | BIN Tape Disassembly Program for PDP-5/8 | 8-44 | Modifications to the Fixed Point Output in the PDP-8 Floating Point Package (Digital 8-5-5) |
| 5/8-18B | Obsolete | 5/8-45 | PDP-5/8 Remote and Time Shared II System |
| 5/8-18C | Disassembler with Symbols <i>no good w/ EAE</i> | 8-46b | The Utility Programs |
| 8-19a | DDT-UP Octal - Symbolic Debugging Program | 8-47 | ALBIN - A PDP-8 Loader for Relocatable Binary Programs |
| 5/8-20 | Remote Operated FORTRAN System | 5/8-48 | Modified Binary Loader MK IV |
| 5/8-21 | Triple Precision Arithmetic Package | 8-49 | Relativistic Dynamics |
| 5-22 | Obsolete | 5/8-50 | Obsolete |
| 5/8-23A | PDP-5/8 Oscilloscope Symbol Generator (4X6 Matrix) <i>NO GOOD w/ CRT</i> | 5/8-51 | Character Packing and Unpacking Routine |
| 5/8-23B | PDP-5/8 Oscilloscope Symbol Generator (5X7 Matrix) | 8-52 | Tiny Tape Editor |
| 5-24 | Obsolete | 5/8-53 | Obsolete |
| 5-25 | A Pseudo Random Number Generator for the PDP-5 Computer | 5/8-54 | TIC-TAC-TOE Learning Program - T3 |
| 8-26A | Compressed Binary Loader | 5/8-55 | PALEX - An On-Line Debugging Program for PDP-5 and PDP-8 Computers |
| 8-26B.1 | BN2CBL and CBL2BN BIN to CBL Format Tape Converter | 8-56 | Fixed Point Trace No. 1 |
| 8-26C | Extended Compressed Binary Loader | 8-57 | Fixed Point Trace No. 2 |
| 8-26D | XCBL Punch Program | 8-58 | One-Page DECTape Routine |
| 5/8-27 and 5/8-27a | Bootstrap Loader and Absolute Memory Clear | 8-59 | Obsolete |
| 5/8-28a | Phoenix Assembler - PAL III Modifications | 8-60 | Square Root Function by Subtraction Reduction (Uses EAE) |
| 5/8-29 | Obsolete | 8-61 | Improvement to Digital 8-9-F Square Root |

| <u>DECUS NO.</u> | <u>TITLE</u> | <u>DECUS NO.</u> | <u>TITLE</u> |
|-------------------|---|------------------|---|
| 8-62a and 5-63 | Obsolete | 8-95 | TRACE for EAE |
| 8-64a | 4K and 8K DECtape Programming System | 8-96 | J Bessel Function (FORTRAN) |
| 8-65 | A Programmed Associative Multichannel Analyser | 8-97 | GOOF |
| 8-66 | Editor Modified for DECtape (552 Control) | 8-98 | 3D Draw for 338 Display |
| 8-67 | PAL Modified for DECtape Input (Uses EAE) | 8-99A | Kaleidoscope |
| 8-68a | LABEL Program | 8-99B | Kaleidoscope - 338 Display |
| 5/8-69 | LESQ29 and LESQ11 | 8-100 | Double Precision BCD Arithmetic Package (Incomplete) |
| 8-70 | EAE Routines for FORTRAN Operating System (DEC-Ø8-CFA3) | 8-101 | Obsolete |
| 8-71 | Perpetual Calendar | 8-102a | A LISP Interpreter for the PDP-8 |
| 8-72 | Matrix Inversion - Real Numbers | 8-103A | Four Word Floating Point Routines - Function Package |
| 8-73 | Matrix Inversion - Complex Numbers | 8-103B | Four Word Floating Point Routines - Rudimentary Calculator |
| 8-74 | Solution of System of Linear Equations: AX=B, by Inverting Matrix A, then Multiplying the Inverse by Vector B | 8-103C | Four Word Floating Point Output Controller with Rounding |
| 8-75 | Matrix Multiplication - Including Conforming Rectangular Matrices | 8-103D | Additional Instructions for use with Four Word Floating Point Package |
| 8-76 | Obsolete | 8-104 | Card Reader Subroutine for the PDP-8 FORTRAN Compiler |
| 8-77 | PDP-8 Dual Process System | 8-105 | D-BUG |
| 8-78 | DIAGNOSE: A Versatile Trace Routine for PDP-8 and EAE | 8-106 | Readable Punch |
| 8-79 | TIC-TAC-TOE (Trinity College) | 8-107 | CHESSBOARD |
| 8-80 | Determination of Real Eigenvalues of a Real Matrix | 8-108 | Increment Mode Compiler (INCMOD) |
| 8-81 | A BIN or RIM Format Data or Program Tape Generator | 8-109 | SEETXT Subroutine |
| 8-82 | Library System for 580 Magnetic Tape (Preliminary Version) | 8-110 | Directory Print (DIREC) for the DEC PDP-8 Disk System |
| 5/8-83 A&B | Octal Debugging Program (With or without Floating Point) | 8-111 | DISKLOOK |
| 8-84 | One Pass PAL III | 8-112 | Sentence Generator |
| 8-85 | Set Memory Equal to Anything | 8-113 | Obsolete |
| 8-86 | Obsolete | 8-114a | Decimal Output Routine for PDP-8 FORTRAN |
| 8-87 | XMAP | 8-115a | Double Precision Interpretive Package |
| 8-88 | Obsolete | 8-116 | Obsolete |
| 8-89 | XOD - Extended Octal Debugging Program | 8-117 | A PDP-8 Interface for a Charged Particle Nuclear Physics Experiment |
| 8-90 | Histogram on Teletype Subroutine | 8-118 | General Linear Regression |
| 8-91 | MICRO-8: An On-Line Assembler | 8-119 | Off-Line TIC-TAC-TOE Program for the PDP-8 Computer |
| 8-92 | Analysis of Pulse-Height Analyzer Test Data with a Small Computer | 8-120 | DISK/DECtape FAILSAFE |
| 8-93 | CHEW - Convert Any BCD to Binary, Double Precision | 8-121 | DECtape Handler |
| 8-94A | BLACKJACK | 8-122A | SNAP (Simplified Numerical Analysis) Without EAE |
| 8-94B | BLACKJACK "Overlays" | 8-122B | SNAP (Simplified Numerical Analysis) With EAE |
| | | 8-123 | UNIDEC Assembler |

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| 8-124a | PDP-8 Assembler for IBM 360/50 and above | 8-156 | HEPTRACE |
| 8-125 | PDP-8 Relocatable Assembler for IBM 360/50 and above | 8-157 | Square Root Patch |
| 5/8-126 | Cumulative Gaussian Distribution Curve Fitting | 8-158 | AX-Ø8 Symbol Generator |
| 8-127 | XDDT Extended Octal - Symbolic Debugging Program | 8-159 | CINET-BASIC |
| 8-128 | PDP-8 Oscilloscope Display of Mathematical Functions | 8-160 | FASTLOAD |
| 8-129 | Magnetic Tape Program Library System | 8-161 | EXPO - A Flexible PDP-8 Data Acquisition Program |
| 8-130A | REBIL8 - Relocating Binary Loader | 8-162 | Demonstration Programs for the PDP-8 |
| 8-130B | RELCON - Binary to Relocatable Binary Tape Converter | 8-163 through 8-165 | Obsolete |
| 8-131 | SRCD, Software Rapid Character Display | 8-166 | Interim Technical Report, The PDPMAP Assembly System |
| 8-132 | STRIP, A Data Display and Analysis Program for the PDP-8, 8/1 | 8-167 | CIRCUITS |
| 8-133 | First Order Kinetics | 8-168 | CalComp Plotting Package |
| 8-134 | LSQ (Least Squares Subroutine) | 8-169 | Physical Oceanography Data Reduction Programs for the PDP-8 (11 Parts-See abstract) |
| 8-135 | DNHELP, A Directory Assistor Program | 8-170 | FORTTRAN Source Conversion Program |
| 8-136 | Fourier Transform Program | 8-171 | Real-Time System for Behavioral Science Experiments |
| 8-137a | Programs for Storage, Manipulation and Calculation of Data Using DEctape | 8-172 | Octal Systems Edit |
| 8-138A | Withdrawn | 5/8-173 | TIC 5/8 |
| 8-138B | Withdrawn | 5/8-174 | MEDIUM |
| 8-138C | Withdrawn | 8-175 | Post Stimulus Interval Histogram for AX-Ø8 |
| 8-139 | Withdrawn | 8-176 | PAL CHOP |
| 8-140 | Withdrawn | 8-177 | COPY |
| 8-141 | SYSLUK | 8-178 | Reverse Assembler |
| 8-142 | Binary Punch - Extended Memory | 8-179 | EAE Modifications for Binary Disassembler with Symbols |
| 8-143 | FFTS-R - A Fast Fourier Transform Subroutine for Real Valued Functions | 8-180 | Editor and Assembler for 57A Magnetic Tape System (UCRL-50534) |
| 8-144 | FFTS-C - A Fast Fourier Transform Subroutine for Complex Data | 8-181 | Automatic Binary Loader and Duplicator - Coder for Auto Bin |
| 8-145 | Time-of-Flight Analyzer | 8-182 | Memory Compare |
| 8-146 | High Speed Executive for the PDP-8, PDP-8/1 | 8-183 | The WANG Loader |
| 8-147 | Incremental Plotter Printout Subroutine | 8-184 | Page Routine |
| 8-148 | Plotter System | 8-185 | Modifications to Symbolic Editor and Symbolic Tape Format Generator |
| 8-149 | Core Window | 8-186 | EAE FORTRAN Patch for the PDP-8 |
| 8-150 | PTOD8 High and PTOD8 Low | 8-187 | Keyboard Controlled Binary Punch |
| 8-151 | On-Line TIC TAC TOE | 8-188 | Extended Memory Patch for 4 Word Floating Point Package (DEC-Ø8-FMHA-8B) |
| 8-152a | PDP-8 Music Programs | 8-189 | LKDN: Look into the Directory Name Block |
| 8-153 | Tape/Disk Transfer Programs | 8-190 | PATCH Utility Program |
| 8-154 | SWAP | 8-191 | Fields |
| 8-155 | HEP | 8-192 | T.A.L.C.: Taylor's Algebraic Linear Calculator |

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| 8-193 | DISP | 8-225 | CR8/I Overlay for PAL III Assembler |
| 8-194 | NMR Simulator | 8-226 | FAILSAFE for DECTape Library System |
| 8-195 | POLY BASIC | 8-227 | PDP-10/8 - Loader |
| 8-196 | DET - Detect Key Words | 8-228 | A One-Pass Paper Tape Loader for PDP-8 Disk System (OPLOAD) |
| 8-197 | Overlay for Standard Editor and PAL III Assembler | 8-229 | Card III Overlay |
| 8-198 | SYSHLP - Monitor System Utility Program | 8-230 | Foreground/Background/8 Now |
| 8-199 | Accessing Data Arrays and Teletype Text Input/Output | 8-231 | Data Processing on the PDP-8/S |
| 8-200A | BOSS | 8-232 | TP1Ø |
| 8-200B | DECTape BOSS for PDP-8 Computers | 8-233 | An Octal Housekeeping and Debugging Package for PDP-8 (PDP-8/I) with EAE and Disk |
| 8-201 | DECSW | 8-234 | SYS/LOAD PUNCH |
| 8-202 | PLOT | 8-235 | Octal Tape Dump for PDP-8/9/10 DECTapes |
| 8-203 | ALPHA | 8-236 | System and User Files Read and Punch Program (LEES) |
| 8-204a | PATCH - A PDP-8 Binary Paper Tape Patch Program | 8-237 | MADCAP IV, A Multiplex ADC and Analog Plotting Program |
| 8-205 | MTSAFE | 8-238 | EPRSIM, An Electron Paramagnetic Resonance Simulator |
| 8-206 | DUMP | 8-239 | PAL III/Editor 8K Link Patch |
| 8-207 | Cube Root Subroutine | 8-240 | END |
| 8-208 | Evaluating Determinants (from 2-17) | 8-241 | BUZZTAPE READER/WRITER |
| 8-209 | Editor-With-View | 8-242 | DÄTAC I |
| 8-210 | A Real-Time Multiple Task Executive Program with Built-In Console Utility Package for PDP-8/S and PDP-8 Computers | 8-243 | Amplitude Distribution |
| 8-211 | Matrix Manipulation System (MMS) for Real Numbers | 8-244 | BINSAVE |
| 8-212a | Obsolete | 8-245 | Dynamic Octal Disk Debugger |
| 8-212b | PALH (Modified) | 8-246 | DF32 Disk Routines |
| 8-213 | 4K ALGOL | 8-247 | HELP: A Disk/DECTape Dialogue Program |
| 8-214 | DECI: A Subroutine to Type Outputs in Decimal | 8-248 | SABR - Coded Fast Fourier Transform Subroutine |
| 8-215 | Hexapawn | 8-249 | Oscilloscope Vector Generator |
| 8-216 | PAL-D Patch | 8-250 | Fast Fourier Transform (FFT) |
| 8-217A | PALR | 8-251 | A System for Production of Problem Sets with Individualized Data |
| 8-217B | PALM | 8-252 | PEEP - A Directory Search Program |
| 8-217C | UTIL | 8-253 | Disk Dump on Scope |
| 8-218 | Interpreter of Constitution of Coding Tables | 8-254 | Vector Algebra Package |
| 8-219 | LISS | 8-255 | SCED: Scope Editor for the AXØ8 |
| 8-220 | FRACPT and TRANS | 8-256 | Binary to RIM Format Converter |
| 8-221 | IFIX/FLOAT | 8-257 | UCONN-EAP, Editor-Assembler |
| 8-222 | Disk Memory Retention Test | 8-258 | NMRCAT-29: A Simplified Signal Averager Program |
| 8-223 | Power Spectrum | 8-259 | Symbolic from Pass 3 |
| 8-224 | PALT: Patch for Improved Text Handling for PAL-D | 8-260 | TOFAST - Fast Direct and Inverse Discrete Fourier Transform Routines |

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| 8-261 | QUBIC | 8-297 | TRACE |
| 8-262 | Character Overflow Change to PDP-8 PAL 3 | 8-298 | OCTMON - An Octal Monitor for the PDP-8 Computer |
| 8-263 | XYPLOT - A Versatile Plot Routine for the D/A Converter | 8-299 | Latency Histogram and Calculation |
| 8-264 | CLOK - AXØ8 RC Clock or External Clock Frequency or Period Measurement | 8-300 | Noise Generator |
| 8-265 | Teletype Parity Conversion Program | 8-301 | STOR: A Store Instruction for the PDP-8 Disk Monitor |
| 8-266 | IBM Editor | 8-302 | Overlay Modifications to the Floating-Point System Packages, DEC-08-YQYA |
| 8-267 | DARIC - Data Reduction in Columns | 8-303 | Alterations of the Basic Floating-Point Package and Additional Subroutines |
| 8-268 | Miniloader and Miniloader Punch | 8-304 | Pseudo-Noise (P-N) Sequence Test |
| 8-269 | Morse Code Trainer | 8-305 | PAL III Assembler Overlay for Card Reader Input |
| 8-270a | Disk-DECtape Utility Program | 8-306 | LDR - A One Pass Transparent Loader |
| 8-271 | LIP, LOGICAL "If" Package | 8-307 | Obsolete |
| 8-272 | IOPACK - A Message and Number I-O Utility Package | 8-308 | PDP-8 Morse Code Sender |
| 8-273 | Algonquin Assembler | 8-309 | Patches and a Utility Program for LAB-8 |
| 8-274 | Card Reader Patch to Phoenix Assembler | 8-310 | BIN Punch for Extended Memory |
| 8-275 | Grade Compiler | 8-311 | Card to Tape Conversion with Diagnostics |
| 8-276 | Core Editor | 8-312 | DECtape Emulator |
| 5-277 | ICBM | 8-313 | Obsolete |
| 8-278 | Single Length Floating Point Package | 8-314 | 8K FORTRAN Library CR8/I Card Reader Input Routine |
| 8-279 | Bar Chart Plotting Subroutine | 8-315 | Block-Modify |
| 8-280 | General Sorting Program | 8-316 | CORR (Compute Correlation Matrix) |
| 8-281a | Binary Tape Splicer ASR 33/75A | 8-317 | EIG (Compute Eigenvalues and Eigenvectors) |
| 8-282 | C528: Paper Tape Conversion 5 Track (SIRIUS) to 8 Track (A.S.C.I.I.) | 8-318 | PART (Partitioning of Treatment Sums of Squares) |
| 8-283 | A.V.S.C. (Analysis of Variance, Single Classification) | 8-319 | RAND (Computation of Random Fractions) |
| 8-284 | ASCO - Numerical Sort in Ascending Order | 8-320 | MMMS (Calculation of Minimum, Mean, Maximum and Standard Deviation) |
| 8-285 | Teletype Input-Output Package | 8-321 | REG-2 (Curvilinear Regression) REG-4 (Linear Regression) |
| 8-286 | Two Patches for Disassembler with Symbols | 8-322 | CCMP (Correlation of Components) and CVAL (Computes Values of Principal Components) |
| 8-287 | A PDP-8 Program to Provide Teletype Entry into the IBM JET System | 8-323 | CRC (Convert Peak Heights on an Auto-Analyzer Chart to PPM and Percentage) |
| 8-288 | GRAYCONV (Gray Code to Binary Code Converter) | 8-324 | TSP - Trend Surface Plotting |
| 8-289 | "ULKA" The Ultimate Kaleidoscope | 8-325 | SBSM - Calculation of Duplicate Sub-Samples from Primary Data |
| 8-290 | Skinny BIN Loader | 8-326 | MLWI - Malawi Land Use Survey Analysis |
| 8-291 | Tape to Memory Comparator (6-channel) | 8-327 | CLAN (Cluster Analysis) and GRMN (Calculate Group Means) |
| 8-292 | Fast Fourier Transform and Fast Walsh-Fourier Transform | 8-328 | NNAN (Nearest Neighbor Analysis) - OREG (Orthogonalized Regression Analysis) - OREH (Additional Orthogonal Regression Coefficients) |
| 8-293 | Atomic Coordinate Program | | |
| 8-294 | Lettering Program | | |
| 8-295 | COMBIN | | |
| 8-296 | Edit Routine | | |

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| 8-329 | TSS/8 FOCARL | 8-364 | Extended Memory Patch to the 3-Word Floating Point Arithmetic Interpreter |
| 8-330 | TSS/8 ALGOL | 8-365 | CARD |
| 8-331 | Roulette | 8-366 | Modified Readable Punch |
| 8-332 | The Civil War Game | 8-367 | Digital 8-12-U Modified |
| 8-333 | 8K PAL-D Assembler for 4K Disk Monitor System | 8-368 | Tri-Data CartriFile PAL III Assembler |
| 8-334 | KVEDIT | 8-369 | Tri-Data CartriFile DEC Editor |
| 8-335 | COLPAC | 8-370A | FBUILD |
| 8-336 | DECtape Library System Modifications | 8-370B | DISK |
| 8-337 | Withdrawn | 8-371 | Teletype Control of ND 50/50 Memory Unit (TYPED) |
| 8-338 | BIN and CBL Loader | 8-372 | ML Editor (Machine Language Editor) |
| 8-339A | PST (Post Stimulus Time) and Latency Histogram for the LAB-8 | 8-373 | LISP Disk Array |
| 8-339B | Time Interval Histogram Program | 8-374 | Binary or RIM Consolidator |
| 8-340 | The Auto and Cross-Correlation Program for the LAB-8 | 8-375A | 3 Page Floating Point Package |
| 8-341 | LISP-8 | 8-375B | 3 Page Floating Point Package with Floating Output |
| 8-342 | STAP-8; Spike Train Analysis Program | 8-376A | Field 1 Symbol Table Storage for PALD |
| 8-343 | Radial Interface Including Interrupt Mask for the PDP-8 or LINC-8 | 8-376B | PALD |
| 8-344 | Toledo Extended Memory Binary Punch | 8-377 | One Pass Assembler |
| 8-345 | EDIT - PAL | 8-378 | Map Directory Information on KV8/I |
| 8-346 | Pollution Game | 8-379a | Double Precision and Floating Point Interchanger |
| 8-347 | DUBAVG | 8-380 | WATSNU |
| 8-348 | Mini Binary Punch | 8-381 | Cardreader Subroutine for Disk Editor |
| 8-349 | Octal Debugging Technique with View | 8-382 | Readable High Speed Punch Copier |
| 8-350 | Wilcoxon-White Two Sample Rank Test | 8-383A | Scan and Analysis Program |
| 8-351 | ComBIN Loader | 8-383B | Core Display Program |
| 8-352 | Parity Hi-Lo Loader | 8-383C | Drawing Applications Program |
| 8-353 | Disk Monitor Patch for BLACKJACK | 8-384 | BLOK |
| 8-354 | Pass 3 ASR 33 Format Overlay | 8-385 | Mixed ASCII Formatting and Outputting Technique |
| 8-355 | PAL III.75 | 8-386 | Multiple Field Loader |
| 8-356 | Page Printer | 8-387 | Grade Point Correlation |
| 8-357 | ISOMER - Interactive Study of Organic Molecules by Educational Reinforcement | 8-388 | CALENDAR |
| 8-358 | Card Reader Patch | 8-389 | Mini-Monitor, A Secondary Disk Monitor for the PDP-8 |
| 8-359 | Hi-Q Game Playing Program | 8-390 | PALEDCO (PAL Assembler and Editor Combined) |
| 8-360 | ASCII to Friden (EIA) | 8-391a | 7 or 9-Track MTA for PS-8 with TC-58/TU-20 |
| 8-361 | Game of Chance | 8-392 | Vector-8 |
| 8-362 | IOFMAG | 8-393 | Queing TC01/TU55 DEctape Routines |
| 8-363 | DATOUT: A Simple Routine for Printing Sequential Data as an Array | 8-394 | BASIC MOO |
| | | 8-395 | Space War |
| | | 8-396 | MTS-6/70 (Millisecond Time-Sharing System) |
| | | 8-397 | 8K Editor |

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| 8-398 | IMAGE | 8-436 | EAE - Simulator |
| 8-399 | 8K FORTRAN Bit Manipulation Subroutines | 8-437 | Computer Dating Game |
| 8-400 | Execute Slow | 8-438 | DF-32/Sykes Swap |
| 8-401 | Dice Game and TIC-TAC-TOE | 8-439 | MOVE |
| 8-402 | Resequenece | 8-440 | PIPL |
| 8-403 | Stereo - A 2 Channel Music Program | 8-441 | DELETE |
| 8-404 | Octal MEM.Dump - Extended Memory | 8-442 | "The BYU Boob Tube" |
| 8-405 | SOOT | 8-443 | Keyboard Test Tape for Hot Metal Linecaster with TTS |
| 8-406 | STATPAC Revisions for PDP-8/I and TSS/8 | 8-444 | COREMAP |
| 8-407 | Patch to Editor (DISK) DEC-D8-ESAD-PB | 8-445 | FYLHLP - PS/8 File Utility Program |
| 8-408 | Disk Utility Program | 8-446 | A Patch to FFTS-R for Use Without the EAE |
| 8-409 | Card Loader | 8-447 | Roots of a Polynomial by Muller's Method |
| 8-410 | Pseudo-Random Number Generator, EAE Version | 8-448 | CORDMP - Formatted Octal Dump |
| 8-411 | Mongoose Display System | 8-449A | A Magtape Handler for the PDP-8/TU20 |
| 8-412 | MRS X | 8-449B | LPTQUE - A PTØ8 to A. B. Dick Line Printer Utility Program |
| 8-413 | GROPE III/A and BINLOC | 8-449C | TALK1Ø - A PDP-8/PDP-10 Utility-Loader |
| 8-414 | LIST | 8-449D | Buffered I/O Subroutines for the PDP-8 |
| 8-415 | Multiple Unit DECtape Copier | 8-450 | PS/8 Editor With Display for KV8/I (Overlay) |
| 8-416a | Bibliographical Handling | 8-451 | PS/8 Handler for KV/8 Vector Display |
| 8-417 | XCORE | 8-452 | ANSAM (Analog Sampling) |
| 8-418A&B | VEKSEL and PAPT | 8-453 | Rapid Alert Program (RAP) |
| 8-419 | Nmr-Pulse for the Lab-8/I | 8-454 | Radio Teletype to ASCII |
| 8-420 | LOGSIM-8 | 8-455 | CRTPAC |
| 8-421 | Chain Load | 8-456A | PIP "AH" |
| 8-422 | Binary Punch - Extended Memory II | 8-456B | BUILD "AH" |
| 8-423 | Disk Editor With View for LAB-8 | 8-457 | DTFIX |
| 8-424 | Morse Code | 8-458 | VW - Field Independent I/O Handler for Disk and TTY |
| 8-425 | Block-Modify for PS/8 | 8-459 | TAYEX - <u>T</u> aylor <u>E</u> xpansion Equation Solver |
| 8-426 | Prime Number Generator | 8-460 | TT89 - Tape Transfer PDP-8 to PDP-9 |
| 8-427b | MEMO III - A Text Formatting Program | 8-461 | COPY1Ø - PDP-10 DECtape Program for the PDP-8 |
| 8-428A | EAE - Modification to DECUS NO. 8-143, FFTS-R | 8-462 | INSTIN |
| 8-428B | EAE - Modification to DECUS NO. 8-144, FFTS-C | 8-463 | Perpetual Calendar (BASIC Version) |
| 8-429 | Intercorrelation 37 | 8-464 | TRØ2 Magnetic Tape Device Handler for PS/8 |
| 8-430 | DECK: A Random Deck of Cards | 8-465 | The SKED Software System |
| 8-431 | 8/I LAB Data System | 8-466A | RL Monitor System (WCFMPG Version) P?S-08-1.1A |
| 8-432 | Triple Precision Integer Package | 8-466B | RL Monitor Subsystems P?S-08-1.1B |
| 8-433 | Extensions to "LIBRA-FOCAL" | 8-466C | Listing Utility Programs P?S-08-1.1C |
| 8-434.1 thru 8-434.7 | Data System for Magnetic Scanning Mass Spectrometers | | |
| 8-435 | RECOVER | | |

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| 8-466D | RL Monitor System Utilities P?S-08-1.1D | 8-492 | BINLOAD, BINTAPE and SEARCH |
| 8-466E | DECTape Utility Programs P?S-08-1.1E | 8-493 | Line to Block Conversion |
| 8-466F | PAL III Modified for RL Monitor | 8-494 | Translate Arabic Into Roman Numerals |
| 8-466G | POLY SNOBOL P?S-08-1.1G | 8-495 | CORRELATION ANALYSIS |
| 8-466H | POLY LISP P?S-08-1.1H | 8-496 | UTR7: A 7-track Magnetic Tape Reading Utility |
| 8-466I | FOCAL Modified for RL Monitor | 8-497A | 8BAL - PDP-8 Macro Language |
| 8-467a | BINREAD (Revised Version) | 8-497B | 8BAL Source Documentation |
| 8-468 | DIPDUB, A Dual-Independent Parameter, Double-Precision Pulse-Height Analysis Code | 8-498 | Unencoded Incremental Plotter Subroutine |
| 8-469 | Top Secret | 8-499 | High-Speed Reader Patch for Lo-Speed Macro-8 |
| 8-470 | ODT-11 (High) Modified | 8-500 | DUMP8 |
| 8-471 | Verify Paper Tape (12K) | 8-501 | Galactic Coordinates |
| 8-472 | PS8IN, PS8OUT | 8-502 | Interrupt Duplicator for Binary Object Tapes |
| 8-473 | Three Utility Routines for PS/8 1. DTA and DECLAB 2. CHANGE and REMOVE 3. LIST | 8-503 | MACRO-8X: 8K Extended MACRO-8 Assembler |
| 8-474 | EXIT PS/8 | 8-504A | ESI (Engineering and Scientific Interpreter) |
| 8-475 | PIPQ | 8-504B | ESIX - Extended ESI |
| 8-476 | Obsolete | 8-504C | ESI Demonstration Programs |
| 8-477 | RIBIER - A Program for the PDP-8/1 Enabling the Transition from the PS/8 System to the Paper Tape System | 8-505 | BIN-CBL Extended Memory Loader |
| 8-478 | Monitor Command Extensions in PS/8 | 8-506 | Load Areas |
| 8-479 | PDP-8/E Instruction Simulators for other PDP-8s | 8-507 | EEPP (Editor Even Parity Punch) |
| 8-480a | Two Subroutines for 8K FORTRAN 1. INPUT 2. RANDU and GAUSS | 8-508 | TSUTIL - A Utility-Diagnostic Program for TSS-8 |
| 8-481 a | MERGE | 8-509 | INTERRUPT - TEST |
| 8-482 | Patch to High ODT (DEC-08-COC2-PB) | 8-510 | P8COR - Overlay for 8K PAL-D Assembler for 4K Disk Monitor System (DECUS NO. 8-333) |
| 8-483 | GRFIT, A Simple Least Squares Routine | 8-511 | FPAK-4 Interrupting Floating Point Package |
| 8-484 | RESTore for the RKØ8 | 8-512 | Modified Binary Loader |
| 8-485 | Geometric Data Truncation for Fourier Transform Programs | 8-513 | DEBUG 8 |
| 8-486 | SEGAR 7 : A Seven Segment Array for Alphanumeric Character Generation | 8-514 | Alpha-Numeric Display Program |
| 8-487 | Revised Octal Memory Dump | 8-515 | Program to Mate PAL III With Symbolic Editor |
| 8-488 | NEWPAGE | 8-516 | Self-Starting PS/8 Loader |
| 8-489 | SUBSET, Integer Compiler and Operating System | 8-517 | Bowling League Results, Standings and Averages Program |
| 8-490 | Tape Alteration Program | 8-518 | PS/8 FORTRAN Alphabetical Sort |
| 8-491 | Indexed Floating Point Math Subroutines for PDP-8/E | 8-519 | MACRO-8 Pass 3 Output Format Patch |
| | | 8-520 | PEST/WALD/PINIT: Adaptive Psychophysics Testing Package |
| | | 8-521 | A Clock |
| | | 8-522 | 'PAGEIT' |
| | | 8-523 | MDT - A Mini Debugging Technique |

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| 8-524 | GRNDYE 1970 - A Program to Estimate Cardiac Output Off-line from an Indicator Dilution Curve | 8-561 | Revised HELP Loader for High-Speed Reader and New BIN Loader |
| 8-525 | DAFFT/PAFFT/DAQUAN (EAE) | 8-562 | DISORT |
| 8-526 | PROCAL 10/71 | 8-563 | TAPE |
| 8-527 | XDDT8E | 8-564 | A Statistical System in PS/8 |
| 8-528 | TIC-TAC-TOE: Modifications to TIC 5/8, DECUS NO. 8-173 | 8-565 | RENUM - Renumbering Program for BASIC Tapes |
| 8-529 | OSCAR: An Operating System for Computerized Animal Research | 8-566 | PARTL |
| 8-530 | 8BALIB - 8BAL Macro Library Generator | 8-567 | EXPO |
| 8-531A&B | 'TRIPLE' - 36 Bit PDP-8/E Simulator and 'TRIPLE' 8BAL Macros | 8-568 | CFI - Continued Fraction Inversion |
| 8-532 | OPDDT (One Page DDT) | 8-569 | FLIT Assembler |
| 8-533 | "WHERE" | 8-570 | BIN4SV |
| 8-534 | DUAL BINARY LOADER | 8-571 | INPUT, OS/8 Version |
| 8-535 | BINARY PUNCH FOR PDP 8/E with 2 TTY's (or with high speed punch) | 8-572 | Combination Lettering and Duplicator-Coder Program |
| 8-536 | Advanced Averager Improvement | 8-573 | EDITS - A PS/8 Editor for Non-storage Scope Display |
| 8-537 | Talking Eights | 8-574 | TD8E System Handler for 8K PS/8 |
| 8-538 | Integer IOH for FORTRAN Library | 8-575 | EAE Overlay for Four-Word Floating Point Package Multiply |
| 8-539 | TD8E 4K Loader | 8-576 | LOCAL PAL8: LPAL8.SV |
| 8-540A | BRAILLE-8 | 8-577 | Tape Duplicator (P.D.T.) |
| 8-540B | BPRINT | 8-578 | Chromaticity Diagram |
| 8-541 | Cassette Utility Program and PALC | 8-579 | LISTIT |
| 8-542 | Radioactive Decay | 8-580 | Decimal to Floating Point Conversion |
| 8-543 | TS8REV - Reverse Assembler for TSS/8 | 8-581 | Obsolete |
| 8-544 | CHECK and CHANGE-D | 8-582 | Random Number Generator Adapted for 8K FORTRAN/SABR |
| 8-545 | PIF (Program Interrupt Facility for 3 TTY's) | 8-583 | BASOVR - 8K BASIC Overlay for PDP-8/S |
| 8-546 | DETEF - DECtape File-Handling System | 8-584 | PRECIS, A Program to Scan a Binary Tape |
| 8-547 | Advanced Averager Program (Rotterdam Version) | 8-585 | FAC HANDLER |
| 8-548 | Links to Page Routine | 8-586 | XDIREC, OS/8-PS/8 Selective Directory Listing |
| 8-549 | Polynomial Least Squares Fit | 8-587 | FORTRAN-D 4K Overlayings to Chain Programs |
| 8-550 | Modified Matrix Inversion - Real Numbers | 8-588 | PEEK, A User Program to Look at the TSS-8 Monitor |
| 8-551 | COMBO | 8-589 | BOOTST, Universal OS/8 (PS/8) Bootstrap |
| 8-552 | Storage Display Device Handler | 8-590 | Matrix Inversion |
| 8-553 | Big Brother II | 8-591 | Pulmonary Resistance |
| 8-554 | ANOVA and DUNCAN | 8-592 | Printer Test Program |
| 8-555 | MULTC Multiple Correlation Program | 8-593 | Tri-Data Paper Tape PAL III Assembler |
| 8-556 | CHISQ Chi Square Program | 8-594 | FP8 - Floating Point Arithmetic Software for DEC PDP-8 Series Computers |
| 8-557 | CLUSTR Cluster Analysis Program | 8-595 | UPDATE, A Program to Make Corrections to a File Containing Records of Variable Length |
| 8-558 | CORREL Correlation Program and PCOMP-VARMX Factor Analysis Program | 8-596 | Multilength Routines |
| 8-559 | CUBIC - A Digital Program for On-Line Differentiation of Sample Analog Signals | 8-597 | N.I.H. OS/8 Package |
| 8-560 | SAM-I | 8-598 | CRT; An OS/8 Handler for Tektronix 611 Storage Scope |
| | | 8-599 | DIBILD.; Directory Rebuilder for PS/8 or OS/8 |
| | | 8-600 | EXPIP (Extensions PIP) |
| | | 8-601 | OASIS |
| | | 8-602 A&B | The PDP-8 Cookbook, Volume 1 & 2 |
| | | 8-603 | PATPST: Patch for DEC-LAB-8/E Post-Stimulus-Time-Histogram Program |
| | | 8-604 | 'GET' Command for the Disk/DECtape Monitor System |
| | | 8-605 | ADUMP8 |
| | | 8-606 | PIPII |
| | | 8-607 | CALCUI |

| <u>DECUS NO.</u> | <u>TITLE</u> |
|------------------|---|
| 8-608 | FUTIL - OS/8 File Utility |
| 8-609 | OCOMP - Octal Compare and Dump |
| 8-610 | INVENT-8 |
| 8-611 | SLED - Source and Listing Editor |
| 8-612 | ELAN - Elementary Linguistic Analysis |
| 8-613 | Interconversion Between A/D Floating Point and D/A Formats |
| 8-614 | Clock Calibration |
| 8-615 | EAE Multiplication for 8K FORTRAN |

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 5/8-1.1a | NC | \$ 1. | \$ | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 5/8-2.1a | NC | 1. | | NC | | | | | | | |
| 5-4 | NC | | | NC | | | | | | | |
| 5-5 | NC | | | NC | | | | | | | |
| 5/8-7 | NC | | | NC | | | | | | | |
| 5/8-9 | NC | 1. | | NC | | | | | | | |
| 5-10 | NC | 1. | | NA | | | | | | | |
| 5/8-14 | NC | 1. | | NA | | | | | | | |
| 5/8-15 | NC | 1. | | NA | | | | | | | |
| 5/8-18A | NC | 1. | | NC | | | | | | | |
| 5/8-18C | NC | 1. | 5. | 5. | | | | | | | |
| 8-19a | NC | 1. | | 5. | | | | | | | |
| 5/8-20 | NC | 1. | 5. | NC | | | | | | | |
| 5/8-21 | NC | 1. | 5. | NC | | | | | | | |
| 5/8-23A | NC | 1. | | NC | | | | | | | |
| 5/8-23B | NC | 1. | 5. | NC | | | | | | | |
| 5-25 | NC | 1. | | NC | | | | | | | |
| 8-26A | NC | 1. | | NC | | | | | | | |
| 8-26B.1 | NC | 1. | | 5. | | | | | | | |
| 8-26C | NC | 1. | | NC | | | | | | | |
| 8-26D | NC | 1. | | 5. | | | | | | | |
| 5/8-27 | NC | 1. | | NC | | | | | | | |
| 5/8-27a | NC | 1. | | NC | | | | | | | |
| 5/8-28a | NC | 1. | | NA | | | | | | | |
| 5-30 | NC | 1. | | NA | | | | | | | |
| 5-31a | NC | 1. | 5. | NA | | | | | | | |
| 5/8-32a | NC | 1. | | NC | | | | | | | |
| 5/8-33 | NC | | 5. | NC | | | | | | | |
| 5/8-35 | NC | | 5. | NC | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 5/8-1.1a | NC | \$ 1. | \$ | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 5/8-2.1a | NC | 1. | | NC | | | | | | | |
| 5-4 | NC | | | NC | | | | | | | |
| 5-5 | NC | | | NC | | | | | | | |
| 5/8-7 | NC | | | NC | | | | | | | |
| 5/8-9 | NC | 1. | | NC | | | | | | | |
| 5-10 | NC | 1. | | NA | | | | | | | |
| 5/8-14 | NC | 1. | | NA | | | | | | | |
| 5/8-15 | NC | 1. | | NA | | | | | | | |
| 5/8-18A | NC | 1. | | NC | | | | | | | |
| 5/8-18C | NC | 1. | 5. | 5. | | | | | | | |
| 8-19a | NC | 1. | | 5. | | | | | | | |
| 5/8-20 | NC | 1. | 5. | NC | | | | | | | |
| 5/8-21 | NC | 1. | 5. | NC | | | | | | | |
| 5/8-23A | NC | 1. | | NC | | | | | | | |
| 5/8-23B | NC | 1. | 5. | NC | | | | | | | |
| 5-25 | NC | 1. | | NC | | | | | | | |
| 8-26A | NC | 1. | | NC | | | | | | | |
| 8-26B.1 | NC | 1. | | 5. | | | | | | | |
| 8-26C | NC | 1. | | NC | | | | | | | |
| 8-26D | NC | 1. | | 5. | | | | | | | |
| 5/8-27 | NC | 1. | | NC | | | | | | | |
| 5/8-27a | NC | 1. | | NC | | | | | | | |
| 5/8-28a | NC | 1. | | NA | | | | | | | |
| 5-30 | NC | 1. | | NA | | | | | | | |
| 5-31a | NC | 1. | 5. | NA | | | | | | | |
| 5/8-32a | NC | 1. | | NC | | | | | | | |
| 5/8-33 | NC | | 5. | NC | | | | | | | |
| 5/8-35 | NC | | 5. | NC | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-73 | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-74 | NC | 1. | 5. | NC | | | | | | | |
| 8-75 | NC | 1. | 5. | NC | | | | | | | |
| 8-77 | NC | 1. | 5. | 5. | | | | | | | |
| 8-78 | NC | 1. | 5. | 5. | | | | | | | |
| 8-79 | NC | 1. | 5. | NC | | | | | | | |
| 8-80 | NC | 1. | 5. | NC | | | | | | | |
| 8-81 | NC | 1. | 5. | NC | | | | | | | |
| 8-82 | NC | 1. | 5. | 5. | | | | | | | |
| 5/8-83A&B | NC | 1. | 5. | NC | | | | | | | |
| 8-84 | NC | 1. | 5. | NC | | | | | | | |
| 8-85 | NC | | | NC | | | | | | | |
| 8-87 | NC | 1. | 5. | NC | 5. | 17. | | | | | On 1 DEctape |
| 8-89 | NC | 1. | 5. | 5. | | | | | | | |
| 8-90 | NC | | 5. | NC | | | | | | | |
| 8-91 | NC | 1. | | 5. | | | | | | | |
| 8-92 | NC | 1. | | NC | | | | | | | |
| 8-93 | NC | | 5. | NC | | | | | | | |
| 8-94A | NC | 1. | 5. | NC | | | | | | | |
| 8-94B | NC | 1. | 5. | NC | | | | | | | |
| 8-95 | NC | 1. | 5. | NC | | | | | | | |
| 8-96 | NC | 1. | 5. | NC | | | | | | | |
| 8-97 | NC | | 5. | NC | | | | | | | |
| 8-98 | NC | 1. | 5. | NA | | | | | | | |
| 8-99A | NC | 1. | 5. | NC | | | | | | | |
| 8-99B | NC | 1. | | NA | | | | | | | |
| 8-100 | NC | | 5. | NC | | | | | | | |
| 8-102a | NC | 1. | | NA | | | | | | | |
| 8-103A | NC | 1. | 5. | NC | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-103B | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-103C | NC | 1. | 5. | NC | | | | | | | |
| 8-103D | NC | 1. | 5. | NC | | | | | | | |
| 8-104 | NC | 1. | 5. | NC | | | | | | | |
| 8-105 | NC | 1. | 5. | NC | | | | | | | |
| 8-106 | NC | 1. | 5. | NC | | | | | | | |
| 8-107 | NC | 1. | | 5. | | | | | | | |
| 8-108 | NC | 1. | | 5. | | | | | | | |
| 8-109 | NC | 1. | | 5. | | | | | | | |
| 8-110 | NC | 1. | | 5. | | | | | | | |
| 8-111 | NC | 1. | | 5. | | | | | | | |
| 8-112 | NC | 1. | 5. | NC | | | | | | | |
| 8-114a | NC | 1. | | NC | | | | | | | |
| 8-115a | NC | 1. | 5. | NC | | | | | | | |
| 8-117 | NC | | | NC | | | | | | | |
| 8-118 | NC | | 5. | NC | | | | | | | |
| 8-119 | NC | 1. | 5. | 5. | | | | | | | |
| 8-120 | NC | 1. | 5. | 5. | | | | | | | |
| 8-121 | NC | 1. | 5. | NC | | | | | | | |
| 8-122A | NC | 1. | | NA | | | | | | | |
| 8-122B | NC | 1. | | NA | | | | | | | |
| 8-123 | NC | | | 5. | | | | | | | Card Deck - \$20. |
| 8-124a | NC | | | 5. | | | | | | | Card Deck - \$20. |
| 8-125 | NC | | | NA | | | | | | | Card Deck - \$20. |
| 5/8-126 | NC | | 5. | NC | | | | | | | |
| 8-127 | NC | 1. | | 5. | | | | | | | |
| 8-128 | NC | | 5. | NC | | | | | | | |
| 8-129 | NC | 1. | 5. | NC | | | | | | | |
| 8-130A | NC | 1. | 5. | NC | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|--|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-130B | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-131 | NC | | | NA | | | | | | | |
| 8-132 | NC | 1. | | NC | | | | | | | |
| 8-133 | NC | 1. | 5. | NC | | | | | | | |
| 8-134 | NC | 1. | 5. | NC | | | | | | | |
| 8-135 | NC | 1. | | 5. | | | | | | | |
| 8-136 | NC | | 5. | NC | | | | | | | |
| 8-137a | NC | | 1.* | NC | 5. | 17. | | | | | * Example Control Tape |
| 8-141 | NC | 1. | | 5. | | | | | | | |
| 8-142 | NC | 1. | 5. | NC | | | | | | | |
| 8-143 | NC | 1. | | 5. | 5. | 17. | | | | | } On same (1) DECTape DECTape-PDP-10 Format |
| 8-144 | NC | 1. | | 5. | 5. | 17. | | | | | |
| 8-145 | NC | 1. | | NC | | | | | | | |
| 8-146 | NC | | 5. | NC | | | | | | | |
| 8-147 | NC | 1. | 5. | NC | | | | | | | |
| 8-148 | NC | 1. | | NA | | | | | | | |
| 8-149 | NC | 1. | 5. | NC | | | | | | | |
| 8-150 | NC | 1. | | NC | | | | | | | |
| 8-151 | NC | 1. | 5. | NA | | | | | | | |
| 8-152a | NC | 1. | 5. | NC | | | | | | | |
| 8-153 | NC | | | NC | 10. | 34. | | | | | On 2 DECTapes |
| 8-154 | NC | 1. | | 5. | | | | | | | |
| 8-155 | NC | 1. | | NA | | | | | | | |
| 8-156 | NC | 1. | | NA | | | | | | | |
| 8-157 | NC | 1. | 5. | NC | | | | | | | |
| 8-158 | NC | 1. | 5. | NC | | | | | | | |
| 8-159 | NC | 1. | | NA | | | | | | | |
| 8-160 | NC | 1. | | NC | | | | | | | |
| 8-161 | NC | 1. | | 5. | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE- UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|--------------|------------|-------|---------|---------|-----|----------|-----|---------|-----|------------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-162 | NC | \$ 1. | \$ | \$ NA | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-166 | NC | | | NA | | | | | | | |
| 8-167 | NC | 1. | 5. | 5. | | | | | | | |
| 8-168 | NC | | | NC | 5. | 17. | 5. | 15. | | | On 1 DECTape; LINCTape |
| 8-169A | NC | 1. | 5. | NC | | | | | | | |
| 8-169B | NC | 1. | 5. | NC | | | | | | | |
| 8-169C | NC | 1. | 5. | NC | | | | | | | |
| 8-169D | NC | 1. | 5. | NC | | | | | | | |
| 8-169E | NC | 1. | 5. | NC | | | | | | | |
| 8-169F | NC | 1. | 5. | NC | | | | | | | |
| 8-169G | NC | 1. | 5. | NC | | | | | | | |
| 8-169H | NC | 1. | 5. | NC | | | | | | | |
| 8-169I | NC | 1. | 5. | NC | | | | | | | |
| 8-169J | NC | 1. | 5. | NC | | | | | | | |
| 8-169K | NC | 1. | 5. | NC | | | | | | | |
| 8-170 | NC | 1. | 5. | NC | | | | | | | |
| 8-171 | NC | | | 5. | | | | | | | |
| 8-172 | NC | 1. | 5. | 5. | | | | | | | |
| 5/8-173 | NC | 1. | | NA | | | | | | | |
| 5/8-174 | NC | 1. | | NA | | | | | | | |
| 8-175 | NC | 1. | | 5. | | | | | | | |
| 8-176 | NC | 1. | 5. | NC | | | | | | | |
| 8-177 | NC | 1. | 5. | 5. | | | | | | | |
| 8-178 | NC | 1. | 5. | 5. | | | | | | | |
| 8-179 | NC | 1. | 5. | NC | | | | | | | |
| 8-180 | NC | | 5. | 5. | | | | | | | |
| 8-181 | NC | 1. | 5. | 5. | | | | | | | |
| 8-182 | NC | 1. | 5. | NC | | | | | | | |
| 8-183 | NC | 1. | | NC | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-184 | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-185 | NC | 1. | | NC | | | | | | | |
| 8-186 | NC | 1. | | NC | | | | | | | |
| 8-187 | NC | 1. | 5. | NC | | | | | | | |
| 8-188 | NC | 1. | | NC | | | | | | | |
| 8-189 | NC | 1. | | NA | | | | | | | |
| 8-190 | NC | 1. | | 5. | | | | | | | |
| 8-191 | NC | 1. | | 5. | | | | | | | |
| 8-192 | NC | 1. | | NA | | | | | | | |
| 8-193 | NC | 1. | 5. | NC | | | | | | | |
| 8-194 | NC | 1. | 5. | 5. | | | | | | | |
| 8-195 | NC | 1. | | 5. | | | | | | | |
| 8-196 | NC | 1. | | NC | | | | | | | |
| 8-197 | NC | | | NC | | | | | | | |
| 8-198 | NC | 1. | | 5. | | | | | | | |
| 8-199 | NC | | 5. | NA | | | | | | | |
| 8-200A | NC | 1. | | NC | | | | | | | |
| 8-200B | NC | 1. | | NA | | | | | | | |
| 8-201 | NC | 1. | 5. | NC | | | | | | | |
| 8-202 | NC | 1. | 5. | 5. | | | | | | | |
| 8-203 | NC | 1. | 5. | 5. | | | | | | | |
| 8-204a | NC | 1. | 5. | 5. | | | | | | | |
| 8-205 | NC | 1. | 5. | 5. | | | | | | | |
| 8-206 | NC | 1. | 5. | NA | | | | | | | |
| 8-207 | NC | 1. | 5. | NC | | | | | | | |
| 8-208 | NC | | | NC | | | | | | | |
| 8-209 | NC | 1. | | NA | | | | | | | |
| 8-210 | NC | 1. | | 5. | | | | | | | |
| 8-211 | NC | 1. | | NA | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|--------------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-212b | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-213 | NC | 1. | | NA | 5. | 17. | | | | | On 1 DECTape - 10 Format |
| 8-214 | NC | 1. | 5. | NC | | | | | | | |
| 8-215 | NC | 1. | | 5. | 5. | 17. | | | | | On 1 DECTape |
| 8-216 | NC | 1. | 5. | NC | | | | | | | |
| 8-217A | NC | 1. | 5. | NC | | | | | | | |
| 8-217B | NC | 1. | 5. | NC | | | | | | | |
| 8-217C | NC | 1. | 5. | NC | | | | | | | |
| 8-218 | NC | 1. | | NC | | | | | | | |
| 8-219 | NC | 1. | | NA | | | | | | | |
| 8-220 | NC | 1. | 5. | NC | | | | | | | |
| 8-221 | NC | | 5. | NC | | | | | | | |
| 8-222 | NC | 1. | | NC | | | | | | | |
| 8-223 | NC | 1. | 5. | 5. | | | | | | | |
| 8-224 | NC | 1. | | NC | | | | | | | |
| 8-225 | NC | 1. | 5. | NC | | | | | | | |
| 8-226 | NC | 1. | 5. | NC | | | | | | | |
| 8-227 | NC | 1. | 5. | NC | | | | | | | |
| 8-228 | NC | 1. | 5. | NA | | | | | | | |
| 8-229 | NC | 1. | 5. | NC | | | | | | | |
| 8-230 | NC | | 5. | NC | | | | | | | |
| 8-231 | NC | | | | | | | | | | |
| 8-232 | NC | 1. | 5. | NC | | | | | | | |
| 8-233 | NC | 1. | 5. | 5. | | | | | | | |
| 8-234 | NC | 1. | 5. | NC | | | | | | | |
| 8-235 | NC | 1. | 5. | 5. | | | | | | | |
| 8-236 | NC | 1. | 5. | NA | | | | | | | |
| 8-237 | NC | 1. | 5. | 5. | 5. | 17. | | | | | On 1 DECTape - 10 Format |
| 8-238 | NC | 1. | | 5. | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-239 | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-240 | NC | 1. | 5. | NC | | | | | | | |
| 8-241 | NC | 1. | 5. | NC | | | | | | | |
| 8-242 | NC | 1. | 5. | NA | | | | | | | |
| 8-243 | NC | 1. | 5. | NC | | | | | | | |
| 8-244 | NC | 1. | 5. | NC | | | | | | | |
| 8-245 | NC | 1. | | NC | | | | | | | |
| 8-246 | NC | | 5. | NA | | | | | | | |
| 8-247 | NC | 1. | 5. | NC | | | | | | | |
| 8-248 | NC | 1. | 5. | NC | | | | | | | |
| 8-249 | NC | 1. | 5. | NC | | | | | | | |
| 8-250 | NC | 1. | 5. | 5. | | | | | | | |
| 8-251 | NC | 1. | 5. | NC | | | | | | | |
| 8-252 | NC | 1. | 5. | NC | | | | | | | |
| 8-253 | NC | 1. | 5. | NC | | | | | | | |
| 8-254 | NC | 1. | 5. | NC | | | | | | | |
| 8-255 | NC | 1. | 5. | NA | | | | | | | |
| 8-256 | NC | 1. | 5. | NC | | | | | | | |
| 8-257 | NC | 1. | | NA | | | | | | | |
| 8-258 | NC | 1. | 5. | 5. | | | | | | | |
| 8-259 | NC | 1. | 5. | NC | | | | | | | |
| 8-260 | NC | 1. | 5. | NC | | | | | | | |
| 8-261 | NC | 1. | 5. | NC | | | | | | | |
| 8-262 | NC | | | NC | | | | | | | |
| 8-263 | NC | | 5. | NC | | | | | | | |
| 8-264 | NC | 1. | 5. | NC | | | | | | | |
| 8-265 | NC | 1. | 5. | NC | | | | | | | |
| 8-266 | NC | 1. | | NC | | | | | | | |
| 8-267 | NC | 1. | 5. | NC | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-268 | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-269 | NC | 1. | 5. | 5. | | | | | | | |
| 8-270a | NC | 1. | 5. | 5. | | | | | | | |
| 8-271 | NC | 1. | 5. | NC | | | | | | | |
| 8-272 | NC | | 5. | NC | | | | | | | |
| 8-273 | NC | 1. | | NC | | | | | | | |
| 8-274 | NC | 1. | | NC | | | | | | | |
| 8-275 | NC | 1. | | NC | | | | | | | |
| 8-276 | NC | 1. | 5. | NC | | | | | | | |
| 5-277 | NC | 1. | 5. | NC | | | | | | | |
| 8-278 | NC | 1. | 5. | NC | | | | | | | |
| 8-279 | NC | | 5. | NC | | | | | | | |
| 8-280 | NC | 1. | 5. | NC | | | | | | | |
| 8-281a | NC | 1. | 5. | NC | | | | | | | |
| 8-282 | NC | | 5. | NC | | | | | | | |
| 8-283 | NC | | 5. | NC | | | | | | | |
| 8-284 | NC | | 5. | NC | | | | | | | |
| 8-285 | NC | | 5. | NC | | | | | | | |
| 8-286 | NC | 1. | 5. | NC | | | | | | | |
| 8-287 | NC | 1. | 5. | NC | | | | | | | |
| 8-288 | NC | | 5. | NC | | | | | | | |
| 8-289 | NC | 1. | | NC | | | | | | | |
| 8-290 | NC | 1. | 5. | NA | | | | | | | |
| 8-291 | NC | 1. | 5. | NC | | | | | | | |
| 8-292 | NC | 1. | 5. | 5. | | | | | | | |
| 8-293 | NC | 1. | | 5. | | | | | | | |
| 8-294 | NC | 1. | 5. | NC | | | | | | | |
| 8-295 | NC | 1. | 5. | NC | | | | | | | |
| 8-296 | NC | 1. | | NC | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-297 | NC | \$ 1. | \$ | \$ 5. | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-298 | NC | 1. | 5. | 5. | | | | | | | |
| 8-299 | NC | 1. | 5. | 5. | | | | | | | |
| 8-300 | NC | | 5. | NC | | | | | | | |
| 8-301 | NC | 1. | | NC | | | | | | | |
| 8-302 | NC | 1. | | NC | | | | | | | |
| 8-303 | NC | | | NC | | | | | | | |
| 8-304 | NC | 1. | 5. | NC | | | | | | | |
| 8-305 | NC | 1. | 5. | NC | | | | | | | |
| 8-306 | NC | | 5. | NA | | | | | | | |
| 8-308 | NC | 1. | 5. | NC | | | | | | | |
| 8-309 | NC | 1. | 5. | NC | | | | | | | |
| 8-310 | NC | | | NC | | | | | | | |
| 8-311 | NC | 1. | 5. | NC | | | | | | | |
| 8-312 | NC | 1. | 5. | NC | | | | | | | |
| 8-314 | NC | 1. | 5. | 5. | | | | | | | |
| 8-315 | NC | 1. | 5. | NC | | | | | | | |
| 8-316 | NC | | 5. | NC | | | | | | | |
| 8-317 | NC | | 5. | NC | | | | | | | |
| 8-318 | NC | | 5. | NC | | | | | | | |
| 8-319 | NC | | 5. | NC | | | | | | | |
| 8-320 | NC | | 5. | NC | | | | | | | |
| 8-321 | NC | | 5. | NC | | | | | | | |
| 8-322 | NC | | 5. | NC | | | | | | | |
| 8-323 | NC | | 5. | NC | | | | | | | |
| 8-324 | NC | | 5. | NC | | | | | | | |
| 8-325 | NC | | 5. | NC | | | | | | | |
| 8-326 | NC | | 5. | NC | | | | | | | |
| 8-327 | NC | | 5. | NC | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|--|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-328 | NC | \$ | \$5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-329 | NC | 1. | | NA | | | | | | | |
| 8-330 | NC | 1. | | NA | | | | | | | |
| 8-331 | NC | | 5. | NC | | | | | | | |
| 8-332 | NC | 1. | | NC | | | | | | | |
| 8-333 | NC | 1. | 5. | 5. | | | | | | | |
| 8-334 | NC | 1. | | 5. | | | | | | | |
| 8-335 | NC | 1. | | 5. | 5. | 17. | | | | | On 1 DECTape - 10 Format |
| 8-336 | NC | | 5. | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-338 | NC | 1. | 5. | NC | | | | | | | |
| 8-339A | NC | 1. | | 5. | 5. | 17. | | | | | } On same (1) DECTape DECTape - PDP-10 Format |
| 8-339B | NC | 1. | | 5. | 5. | 17. | | | | | |
| 8-340 | NC | 1. | | 5. | 5. | 17. | | | | | On 1 DECTape - 10 Format |
| 8-341 | NC | 1. | 5. | 5. | | | | | | | |
| 8-342 | NC | 1. | | NA | | | | | | | |
| 8-343 | NC | | | NA | | | | | | | |
| 8-344 | NC | 1. | 5. | NC | | | | | | | |
| 8-345 | NC | 1. | 5. | NC | | | | | | | |
| 8-346 | NC | | 5. | NC | | | | | | | |
| 8-347 | NC | | 5. | NC | | | | | | | |
| 8-348 | NC | | | NC | | | | | | | |
| 8-349 | NC | 1. | 5. | 5. | | | | | | | |
| 8-350 | NC | 1. | 5. | NC | | | | | | | |
| 8-351 | NC | 1. | 5. | NC | | | | | | | |
| 8-352 | NC | 1. | 5. | NC | | | | | | | |
| 8-353 | NC | 1. | 5. | NC | | | | | | | |
| 8-354 | NC | 1. | 5. | NC | | | | | | | |
| 8-355 | NC | 1. | 5. | NC | | | | | | | |
| 8-356 | NC | 1. | 5. | NC | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-357 | NC | \$1. | \$5. | \$5. | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-358 | NC | | 5. | NC | | | | | | | |
| 8-359 | NC | 1. | | NC | | | | | | | |
| 8-360 | NC | 1. | | NC | | | | | | | |
| 8-361 | NC | | | NC | | | | | | | |
| 8-362 | NC | | 5. | NC | | | | | | | |
| 8-363 | NC | 1. | 5. | NC | | | | | | | |
| 8-364 | NC | 1. | 5. | NC | | | | | | | |
| 8-365 | NC | | 5. | 5. | | | | | | | |
| 8-366 | NC | 1. | 5. | 5. | | | | | | | |
| 8-367 | NC | | 5. | NC | | | | | | | |
| 8-368 | NC | | 5. | 5. | | | | | | | |
| 8-369 | NC | 1. | 5. | NC | | | | | | | |
| 8-370A&B | NC | | 5. | 5. | | | | | | | |
| 8-371 | NC | 1. | | NC | | | | | | | |
| 8-372 | NC | 1. | 5. | NC | | | | | | | |
| 8-373 | NC | | | NC | | | | | | | |
| 8-374 | NC | 1. | 5. | 5. | | | | | | | |
| 8-375A | NC | 1. | 5. | 5. | | | | | | | |
| 8-375B | NC | 1. | 5. | 5. | | | | | | | |
| 8-376A | NC | 1. | 5. | NC | | | | | | | |
| 8-376B | NC | 1. | 5. | NC | | | | | | | |
| 8-377 | NC | 1. | | NA | | | | | | | |
| 8-378 | NC | 1. | 5. | 5. | | | | | | | |
| 8-379a | NC | 1. | 5. | NC | | | | | | | |
| 8-380 | NC | 1. | 5. | NC | | | | | | | |
| 8-381 | NC | | | NC | | | | | | | |
| 8-382 | NC | 1. | 5. | NC | | | | | | | |
| 8-383A | NC | 1. | | NA | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|--------------------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|--------------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-383B | NC | \$1. | \$ | \$ NA | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-383C | NC | 1. | | NA | | | | | | | |
| 8-384 | NC | 1. | 5. | NC | | | | | | | |
| 8-385 | NC | | | NC | | | | | | | |
| 8-386 | NC | | | NC | | | | | | | |
| 8-387 | NC | 1. | 5. | 5. | | | | | | | |
| 8-388 | NC | 1. | 5. | 5. | | | | | | | |
| 8-389 | NC | 1. | 5. | 5. | | | | | | | |
| 8-390 | NC | 1. | | NA | | | | | | | |
| 8-391 _a | NC | | 5. | NC | | | | | | | |
| 8-392 | NC | 1. | | NA | 5. | 17. | | | | | On 1 DECTape - 10 Format |
| 8-393 | NC | | | NC | 5. | 17. | | | | | On 1 DECTape |
| 8-394 | NC | | | NC | | | | | | | |
| 8-395 | NC | 1. | | 5. | 5. | 17. | | | | | On 1 DECTape |
| 8-396 | NC | 1. | 5. | 5. | | | | | | | |
| 8-397 | NC | 1. | | NA | | | | | | | |
| 8-398 _a | NC | 1. | 5. | NC | | | | | | | |
| 8-399 | NC | 1. | 5. | 5. | | | | | | | |
| 8-400 | NC | 1. | | NA | | | | | | | |
| 8-401 | NC | | | NC | | | | | | | |
| 8-402 | NC | | 5. | NC | | | | | | | |
| 8-403 | NC | 1. | 5. | 5. | | | | | | | |
| 8-404 | NC | 1. | 5. | NA | | | | | | | |
| 8-405 | NC | 1. | 5. | NA | | | | | | | |
| 8-406 | NC | | | NC | | | | | | | |
| 8-407 | NC | 1. | 5. | NC | | | | | | | |
| 8-408 | NC | 1. | 5. | 5. | | | | | | | |
| 8-409 | NC | | | 5. | | | | | | | Cards - \$20. |
| 8-410 | NC | | | NC | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-411 | NC | \$1. | \$5. | \$ 5. | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-412 | NC | 1. | 5. | NA | | | | | | | |
| 8-413 | NC | 1. | 5. | NA | | | | | | | |
| 8-414 | NC | 1. | | NC | | | | | | | |
| 8-415 | NC | 1. | 5. | 5. | | | | | | | |
| 8-416a | NC | 1. | | NA | | | | | | | |
| 8-417 | NC | | | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-418A | NC | 1. | 5. | NC | | | | | | | |
| 8-418B | NC | 1. | 5. | NC | | | | | | | |
| 8-419 | NC | 1. | 5. | 5. | | | | | | | |
| 8-420 | NC | 1. | | NA | | | | | | | |
| 8-421 | NC | | 5. | NA | | | | | | | |
| 8-422 | NC | 1. | 5. | NC | | | | | | | |
| 8-423 | NC | 1. | 5. | 5. | | | | | | | |
| 8-424 | NC | 1. | 5. | NC | | | | | | | |
| 8-425 | NC | 1. | 5. | NC | | | | | | | |
| 8-426 | NA | 1. | | NA | | | | | | | |
| 8-427b | NC | | | 5. | 5. | 17. | | | | | |
| 8-428A | NC | 1. | 5. | NC | | | | | | | |
| 8-428B | NC | 1. | 5. | NC | | | | | | | |
| 8-429 | NC | 1. | 5. | 5. | | | | | | | |
| 8-430 | NC | | 5. | NC | | | | | | | |
| 8-431 | NC | 1. | | NA | | | | | | | |
| 8-432 | NC | | 5. | NA | | | | | | | |
| 8-433 | NC | | 5. | 5. | | | | | | | |
| 8-434.1 | NC | 1. | 5. | 5. | | | | | | | |
| 8-434.2 | NC | 1. | 5. | 5. | | | | | | | |
| 8-434.3 | NC | 1. | 5. | 5. | | | | | | | |
| 8-434.4 | NC | 1. | 5. | 5. | | | | | | | |

N/C - No Charge
 N/A - Not Available

U/S - User Supplied Tape
 D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|---------------------------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-434.5 | NC | \$ 1. | \$ 5. | \$ 5. | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-434.6 | NC | 1. | 5. | 5. | | | | | | | |
| 8-434.7 | NC | 1. | 5. | NC | | | | | | | |
| 8-435 | NC | 1. | 5. | 5. | | | | | | | |
| 8-436 | NC | 1. | 5. | NC | | | | | | | |
| 8-437 | NC | | | NC | | | | | | | |
| 8-438 | NC | 1. | 5. | NC | | | | | | | |
| 8-439 | NC | 1. | 5. | NA | | | | | | | |
| 8-440 | NC | 1. | 5. | NA | | | | | | | |
| 8-441 | NC | 1. | 5. | NC | | | | | | | |
| 8-442 | NC | | 5. | NC | | | | | | | |
| 8-443 | NC | 1. | 5. | NC | | | | | | | |
| 8-444 | NC | 1. | 5. | NA | | | | | | | |
| 8-445 | NC | | | 5. | 5. | 17. | | | | | On 1 DECTape |
| 8-446 | NC | 1. | 5. | NC | | | | | | | |
| 8-447 | NC | | 5. | NC | | | | | | | |
| 8-448 | NC | 1. | 5. | NC | | | | | | | |
| 8-449A | NC | | | NC | 5. | 17. | | | | | On 1 DECTape DECTape PDP-10 Format |
| 8-449B | NC | | | NC | 5. | 17. | | | | | |
| 8-449C | NC | | | NC | 5. | 17. | | | | | |
| 8-449D | NC | | | NC | 5. | 17. | | | | | |
| 8-450 | NC | 1. | 5. | 5. | | | | | | | |
| 8-451 | NC | | 5. | NA | | | | | | | |
| 8-452 | NC | 1. | 5. | NC | | | | | | | |
| 8-453 | NC | 1. | 5. | NA | | | | | | | |
| 8-454 | NC | 1. | 5. | NC | | | | | | | |
| 8-455 | NC | 1. | 5. | 5. | | | | | | | |
| 8-456A | NC | 1. | | 5. | 5. | 17. | | | | | On 1 DECTape |
| 8-456B | NC | 1. | | 5. | 5. | 17. | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-457 | NC | \$ 1. | \$ 5. | \$ 5. | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-458 | NC | 1. | 5. | NC | | | | | | | |
| 8-459 | NC | 1. | 5. | NC | | | | | | | |
| 8-460 | NC | 1. | 5. | NA | | | | | | | |
| 8-461 | NC | 1. | 5. | NA | | | | | | | |
| 8-462 | NC | | 5. | NC | | | | | | | |
| 8-463 | NC | | 5. | NC | | | | | | | |
| 8-464 | NC | 1. | 5. | NC | | | | | | | |
| 8-465 | NC | 1. | 10. | 10. | | | | | | | |
| 8-466A | NC | | | NA | | | | | | | |
| 8-466B | NC | | | NA | | | | | | | |
| 8-466C | NC | | | NA | | | | | | | |
| 8-466D | NC | | | NA | | | | | | | |
| 8-466E | NC | | | NA | | | | | | | |
| 8-466F | NC | | | NA | | | | | | | |
| 8-466G | NC | | | NA | | | | | | | |
| 8-466H | NC | | | NA | | | | | | | |
| 8-466I | NC | | | NA | | | | | | | |
| 8-466UØ | NA | | | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-467a | NC | 1. | | NC | | | | | | | |
| 8-468 | NC | 1. | | 5. | | | | | | | |
| 8-469 | NC | 1. | | NC | | | | | | | |
| 8-470 | NC | A-1. | | NA | | | | | | | Tape A for KSR33 |
| | NC | B-1. | | NA | | | | | | | Tape B for KSR35 |
| 8-471 | NC | 1. | | NA | | | | | | | |
| 8-472 | NC | | 5. | 5. | | | | | | | |
| 8-473 | NC | | | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-474 | NC | | | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-475 | NC | | 5. | NA | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
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For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|--------------------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-477 | NC | \$ 1. | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-478 | NC | 1. | 5. | NA | | | | | | | |
| 8-479 | NC | | | NA | | | | | | | |
| 8-480 _a | NC | 1. | 5. | NA | | | | | | | |
| 8-481 _a | NC | 1. | | NC | | | | | | | |
| 8-482 | NC | 1. | | NC | | | | | | | |
| 8-483 | NC | 1. | 5. | NC | | | | | | | |
| 8-484 | NC | 1. | 5. | NC | | | | | | | |
| 8-485 | NC | 1. | 5. | NC | | | | | | | |
| 8-486 | NC | 1. | 5. | NC | | | | | | | |
| 8-487 | NC | 1. | 5. | NC | | | | | | | |
| 8-488 | NC | 1. | | NC | | | | | | | |
| 8-489 | NC | 1. | | NC | | | | | | | |
| 8-490 | NC | 1. | 5. | NC | | | | | | | |
| 8-491 | NC | | 5. | 5. | | | | | | | |
| 8-492 | NC | 1. | 5. | NC | | | | | | | |
| 8-493 | NC | 1. | 5. | NC | | | | | | | |
| 8-494 | NC | | 5. | NC | | | | | | | |
| 8-495 | NC | 1. | 5. | 5. | | | | | | | |
| 8-496 | NC | 1. | 5. | 5. | | | | | | | |
| 8-497A | NC | | | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-497B | NC | | | NA | | | | | | | |
| 8-498 | NC | | 5. | NA | | | | | | | |
| 8-499 | NC | 1. | 5. | NC | | | | | | | |
| 8-500 | NC | 1. | 5. | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-501 | NC | | 5. | NC | | | | | | | |
| 8-502 | NC | 1. | | NC | | | | | | | |
| 8-503 | NC | 1. | | NA | | | | | | | |
| 8-504A | NC | 1. | | NA | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

For information not contained on this sheet see General Information at end of this section

DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|------------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-504B | NC | \$ 1. | \$ | \$ NA | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-504C | NA | | 5. | NA | | | | | | | |
| 8-505 | NC | 1. | 5. | NC | | | | | | | |
| 8-506 | NC | 1. | 5. | 5. | | | | | | | |
| 8-507 | NC | 1. | 5. | NC | | | | | | | |
| 8-508 | NC | | 5. | NA | | | | | | | |
| 8-509 | NC | 1. | 5. | 5. | | | | | | | |
| 8-510 | NC | 1. | 5. | NC | | | | | | | |
| 8-511 | NC | 1. | | 5. | | | | | | | |
| 8-512 | NC | 1. | | NC | | | | | | | |
| 8-513 | NC | 1. | 5. | NC | | | | | | | |
| 8-514 | NC | | 5. | NC | | | | | | | |
| 8-515 | NC | 1. | | NC | | | | | | | |
| 8-516 | NC | | 5. | NA | | | | | | | |
| 8-517 | NC | | | NC | 5. | 17. | | | | | On 1 DEctape |
| 8-518 | NC | | | NC | | | | | | | |
| 8-519 | NC | 1. | | NC | | | | | | | |
| 8-520 | NC | 1. | 5. | NC | | | | | | | |
| 8-521 | NC | 1. | 5. | NC | | | | | | | |
| 8-522 | NC | 1. | 5. | NC | | | | | | | |
| 8-523 | NC | 1. | 5. | NA | | | | | | | |
| 8-524 | NC | 1. | 5. | NA | | | | | | | |
| 8-525 | NC | 1. | 5. | NA | | | | | | | |
| 8-526 | NC | 1. | | 5. | | | | | | | |
| 8-527 | NC | 1. | | 5. | | | | | | | |
| 8-528 | NC | 1. | 5. | NC | | | | | | | |
| 8-529 | NC | 1. | 5. | NA | | | | | | | |
| 8-530 | NC | | | NA | 5. | 17. | | | | | On 1 DEctape |
| 8-531A&B | NC | | | NC | 5. | 17. | | | | | Also includes 8-497, 4 |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
D/S - DECUS Supplied Tape

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DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-532 | NC | \$ | \$ 5. | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-533 | NC | 1. | | NC | | | | | | | |
| 8-534 | NC | 1. | | NC | | | | | | | |
| 8-535 | NC | 1. | | NC | | | | | | | |
| 8-536 | NC | 1. | 5. | NC | | | | | | | |
| 8-537 | NC | 1. | 5. | NC | | | | | | | |
| 8-538 | NC | 1. | 5. | NC | | | | | | | |
| 8-539 | NC | 1. | 5. | NC | | | | | | | |
| 8-540A | NC | | 5. | NC | | | | | | | |
| 8-540B | NC | | 5. | NC | | | | | | | |
| 8-541 | NC | | | NA | | | | | | | |
| 8-542 | NC | 1. | 5. | NC | | | | | | | |
| 8-543 | NC | 1. | | NA | | | | | | | |
| 8-544 | NC | 1. | | NA | | | | | | | |
| 8-545 | NC | 1. | 5. | NA | | | | | | | |
| 8-546 | NC | 1. | | 25. | 5. | 17. | | | | | On 1 DECTape |
| 8-547 | NC | 1. | 5. | 5. | | | | | | | |
| 8-548 | NC | 1. | 5. | NC | | | | | | | |
| 8-549 | NC | | | NA | 5. | 17. | | | | | On 1 DECTape |
| 8-550 | NC | | 5. | NC | | | | | | | |
| 8-551 | NC | 1. | 5. | NC | | | | | | | |
| 8-552 | NC | | 5. | NC | | | | | | | |
| 8-553 | NC | 1. | 5. | 5. | | | | | | | |
| 8-554 | NC | | 5. | NA | | | | | | | |
| 8-555 | NC | | 5. | NA | | | | | | | |
| 8-556 | NC | | 5. | NA | | | | | | | |
| 8-557 | NC | | 5. | NA | | | | | | | |
| 8-558 | NC | | 5. | NA | | | | | | | |

N/C - No Charge
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DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-----------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-559 | NC | \$1. | \$ | \$ 5. | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-560 | NC | 1. | | NA | | | | | | | |
| 8-561 | NC | 1. | | NC | | | | | | | |
| 8-562 | NC | 1. | 5. | NA | | | | | | | |
| 8-563 | NC | 1. | 5. | NC | | | | | | | |
| 8-564 | NC | | 10. | 5. | | | | | | | |
| 8-565 | NC | 1. | | NC | | | | | | | |
| 8-566 | NC | 1. | | NC | | | | | | | |
| 8-567 | NC | 1. | | NC | | | | | | | |
| 8-568 | NC | 1. | | NC | | | | | | | |
| 8-569 | NC | 1. | 5. | 5. | | | | | | | |
| 8-570 | NC | 1. | 5. | NC | | | | | | | |
| 8-571 | NC | 1. | 5. | NC | | | | | | | |
| 8-572 | NC | 1. | 5. | NC | | | | | | | |
| 8-573 | NC | | | NA | 5. | 17. | | | | | Image & ASCII DECTape |
| 8-574 | NC | 1. | | NC | | | | | | | |
| 8-575 | NC | 1. | 5. | NC | | | | | | | |
| 8-576 | NC | 1. | | NC | | | | | | | |
| 8-577 | NC | 1. | | NC | | | | | | | |
| 8-578 | NC | 1. | 5. | NA | | | | | | | |
| 8-579 | NC | 1. | | NC | | | | | | | |
| 8-580 | NC | 1. | 5. | NC | | | | | | | |
| 8-582 | NC | 1. | 5. | NC | | | | | | | |
| 8-583 | NC | 1. | | NC | | | | | | | |
| 8-584 | NC | 1. | 5. | NC | | | | | | | |
| 8-585 | NC | 1. | 5. | NC | | | | | | | |
| 8-586 | NC | | 5. | NA | | | | | | | |
| 8-587 | NC | 1. | 5. | NC | | | | | | | |
| 8-588 | NC | | 5. | NA | | | | | | | |

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DECUS SERVICE CHARGES

| DECUS NO. | WRITE-UP | PAPER TAPE | | LISTING | DECTAPE | | LINCTAPE | | MAGTAPE | | OTHER INFORMATION |
|-----------|----------|------------|-------|---------|---------|-----|----------|-----|---------|-----|-----------------------|
| | | BIN | ASCII | | U/S | D/S | U/S | D/S | U/S | D/S | |
| 8-589 | NC | \$1. | \$ | \$ NC | \$ | \$ | \$ | \$ | \$ | \$ | |
| 8-590 | NC | 1. | 5. | NC | | | | | | | |
| 8-591 | NC | 1. | 10. | 10. | | | | | | | |
| 8-592 | NC | 1. | 5. | NC | | | | | | | |
| 8-593 | NC | 1. | 5. | 5. | | | | | | | |
| 8-594 | NC | 1. | 5. | NC | | | | | | | |
| 8-595 | NC | 1. | 5. | 5. | | | | | | | |
| 8-596 | NC | 1. | | NC | | | | | | | |
| 8-597 | NC | | | 5. | 10. | 34. | | | | | 1 obj. 1 src. DECTape |
| 8-598 | NC | | 5. | NC | | | | | | | |
| 8-599 | NC | 1. | 5. | NA | | | | | | | |
| 8-600 | NC | 1. | 5. | NC | | | | | | | |
| 8-601 | NC | 1. | | NA | | | | | | | |
| 8-602 | NC | | 5. | NC | | | | | | | |
| 8-602B | NC | | 5. | NC | | | | | | | |
| 8-603 | NC | 1. | 5. | NC | | | | | | | |
| 8-604 | NC | 1. | 5. | NC | | | | | | | |
| 8-605 | NC | 1. | 5. | NC | | | | | | | |
| 8-606 | NC | | 5. | NA | | | | | | | |
| 8-607 | NC | 1. | 5. | NC | 5. | 17. | | | | | Paper Tape OR DTA |
| 8-608 | NC | | | NA | 5. | 17. | | | | | Tape Includes 8-608, |
| 8-609 | NC | | | NA | 5. | 17. | | | | | 8-609 & FOCAL8-269 |
| 8-610 | NC | | | NA | 5. | 17. | | | | | B/S DECTape |
| 8-611 | NC | 1. | 5. | NC | | | | | | | |
| 8-612 | NC | 1. | 5. | 5. | | | | | | | |
| 8-613 | NC | 1. | 5. | NC | | | | | | | |
| 8-614 | NC | 1. | 5. | NC | | | | | | | |
| 8-615 | NC | 1. | 5. | NC | | | | | | | |

N/C - No Charge
N/A - Not Available

U/S - User Supplied Tape
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A complete set of all current PDP-8 write-ups is available for a service charge of \$60.00



PDP-8 PROGRAM ABSTRACTS

DECUS NO. 5/8-1.1a

BPAK - A Binary Input/Output Package for the PDP-5

P. T. Brady, Bell Laboratories, Holmdel, New Jersey

BPAK incorporates DEC's binary loader with a binary punch-out program. It is designed to fit on the last page of the PDP-8 memory, thus allowing memory-protected storage of a punchout program as well as a read-in program. It has been revised to allow reading into or punching out of any 4K field of memory; the previous version was limited to a 4K machine. BPAK reads and punches tapes in standard DEC binary format.

Source Language: PAL

DECUS NO. 5/8-2.1a

OPAK - An On-Line Debugging Program

P. T. Brady, Bell Laboratories, Holmdel, New Jersey

The new version of OPAK (octal package) is a revision of a debugging program originally conceived in 1964 by A. D. Hause of Bell Laboratories. OPAK enables the user to perform standard debugging operations with special emphasis on ease of typing and typing error correction. Debugging features include register examination and loading, block memory transfer, jamming sections of memory with any constant, an interpretive breakpoint with ability to execute it more than once before control returns to user, word search with mask, octal dump of blocks of memory, and a symbolic dump which recognizes seven groups of in/out devices (selected by user) and supplies the effective address of all indirect instructions and "AND" instructions.

DECUS NO. 5-3

Obsolete

DECUS NO. 5-4

Octal Typeout of Memory Area with Format Option

Donald V. Weaver, New York, New York

(Write-up consists of listing only)

DECUS NO. 5-5

Expanded Adding Machine

Donald V. Weaver, New York, New York

Expanded Adding Machine is a minimum-space version of Expensive Adding Machine (DEC-5-43-D) using a table look-up method including an error space facility.

This is a basic version to which additional control functions can easily be added. Optional vertical or horizontal format, optional storage of intermediate result without reentry fixed-point output of results within reason, and other features that can be had in little additional space under switch register control.

DECUS NO. 5-6

Obsolete

DECUS NO. 5/8-7

Decimal to Binary Conversion by Radix Deflation and Accelerated Radix Deflation

Donald V. Weaver, New York, New York

These are typical programs by the improved method of regular and accelerated radix deflation.

DECUS NO. 5-8

Obsolete

DECUS NO. 5/8-9

Analysis of Variance - PDP-5/8

H. Burkhardt

An analysis of variance program for the standard PDP-5/8 configuration. The output consists of:

A. For each sample: 1) sample number, 2) sample size, 3) sample mean, 4) sample variance, 5) sample standard deviation.

B. The grand mean

C. Analysis of Variance Table: 1) the grand mean, 2) the weighted sum of squares of class means about the grand means, 3) the degrees of freedom between samples, 4) the variance between samples, 5) the pooled sum of squares of individual values about the means of their respective classes, 6) the degrees of freedom within samples, 7) the variance within samples, 8) the total sum of squares of deviations from the grand mean, 9) the degrees of freedom, 10) the total variance, 11) the ratio of the variance between samples to the variance with samples.

This is the standard analysis of variance table that can be used with the F test to determine the significance, if any, of the differences between sample means. The output is also useful as a first description of the data.

Other Programs Needed: Floating Point Interpretive Package (DEC-8-5-S)

DECUS NO. 5-10

Paper Tape Reader Tester

Tony Schaeffer, Lawrence Radiation Laboratory, Berkeley, California

A test tape can be produced and will be continuously read as an endless tape. Five kinds of errors will be detected and printed out. The Read routine is in 6033-6040.

Storage Requirement: Locations 10, 11, 40-67 (save 63, 64), and 6000-7777.

DECUS NO. 5-11 through 5-13

Obsolete

DECUS NO. 5/8-14

Dice Game for the PDP-5/8

Edward Steinberger, Digital Equipment Corporation, Maynard, Massachusetts

Enables a user to play the game DICE on either the PDP-5 or PDP-8.

Storage Requirement: 1 to 1677
Source Language: PAL

DECUS NO. 5/8-15

ATEPO (Auto Test in Elementary Programming and Operation of a PDP-5/8 Computer)

Submitted by: Rutgers University, Electrical Engineering Department, New Brunswick, New Jersey

The program will type questions or instructions to be performed by the operator of a 4K PDP-5/8. The program will check to see if the operator has answered the questions correctly. If this is the case, it will type the next question or instruction.

DECUS NO. 5-16 and 5/8-17

Obsolete

DECUS NO. 5/8-18A

BIN Tape Disassembly Program for PDP-5/8

John W. McClure, University of California, Lawrence Radiation Laboratory, Livermore, California

Disassembles a PDP-5 or 8 program, which is on tape in BIN format. It prints the margin setting, address, octal contents, mnemonic interpretation (PAL) of the octal contents. A normal program or a program which uses Floating Point may be disassembled.

Minimum Hardware: 4K PDP-5/8, ASR33
Storage Requirement: 16-1377₈

DECUS NO. 5/8-18B

Obsolete

DECUS NO. 5/8-18C

Disassembler with Symbols

Eberhard Werner, University of California, Marine Physical Laboratory of the Scripps Institution of Oceanography, San Diego, California

This disassembler accepts a binary tape of standard format and produces a listing of the tape in PAL III mnemonics, and a cross-reference table of all addresses referenced by any memory-reference instruction. A symbol table may be entered to produce a listing similar to a PAL III Pass 3 listing. A patch to produce only a cross reference table is included. See DECUS NO. 8-179.

Minimum Hardware: PDP-8 with 4K, ASR-33 High Speed Reader, EAE
Storage Requirement: 20-1773₈ for program, 1774-7577₈ for scratch
Source Language: PAL

DECUS NO. 8-19a

DDT-UP Octal-Symbolic Debugging Program

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts and Robb N. Russell, The Moore School of Electrical Engineering, University of Pennsylvania, Philadelphia, Pennsylvania

DDT-UP is an octal-symbolic debugging program for a 4K PDP-8 which occupies locations 5600-7667. The mnemonics for the eight basic instructions are defined internal to this area. Other symbols are stored, four locations per symbol, from 5577 down towards 0000. The mnemonics for the standard OPR and IOT group instructions are initially defined in this area. Thus, the highest location initially available to the user is 5363. Beginning at this location the user may define symbols one at a time using the comma (,) operator.

From the Teletype, the user can symbolically examine and modify the contents of any memory location. DDT-UP allows the user to punch a corrected program in CBL format.

DDT-UP has a breakpoint facility to help the user run sections of his program. When this facility is used the debugger also uses location 0005.

Other Programs Needed: DECUS NO. 8-26A or DECUS NO. 8-26C

DECUS NO. 5/8-20

Remote Operated FORTRAN System

James Miller, Dow Badische, Freeport, Texas

Program modification and instructions to make the FORTRAN OTS version dated 2/12/65 operate from remote stations.

DECUS NO. 5/8-21

Triple Precision Arithmetic Package

Joseph A. Rodnite, Information Control System, Ann Arbor, Michigan

An arithmetic package to operate on 36-bit signed integers. The operations are add, subtract, multiply, divide, input conversion, and output conversion. The largest integer which may be represented is $2^{35}-1$ or 10 decimal digits. The routines simulate a 36-bit (3 word) accumulator in core locations 40, 41 and 42 and a 36-bit multiplier quotient register in core locations 43, 44 and 45. Aside from the few locations in page 0, the routines use less core storage space than the equivalent double precision routines.

DECUS NO. 5-22

Obsolete

DECUS NO. 5/8-23A

PDP-5/8 Oscilloscope Symbol Generator (4 x 6 Matrix)

Norman Weissman and John Kiraly, NASA-Ames, Moffett Field, California

The subroutine may be called to write a string of characters, a pair of characters, or a single character on an oscilloscope. Seventy (octal) symbols in ASCII Trimmed Code and four special "formal" commands are acceptable to this routine. The program is operated in a fashion similar to the DEC Teletype Output Package.

DECUS NO. 5/8-23B

PDP-5/8 Oscilloscope Symbol Generator (5 x 7 Matrix)

Larry T. Gell, Center for Visual Science, University of Rochester, Rochester, New York

This subroutine may be called to write a string of characters, a pair of characters, or a single character on a 34D Oscilloscope. Twenty-six alphabetic characters and 0-9 numeric characters are acceptable. However, there is space available to include any symbol the user desires. The program is operated in a fashion similar to the DEC Teletype Output Package (Digital 8-19-U).

Storage Requirement: 200_8-777_8 registers

Source Language: MACRO-8

DECUS NO. 5-24

Obsolete

DECUS NO. 5-25

A Pseudo Random Number Generator for the PDP-5 Computer

Paul T. Brady, Bell Laboratories, Holmdel, New Jersey

The random number generator subroutine, when called repeatedly, will return a sequence of 12-bit numbers which, though deterministic, appears to be drawn from a random sequence uniform over the interval 0000_8 to 7777_8 . Successive numbers will be found statistically uncorrelated. The sequence will not repeat itself until it has been called over 4 billion times. (See DECUS NO. FOCAL8-1.)

DECUS NO. 8-26A

Compressed Binary Loader

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

The CBL (Compressed Binary Loader) format in contrast to BIN format utilizes all eight information channels of the tape, thus achieving nearly 25% in time savings.

As BIN tapes include only one checksum at the end of the tape, CBL tapes are divided into many independent blocks, each of which includes its own checksum. Each block has an initial loading address for the block and a word count of the number of words to be loaded.

Storage Requirement: $7700-7777$

DECUS NO. 8-26B.1

BN2CBL and CBL2BN BIN to CBL Format Tape Converter

David M. Kristol, University of Pennsylvania, Philadelphia, Pennsylvania

CBL2BN is a short utility program which converts paper tape in CBL format to BIN and BN2CBL converts paper tape from BIN to CBL format. It offers high or low speed I/O and proper punching of field characters.

Storage Requirement: 300_8 and 200_8 Buffer; 400_8 and 200_8 Buffer

Source Language: PDPMAP - (DECUS NO. 8-166)

DECUS NO. 8-26C

Extended Compressed Binary Loader

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

XCBL is used to load binary tapes punched in CBL format into a PDP-8 with more than standard 4K memory. This loader occupies locations 7670 through 7777 of any memory field.

DECUS NO. 8-26D

XCBL Punch Program

Michael S. Wolfberg, Moore School of Electrical Engineering,
University of Pennsylvania, Philadelphia, Pennsylvania

This program permits a user to prepare an XCBL tape of portions of a PDP-8 extended memory through the control of the keyboard of the on-line Teletype.

The program is loaded by the BIN Loader.

There are two versions of the program so that any section of memory may be punched: LOW XCBL occupies 00000-00377 and its starting address is 00000; HIGH XCBL occupies 17200-17577 and its starting address is 17200.

Source Language: PAL

DECUS NO. 5/8-27 and 5/8-27a

Bootstrap Loader and Absolute Memory Clear

J. E. Gorman, Western Electric Company, Princeton,
New Jersey

Bootstrap Loader inserts a bootstrap loading program in page 0 from a minimum of toggled instructions.

Absolute Memory Clear leaves the machine in an absolutely clear state and, therefore, cycling around memory obeying an AND instruction with location zero. Should not be used unless one plans to reinsert the loader program.

DECUS NO. 5/8-28a

Phoenix Assembler - PAL III Modifications

Terrel L. Miedaner, Space Astronomy Laboratory, Madison,
Wisconsin

This modification of the PAL III Assembler speeds up assembly on the ASR-33/35 and operates only with this I/O device. Operation is essentially the same as PAL III, except that an additional pass has been added, Pass 0. This pass, started in the usual manner, but with the switches set to zero, reads the symbolic tape into a core buffer area. Subsequent passes then read the tape image from storage instead of from the Teletype.

DECUS NO. 5/8-29

Obsolete

DECUS NO. 5-30

GENPLOT - General Plotting Subroutine

M. Adamowicz, Department of Electrical Engineering,
New York University, New York City, New York

This self-contained subroutine is for the PDP-5 with a 4K memory and a CalComp incremental plotter. The subroutine can move (with the pen in the up position) to locations (x,y),

make an "x" at this location, draw a line from this present position to location (x,y) and initialize the plotter location counters.

DECUS NO. 5-31a

FORPLOT

Jerome Feder, Department of Electrical Engineering,
New York University, New York City, New York

FORPLOT is a general-purpose plotting program for the PDP-5 computer in conjunction with the CalComp 560 Plotter. It is self-contained and occupies memory locations 0000₈ up to 4177₈. FORPLOT accepts decimal data inputted on paper tape in either fixed or floating point formats. Formats can be mixed at will. PDP-5 FORTRAN output tapes are acceptable directly and any comment on these are filtered out. An overlay has been added which allows it to be used by those who have neither a high speed reader nor a card reader.

Storage Requirement: 0000-4177₈

DECUS NO. 5/8-32a

A Program to Relocate and Pack Programs in Binary Format

J. W. Bowman, Atomic Energy of Canada Ltd., Chalk River,
Ontario, Canada

This program provides a means to shuffle machine language programs around in memory to make the most efficient use of computer store.

DECUS NO. 5/8-33

Tape to Memory Comparator

Milton Collins, Teradyne, Boston, Massachusetts

Tape to Memory Comparator is a debugging program which allows comparison of the computer memory with a binary tape. It is particularly useful for detecting reader problems, or during stages of debugging a new program. Presently uses high-speed reader, but may be modified for TTY reader.

DECUS NO. 5-34

Obsolete

DECUS NO. 5/8-35

BCD to Binary Conversion Subroutine and Binary to BCD Conversion Subroutine (Double Precision)

Selene H. C. Wise, Bermuda Press Ltd., Hamilton, Bermuda

This program consists of a pair of relatively simple and straightforward double precision conversions.

DECUS NO. 5-36

Obsolete

DECUS NO. 5-37

Transfer II

Paul Hammond, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts

For users who have more than one memory bank attached to the PDP-5/8, Transfer II may prove valuable in moving information from one field to another. When debugging, Transfer II enables a programmer to make a few changes in a new program and test it without reading in the original program again. Transfer II enables more extensive use of memory banks.

DECUS NO. 5/8-38

FType - Fractional Type

P. T. Brady, Bell Laboratories, Holmdel, New Jersey

Enables a user to type fractions of the form: .582, -.73, etc., which will be interpreted as sign plus 11 bits (e.g., 0.5=2000₈). Subroutine reads into 300-3177 and is easily relocated, as it will work on any page without modifications.

DECUS NO. 5/8-39

DSdprint, DDtype - Double Precision Signed Decimal Input-Output

P. T. Brady, Bell Laboratories, Holmdel, New Jersey

DSdprint, when given a signed 24-bit integer, types a space or minus sign, and then a 7-digit decimal number in the range -8388608 to +8388607. DDtype enables a user to type in a signed decimal number in either single or double precision. These routines are already separately available, but the present subroutine package occupies only one memory page and allows for more efficient memory allocation. Located in 3000-3177, but will work on any page.

DECUS NO. 5-40

Obsolete

DECUS NO. 5-41

Break Point

Arthur R. Miller, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts

This debugging routine has been reduced to a minimum operation. It is a mobile routine which can operate around any program that leaves an extra 30 cells of memory space.

Its function is to insert break points in any given location of the program being debugged, and to hold the contents of AC and Link. The programmer may examine any locations desired and then continue to the next break point. It is

presently located in 140₈ - 170₈, but may be easily relocated.

Storage Requirement: 140₈ - 170₈

DECUS NO. 5-42

Obsolete

DECUS NO. 5/8-43

Unsigned Octal - Decimal Fraction Conversion

Frank Ollie, Defence Research Telecommunications Establishment, Ottawa, Ontario, Canada

This routine accepts a four-digit octal fraction in the accumulator and prints it out as an N-digit decimal fraction where N=12 unless otherwise specified. After N digits, the fraction is truncated. Programs are included for use on the PDP-5 with Type 153 Automatic Multiply-Divide and the PDP-8 with Type 182 Extended Arithmetic Element.

Storage Requirement: 55₈ locations for the PDP-5; 47₈ locations for the PDP-8

DECUS NO. 8-44

Modifications to the Fixed Point Output in the PDP-8 Floating Point Package (Digital 8-5-5)

A. R. McKenzie, Data Systems Division, Standard Telephone & Cables, Ltd., England

This version of the Output Controller is in the form of patches to the Floating Output with an additional page of coding. It does not increase the size of the Floating Point Package. A summary of this version follows:

1. The number output is automatically rounded off to the last digit printed, or the sixth significant digit, whichever is reached first. Floating point output is rounded off to six significant figures since the seventh is usually meaningless.
2. A number less than one is printed with a zero preceding the decimal point (e.g., "+0.5" instead of "+.5").
3. A zero result, after rounding off, is printed as "+0" instead of "+".
4. The basic Floating Point Package includes the facility to specify a carriage return/line feed after the number using location 55 as a flag for this purpose. The patches for the Output Controller caused this facility to be lost. This version restores this facility.

DECUS NO. 5/8-45

PDP-5/8 Remote and Time Shared II System

James Miller, Dow Badische Chemical Company, Freeport, Texas

A time-shared programming system which allows remote stations immediate access to the computer and a wide selection of programs.

The Utility Programs

Edward Della Torre, American-Standard, Princeton, New Jersey

Consists of seven programs (listed below) each of which may be selected via the Teletypewriter. When the program is started, either by a self-starting binary loader or by manually starting the computer in address 200₈, it is in its executive mode. In this mode, it will respond only to eight keys and perform the following functions:

- B - go to BIN to QK Converter Program
- E - go to Editor Program
- F - FORTRAN Tape formatter
- L - type a section of leader and stay in executive
- N - go to Editor program without typing leader
- P - go to Page Format Program
- T - Assembly language tape formatter
- Q - go to QK to BIN Converter Program

DECUS NO. 8-47

ALBIN - A PDP-8 Loader for Relocatable Binary Programs

J. L. Visschers, P. U. ten Kate and M. A. A. Sonnemans, Institut Voar Kernfysisch Onderzoek (IKO), Amsterdam, The Netherlands

ALBIN is a simple method for constructing relocatable binary formatted programs, using the PAL III Assembler. Allocation of these programs can be varied in units of one memory page (128₁₀ registers). When loading an ALBIN program, the actual absolute addresses of indicated program elements (e.g., the keypoint of subroutines) are noted down in fixed program-specified location on page zero. In order to make a DEC symbolic program suitable for translation into its relocatable binary equivalent, minor changes are required which, however, do not influence the length of the program. Due to its similarity to the standard DEC BIN loader, the ALBIN loader is also able to read-in normal DEC binary tapes. ALBIN requires 122₁₀ locations, RIM loader included. Piling-up in core memory of ALBIN programs stored on conventional or DECtape can be achieved using the same method with some modifications.

DECUS NO. 5/8-48

Modified Binary Loader MK IV

R. Ward, American-Standard Research Division, New Brunswick, New Jersey

The Mark IV Loader was developed to accomplish four objectives: 1) Incorporate the self-starting format described in DECUS NO. 5/8-27, Bootstrap Loader; 2) Select the reader in use, automatically, without switch register settings; 3) Enable a newly-prepared binary tape to be checked prior to loading by calculating the checksum; 4) Reduce the storage requirements for the loader so that a special program would fit on the last page of memory with it.

Relativistic Dynamics

G. Sharman, Southampton University, Southampton, England

Prints tables for relativistic particle collisions and decay in the same format as the Oxford Kinematic Tables. It can be used in two ways:

1. Two-particle Collisions - Given the masses of incident, target, and emitted particles, the incident energy and centre-of-mass angles, the program calculates angles and energies of the emitted particles in the Lab frame. If the process is forbidden energetically, program outputs "E" allowing the threshold energy to be found.
2. Single-Particle Decays - By specifying M2=0 (target), the problem will be treated as a decay, and similar tables to the above will be printed.

DECUS NO. 5/8-50

Obsolete

DECUS NO. 5/8-51

Character Packing and Unpacking Routine

Richard Merrill, Digital Equipment Corporation, Maynard, Massachusetts

ASCII characters may be packed two to a word and recovered. Control characters are also packable but are preceded by a 37 before being packed into the buffer.

Storage Requirement: 63₁₀ words

DECUS NO. 8-52

Tiny Tape Editor

Richard Merrill, Digital Equipment Corporation, Maynard, Massachusetts

This Tiny Tape Character Editor fits in core at the same time as the PAL III or MACRO-8 assemblers. A tape may be duplicated at three speeds and stopped at any character for insertion or deletion. The toggle switches control the speed and the functions desired.

Storage Requirement: 72₁₀ registers

DECUS NO. 5/8-53

Obsolete

DECUS NO. 5/8-54

TIC-TAC-TOE Learning Program - T3

Michael Green, Stevens Institute of Technology, Hoboken, New Jersey

This program plays TIC-TAC-TOE basing its moves on stored

DECUS NO. 5/8-54 (Continued)

descriptions of previously lost games. The main program is written in FORTRAN. There is a short subroutine written in PAL II used to print out the TIC-TAC-TOE board. The program comes already educated with about 32 lost games stored.

Other Programs Needed: FORTRAN Object Time System

DECUS NO. 5/8-55

PALEX - An On-Line Debugging Program for the PDP-5 and PDP-8 Computers

Robert Berger, Bell Telephone Laboratories, New York, New York

One problem with programs written in Program Assembly Language (PAL) for operation on a PDP-5/8 computer is the danger of an untested program being self-destructive, running wild, destroying other programs residing in memory such as loading programs. PALEX prevents any of the above unwanted operations from occurring while it gives the operator-programmer valuable debugging information and enables him to make changes in his program and try out the modified program. Once running, PALEX cannot be destroyed by any program or instruction in memory, the operator need not touch any manual console controls, and all required information is printed in easy-to-read format on the Teletype console.

DECUS NO. 8-56

Fixed Point Trace No. 1

B. J. Biavati, Columbia University, New York, New York

A minimum size monitor program which executes the users' program one instruction at a time and reports the contents of the program counter, the octal instruction, the contents of the accumulator and link and the contents of the effective address by means of the ASR-33 Teletype. (See DECUS NO. 8-57)

Storage Requirement: Two pages

DECUS NO. 8-57

Fixed Point Trace No. 2

B. J. Biavati, Columbia University, New York, New York

Similar to Fixed Point Trace No. 1 (DECUS NO. 8-56) except that the symbolic tape provided has a single origin setting instruction of 6000. Any four consecutive memory pages can be used, with the exception of page zero, by changing this one instruction.

DECUS NO. 8-58

One-Page DECTape Routine

George Friedman, Massachusetts Institute of Technology, Cambridge, Massachusetts

A general-purpose program for reading, writing, and searching of magnetic tape. This program was written for the Type 552 Control. It has many advantages over both the standard DEC routines. The routines are one page long and can be operated with the interrupt on or off. The DEC program delays the calling program while waiting for the unit and movement delays to time-out. This routine returns control to the calling program. This saves 1/4 second every time the tape searches forward and half that time when it reverses. In addition, it will read and write block 0. This program is an advantage over the previous one-page routines in that it allows interrupt operations, does not overflow by one location, interprets the end zone correctly and not as an error, and provides a calling sequence identical to the DEC program.

DECUS NO. 8-59

Obsolete

DECUS NO. 8-60

Square Root Function by Subtraction Reduction (Uses EAE)

George Friedman, Massachusetts Institute of Technology, Cambridge, Massachusetts

A single precision square root routine using EAE. This routine is usually faster than the DEC routine and can easily be modified for double precision calculation at only twice the computation time.

DECUS NO 8-61

Improvement to Digital 8-9-F Square Root

George Friedman, Massachusetts Institute of Technology, Cambridge, Massachusetts

An improved version of the DEC Single Precision Square Root Routine (without EAE). Saves a few words of storage and execution is speeded up 12 percent.

DECUS NO. 8-62a and 5-63

Obsolete

DECUS NO. 8-64a

4K and 8K DECTape Programming System

James Crapuchettes, Stanford Electronics Laboratories, Stanford, California

This programming system is a complete revision and expansion of the DECTape Library System (written by DEC) and the DECTape Programming System (DECUS NO. 8-64). The System will allow editing, assembling and debugging of programs using one or more DECTape units (TU55) and 4K or 8K of memory on PDP-8 Family computers. The strong points of the

DECUS NO. 8-64a (Continued)

System are speed with DECTapes (much faster than Disk/ DECTape Monitor System) and complete teletype control of all System programs. The file system is completely compatible with the System that it replaces (DECUS NO. 8-64), and all of the System programs except XEDIT, XPAL, XPAL8, XLOAD and XSYS are compatible with the old System. These 5 programs must be used with the new System only.

Note: TCØ1 version only. Tapes no longer available for 552 version.

Minimum Hardware: PDP-8, TCØ1(TCØ8), TU55(TU56), 1 DECTape unit required but 2 are preferable.

Source Language: PAL III

DECUS NO. 8-65

A Programmed Associative Multichannel Analyzer

G. C. Best, Atomic Energy Research Establishment, Harwell, England

The program describes the use of a small computer as an associative analyzer with special reference to the PDP-8. The advantages and limitations of the method are discussed in the write-up, and general program algorithms are presented.

DECUS NO. 8-66

Editor Modified for DECTape (552 Control)

Robin Wadleigh, Johns Hopkins University, Baltimore, Maryland

This program consists of modifications to the Digital 8-1-S Symbolic Editor to enable reading and writing on DECTape. This results in considerable time savings in assembling PAL programs since PAL has also been modified to accept the symbolic program directly from DECTape. The DECTape compatibility is also useful for storing text for later use and for regaining Editor memory space lost due to delete and change commands. In addition, the overflow detection routine is now foolproof and results in a HALT.

Minimum Hardware PDP-8 with EAE, ASR-33, DECTape

Other Programs Needed: DECUS NO. 8-67

Storage Requirement: Editor: <Ø, 1502>
Modifications: <1462, 1502>
<6376, 7177>
DECTape Routines: <7200, 7577>

DECUS NO. 8-67

PAL Modified for DECTape Input (Uses EAE)

Robin B. Wadleigh, Johns Hopkins University, Baltimore, Maryland

This program is a modification to the Digital 8-3L-S PAL Assembly Program enabling PAL to obtain the symbolic program from DECTape (in addition to paper tape), and outputting the assembled program in the usual manner. (The symbolic program is written onto DECTape by use of the "Editor Modified for DECTape" Program.) This modification also makes it possible to assemble sections or commands from the keyboard with those from DECTape. The resulting assembly is limited

in speed mainly by the punching of the assembled program during Pass 2; and Pass 1 is speeded considerably. Also included is a tabulator interpreter, providing Pass 3 listings in tabulated format.

Minimum Hardware: PDP-8 with EAE, ASR-33, DECTape (552)
Other Programs Needed: DECUS NO. 8-66
Storage Requirement: PAL III: <Ø, 3561> plus symbol table
Modifications: <6555, 7177>
DECTape Routines: <7200, 7577>

DECUS NO. 8-68a

LABEL Program

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

The LABEL Program punches labels for paper tapes on the Teletype punch. When a key on the Teletype keyboard is depressed, no echo is performed, but a few characters of tape are punched which form the outline of the character associated with the key. Outlines are punched for all characters whose code is between 240 and 337. (Reference DECUS NO. 8-106).

Storage Requirement: Locations 200-677 of any memory field. 400-677 of Readable Punch

DECUS NO. 5/8-69

LESQ29 and LESQ11

Michael W. King, Phillips Petroleum Company, Idaho Falls, Idaho

The purpose of the program is to fit the best sequences of parabolas to a given 400 point data curve in order to remove extraneous noise; rather than rely on a single 400 point parabola least squares fit to approximate a given data curve. Approximately 400 individual parabolas are computed as follows:

LESQ29 performs a second order least squares fit using a 29 point smooth interval.

LESQ11 is identical to LESQ29 except that an 11 rather than a 29 point smooth interval is used. LESQ11 will preserve higher frequency data than LESQ29 for a given data curve with constant time between data points.

Minimum Hardware: 4K PDP-5 or PDP-8, Teletypewriter (plotter, DECTape optional)

Other Programs Needed: Floating Point Interpretive Package (Digital 8-5-S) and appropriate data handling routines

Storage Requirement: LESQ11: 400-564; 700-716
LESQ29: 400-564; 700-751

Restrictions: Positive integer data <3777>₈;
time between data points constant

DECUS NO. 8-70

EAE Routines for FORTRAN Operating System (DEC-08-CFA3)

Russell B. Ham, U. S. Public Health Service, Winchester, Massachusetts

These are two binary patches to the FORTRAN Operating System which utilizes the Type 182 EAE hardware for single precision multiplication and normalization, replacing the software routines in FOSSIL (the operating system). The binary tape is loaded by the BIN Loader after FOSSIL has been loaded. Execution time of a Gauss-Jordan matrix inversion is reduced by approximately 30%.

Minimum Hardware: PDP-8 with Type 182 EAE
Other Programs Needed: FORTRAN Operating System DEC-08-CFA3-PB dated March 2, 1967

DECUS NO. 8-71

Perpetual Calendar

E. Singer, McGill University, Montreal, Quebec, Canada

The program is designed as a computer demonstration. When a valid date is fed into the computer, the corresponding day of the week is typed out. The program is based on the Gregorian Calendar and is limited to years between 1500 and 4095.

Minimum Hardware: PDP-8 with an ASR-33 Teletype
Storage Requirement: 20-1333

DECUS NO. 8-72

Matrix Inversion - Real Numbers

A. E. Sapego, Trinity College, Hartford, Connecticut

The program inverts a matrix, up to size 12 x 12, of real numbers. The algorithm used is the Gauss-Jordan method. A unit vector of appropriate size is generated internally at each stage. Following the Gauss sweep-out, the matrix is shifted in storage, another unit vector is generated and the calculation proceeds.

Other Programs Needed: FORTRAN Compiler and FORTRAN Operating System
Storage Requirement: Uses all of core not used by the FORTRAN Operating System

DECUS NO. 8-73

Matrix Inversion - Complex Numbers

A. E. Sapego, Trinity College, Hartford, Connecticut

The program inverts a matrix, up to size 6 x 6 of complex numbers. The algorithm used is the Gauss-Jordan method, programmed to carry out complex number calculations. A unit-vector of appropriate size is generated internally. Following the Gauss sweep-out, the matrix is shifted, another unit vector is generated, and the calculation proceeds.

Other Programs Needed: FORTRAN Compiler and FORTRAN Operating System
Storage Requirement: Uses essentially all core not used by the FORTRAN Operating System

DECUS NO. 8-74

Solution of System of Linear Equations: AX=B, by Inverting Matrix A, Then Multiplying the Inverse by Vector B

A. E. Sapego, Trinity College, Hartford, Connecticut

This program solves the set of linear algebraic equations AX=B by inverting matrix A using a Gauss-Jordan method. When the inverse matrix has been calculated, it is printed out. At that point, the program requests the B-vector entries. After read-in of the B-vector, the product is computed and printed out. The program then loops back to request another B-vector, allowing the system to solve many sets of B-vectors without the need to invert matrix A again. Maximum size is 8 x 8.

Other Programs Needed: FORTRAN Compiler and FORTRAN Operating System
Storage Requirement: Uses essentially all of core not used by the FORTRAN Operating System

DECUS NO. 8-75

Matrix Multiplication - Including Conforming Rectangular Matrices

A. E. Sapego and Chester Sic, Trinity College, Hartford, Connecticut

This program multiplies two matrices, not necessarily square but which conform for multiplication.

Other Programs Needed: FORTRAN Operating System and FORTRAN Compiler

DECUS NO. 8-76

Obsolete

DECUS NO. 8-77

PDP-8 Dual Process System

Richard M. Merrill, Digital Equipment Corporation, Maynard, Massachusetts

The purpose of this system is to expedite the programming of multiprocessing problems on the PDP-8 and PDP-8/S. It maximizes both the input speed and the portion of real time actually used for calculations by allowing the program to run during the intervals between issuing I/O commands and the raising of the device flag to signal completion of the command. The technique also allows queuing of input data or commands so that the user need not wait while his last line is being processed, and so that each line of input may be processed as fast as possible regardless of its length. The system uses the interrupt facilities and has less than 3% overhead on the PDP-8/S (about 0.1% on the PDP-8).

DECUS NO. 8-77 (Continued)

This method is especially useful for a slower machine where the problem may easily be calculation limited but would, without such a system, become I/O bound.

The program may also be easily extended to handle input from an A/D converter. Here, the input would be buffered by groups of readings terminated either arbitrarily in groups of N or by zero crossings.

This program can increase the I/O to computation efficiency of some programs by 100%. It can do this even for single Teletype. Each user will probably want to tailor the program to his individual needs.

Storage Requirement: 600₈ registers for two TTY's plus buffer space. (Several device configurations are possible.)

DECUS NO. 8-78

DIAGNOSE: A Versatile Trace Routine for PDP-8 and EAE

Keith B. Oldham, North American Aviation Science Center, Thousand Oaks, California

This relocatable trace routine will track down logical errors in a program (the "sick" program). Starting at any convenient location in the "sick" program, instructions are executed one at a time, and a record of all operations is printed out via the Teletype. To avoid tracing proven subroutines, an option is provided to omit subroutine tracing. The present routine is significantly more versatile than two other trace routines in the DECUS Library (DECUS NO. 8-56 and 8-57) for the PDP-8 in that it is able to trace "sick" programs containing floating point, extended arithmetic and a variety of input/output instructions. DIAGNOSE is, however, at a disadvantage compared with DECUS NO. 8-56 in requiring more memory space (five pages as opposed to two); and compared with DECUS NO. 8-57 in not possessing the trace-suppression features of the latter. The mode of operation of DIAGNOSE is quite different from the other trace routines.

Other Programs Needed: Floating Point Package needed for floating point tracing (DEC-8-5-S)

DECUS NO. 8-79

TIC-TAC-TOE (Trinity College)

Gunnar Walmet, Trinity College, Hartford, Connecticut

This TIC-TAC-TOE game is programmed, using internal logic, so that the computer will either win or stalemate, but not lose a game. At the termination of a game, the program restarts for the next game.

DECUS NO. 8-80

Determination of Real Eigenvalues of a Real Matrix

A. E. Sapega, Trinity College, Hartford, Connecticut

This is a two-part program for determining the real eigenvalues of a real-valued matrix. The matrix does not have to be symmetric. Part I uses the power method of iterating on an eigenvector to determine the largest eigenvalue of the matrix. Part II then deflates the matrix using the results of Part I so as to produce a matrix of order one less than that solved for in Part I. Part I can then be reloaded, and the next eigenvalue in line may be calculated. In this, all the real eigenvalues may be computed in order.

Minimum Hardware: PDP-8; ASR-33
Other Programs Needed: FORTRAN Systems
Source Language: FORTRAN

DECUS NO. 8-81

A BIN or RIM Format Data or Program Tape Generator

R. F. Templeman, The Physical Laboratories, The University, Manchester, England

This program enables a PDP-8 operator to generate tapes under Teletype control in RIM or PAL BIN format without formal assembly, assuming the operator knows the octal codes corresponding to each instruction. This is particularly useful when one is dealing with small programs for testing interface equipment or when making small modifications to larger programs saving reassembling time. Tapes generated using this program can be appended to existing BIN or RIM tapes and can then be loaded with the original tape into core with the appropriate loader. Another use of this program is in the preparation of data tapes in RIM or BIN format so that data can be loaded directly into PDP-8 core via the usual loaders. The program also generates leader/trailer code and a checksum under program control.

Storage Requirement: Locations 6000-6077
Source Language: PAL III

DECUS NO. 8-82

Library System for 580 Magnetic Tape (Preliminary Version)

G. Sharman, University of Southampton, Southampton, England

The system provides for storing program files (or other files) on the 580 Magnetic Tape with PDP-8, and recalling them at will without altering the state of the rest of the computer. In general principle, it is similar to the DECTape Library System, and the only effective storage requirement is the last page of memory.

As written, the system consists of three programs known as BOOTSTRAP 1, BOOTSTRAP 2, and the LIBRARY Routines.

DECUS NO. 5/8-83A&B

Octal Debugging Package (With and without Floating Point)

James Rothman

This program is an on-line debugger which will communicate with the operator through the ASR-33 Teletype. It allows register examination and modification, octal dumping, binary punching, multiple and simultaneous breakpoints, starting a program, and running at a particular location with preset AC and link. ODP is completely relocatable at the beginning of all pages except page zero, and is compatible with the PDP-5, the PDP-8 and the PDP-8/S.

Storage Requirement The high version of ODP requires locations 7000-7577. The low version requires locations 0200-0777. All versions will require three pages. Also, location 0002 is used for a breakpoint pointer to ODP

DECUS NO. 8-84

One Pass PAL III

Krause and Riedl, Siemens, Erlangen, Germany

This is a modification to Digital 8-3L-S, for use on an 8K PDP-8 with ASR-33. The principle of the modification is to store the incoming characters during Pass 1 into the memory extension and taking them from there during Pass 2 and 3. Source programs must be limited to 4095 characters. This modification can save about 40% of assembly time.

Operation of the program is the same as for PAL III except that the reading of the source program for Pass 2 and 3 need not be repeated. For these passes, one simply presses CONTINUE after setting the correct switches.

Restrictions: The program does not work with high speed reader and punch

DECUS NO. 8-85

Set Memory Equal to Anything

Roy S. Taylor, Department of Defense, Fort George G. Meade, Maryland

This program will preset all locations to any desired settings, thus combining a memory clear, set memory equal to HALT, etc. into a single program. The program is loaded via the switch registers into core.

DECUS NO. 8-86

Obsolete

DECUS NO. 8-87

XMAP

Curtis Jansky and Robert Brown, Communications Systems, Inc., Paramus, New Jersey

This program types out the contents of the DECTape directory on TTY keyboard. The list includes the name of the program, its initial block number, the amount of blocks used, the starting address and the location(s) of the program in core. The above restriction is only a format restriction due to the line length on the TTY unit. At present, this program is operational only with the TCØ1 control; however, the symbolic version may be modified for use with the 552 control.

Storage Requirement: 0000-1232, 6000-6577 (directory)
Restrictions: Each program on tape is assumed to occupy no more than three successive sequences of memory pages

DECUS NO. 8-88

Obsolete

DECUS NO. 8-89

XOD - Extended Octal Debugging Program

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

XOD is an octal debugging program for a PDP-8 with extended memory which preserves the status of program interrupt system at breakpoint. The program occupies locations 6430 through 7577 of any memory field.

XOD includes an elaborate breakpoint facility to help the user run sections of his program. When this facility is used, the debugger also uses locations 0005, 0006 and 0007 of every memory field. (See DECUS NO. FOCAL8-2.)

Restrictions: The ability to punch binary tapes is not included in XOD

DECUS NO. 8-90

Histogram on Teletype Subroutine

J. B. Levin, University of Arizona, Tucson, Arizona

This routine plots histograms on the Teletype when there is no CRT display available or a means of making a permanent copy of a CRT display. Input to the routine consists of a vertical scaling factor, the size of the table to be plotted (limited only by the size of the Teletype print line), the starting address of two core areas: one containing the data to be plotted, and one for use as temporary storage by the machine.

Storage Requirement: 128₁₀ words plus tables
Source Language: PAL III

DECUS NO. 8-91

MICRO-8: An On-Line Assembler

K. F. Kinsey, State University of New York, Geneseo, New York

M. E. Nordbert, Jr., Cornell University, Ithaca, New York

MICRO-8 is a short assembler program for the PDP-8 that translates typed mnemonic instructions into the appropriate binary code and places them in specified memory locations immediately ready to function. It processes the typed instructions by a table-lookup procedure.

It is especially useful for programs of less than one page which are to be run immediately. Only octal (not symbolic) addresses may be specified, but the user has control of the zero page and indirect addressing bits. An octal typeout routine permits examination of any memory location.

Storage Requirement: 3200 to 4200
Restrictions: MICRO-8 is quite capable of modifying itself

DECUS NO. 8-92

Analysis of Pulse-Height Analyzer Test Data with a Small Computer

E. McDaniel and J. W. Woody, Jr., Oak Ridge National Laboratory, Oak Ridge, Tennessee

This PDP-8 computer program is used in the evaluation of test data for multichannel pulse-height analyzers. The program determines integral and differential nonlinearities and examines smooth spectra of radioactive decay.

DECUS NO. 8-93

CHEW - Convert Any BCD to Binary, Double Precision

Louis O. Cropp, Sandia Corporation, Albuquerque, New Mexico

This subroutine converts a double precision (6-digit) unsigned-integral binary-coded decimal (BCD) number with bit values of 4, 2, 2 and 1 to its integral-positive-binary equivalent in two computer words. It is possible to change the bit values to any desired values and thereby convert any BCD number to binary.

Storage Requirement: 0109₁₀

DECUS NO. 8-94A

BLACKJACK

Dennis J. Frailey, Ford Motor Company, Dearborn, Michigan

This program enables a person to play BLACKJACK with the computer. The computer acts as dealer and keeps track of bets, cards played, etc.

Minimum Hardware: PDP-8 with EAE
Storage Requirement: 0-3777₈

DECUS NO. 8-94B

BLACKJACK "Overlays"

Steven L. Bard, U. S. Army Nuclear Defense Laboratory, Edgewood Arsenal, Maryland

This patch contains two overlays for BLACKJACK (DECUS NO. 8-94A). The first eliminates the need for the EAE hardware, the second allows one to "double down" on any two cards with the instruction "D" (Ø response to "HIT?" is made invalid).

Minimum Hardware: PDP-8, 8/S or 8/I
Other Programs Needed: DECUS NO. 8-94A

DECUS NO. 8-95

TRACE for EAE

Eberhard Werner, Scripps Institution of Oceanography, University of California, San Diego, California

TRACE interpretively executes a PDP-8 program. At the same time a printout is provided of the contents of the program counter, the instruction, the link, accumulator, and multiplier-quotient registers, and where applicable the effective address and the contents of the effective address. This printout may be for all or a selected type of instruction within selected memory bounds. The program is capable of handling any PDP-8 instruction including IOT, two-word EAE, and interrupt instructions. TRACE cannot be destroyed by the program being traced while TRACE is in control.

Minimum Hardware: PDP-8 with Type 182 EAE, ASR-33 Teletype
Storage Requirement: 400₈ or 500₈ locations

DECUS NO. 8-96

J Bessel Function (FORTRAN)

J. A. Crawford, Communications Systems, Inc., Paramus, New Jersey

This program computes the J Bessel Function for a given argument and order. It is a complete PDP-8 FORTRAN program that operates in a conversational mode.

Other Programs Needed: FORTRAN Compiler/Operating System

DECUS NO. 8-97

GOOF

Peter Andrews and Charles Wagner, Fairchild R & D, Palo Alto, California

A one-page program which allows insertion of instruction (xxxx) in location (nnn) by means of the TTY keyboard. A

DECUS NO. 8-97 (Continued)

feature of automatically incrementing the current address permits rapid insertion of blocks of data or instructions. Typing "RUB-OUT" reinitializes the program.

Storage Requirement: 175₈ locations (1 page)

DECUS NO. 8-98

3D Draw for 338 Display

Barry Wessler

This program is a demonstration of the capabilities of the 338 system. The program allows the user to sketch three dimensional objects on the scope and rotate them in real time.

Minimum Hardware: PDP-8 with 338 Display
Source Language: MACRO-8

DECUS NO. 8-99A

Kaleidoscope

The program creates pictures on the PDP-8 or PDP-8/S with 34D Display. They are varied by manipulating the sense switches (within the range 0000-0007). The program was submitted without comments by an anonymous donor.

DECUS NO. 8-99B

Kaleidoscope - 338 Display

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

The program creates varied pictures by manipulating the buttons of the 338 Display pushbutton bank.

Storage Requirement: 200₈ - 274₈

DECUS NO. 8-100

Double Precision BCD Arithmetic Package (Incomplete)

Richard M. Merrill, Digital Equipment Corporation, Maynard, Massachusetts

Consists of the following routines:

BCDADD - The single precision BCD addition routine is the basic component of the BCD arithmetic package. This routine functions simply by masking out and adding together corresponding BCD digits (i.e., four bits) and checking for carry (i.e., when the sum of two four-bit numbers is greater than 9 (1001)).

MPYBCD - This routine multiplies a single precision (three digit) number times a double precision one to produce another double precision number. Overflow is indicated in the link; the arguments are not affected.

SUBBCD - One double precision BCD number is subtracted from a second by this routine. It uses a 9's complement

routine and the double precision add routine.

DOLOUT - Special formats: ("XXXX.YY "). ("XXXXXX "); (3 nonprinting data codes); ("XXX ").

DECUS NO. 8-101

Obsolete

DECUS NO. 8-102a

A LISP Interpreter for the PDP-8

Dr. G. van der Mey and Dr. W. L. van der Poel, Technical University of Delft, The Netherlands

LISP is a programming language for list manipulation. The system is particularly suitable for conversational use and teaching. There are very few restrictions to the language apart from the total storage space. More than half of the storage is used as list space.

Minimum Hardware: 4K PDP-8 and ASR-33
High Speed Reader

DECUS NO. 8-103A

Four Word Floating Point Routines - Function Package

D. A. Dalby, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

This program package, written for use with Digital's Four Word Floating Point Package (DEC-08-FMHA-PB), includes subroutines to evaluate square, square root, sine cosine, arctangent, natural logarithm, and exponential functions.

DECUS NO. 8-103B

Four Word Floating Point Routines - Rudimentary Calculator

D. E. Wells, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

This is a minimum space program to perform calculations with the 10.5 decimal place precision of Digital's Four Word Floating Point Package (DEC-08-FMHA-PB), and uses the Four Word Floating Point Function Package (DECUS NO. 8-103A). Operations are performed in the sequence in which they are entered. One storage register is provided. Up to five user-defined operation routines may be called.

DECUS NO. 8-103C

Four Word Floating Point Output Controller with Rounding

C. K. Ross, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

This subprogram is almost identical to the output controller for the Three Word Floating Point Package (Digital 8-5-S) with the rounding addition (DECUS NO. 8-44) except that the Four Word Floating Point Package (DEC-08-FMHA-PB) is used.

DECUS NO. 8-103D

Additional Instructions for use with Four Word Floating Point Package

C. K. Ross, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

These subroutines allow the Four Word Floating Point Interpreter to perform the operations: read a floating point number, skip positive floating point accumulator, skip zero floating point accumulator, no operation, unconditional jump, negate floating point accumulator, and halt. The two skip instructions and the jump instruction allow forward or backward jumping up to 15 locations from the location of the instruction.

DECUS NO. 8-104

Card Reader Subroutine for the PDP-8 FORTRAN Compiler

Steven Sullivan, Oregon State University, Corvallis, Oregon

Modifications and additions which allow the PDP-8 FORTRAN Compiler to read source programs from cards. The standard FORTRAN card format is used with only minor modifications.

Minimum Hardware: 8K PDP-8 and a Type CROI-C Card Reader
Source Language: PAL III

DECUS NO. 8-105

D-BUG

F. K. Williamson, Solartron Electronic Group Ltd., Farnborough, Hampshire, England

D-BUG is an aid used in debugging PDP-8 programs by facilitating communication with the program being run. Communication between operator and program is via the ASR-33 Teletype. D-BUG is similar to DEC's program ODT II (DEC-08-COAT-PB); however, it uses the DEC Floating Point Interpreter (Digital 8-5-S).

Two modes of operation are possible, fixed and floating point. D-BUG features include register examination and modification, control transfer, octal dumping and instruction trap-outs to D-BUG control. Registers containing floating point numbers may also be examined, and break-traps can be inserted in floating point programs.

Source Language: PAL

DECUS NO. 8-106

Readable Punch

A. M. Lane-Nott, Letchworth College of Technology, England

This program enables the user to type a character on the keyboard and produce the character in readable form on paper tape. The program uses the high speed punch. The readable characters on tape are produced by means of a table which

contains the format of a 6 x 5 matrix using three words of storage per character to be punched. In addition, channel 8 is punched throughout. The program is terminated by typing a carriage return which generates 6 inches of tape. (Reference DECUS NO. 8-68a)

DECUS NO. 8-107

CHESSBOARD

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

This program displays a chessboard on the screen of a DEC 338 Display with all thirty-two chessmen set up on their initial board positions. There is no provision to move them about the board; it is just a demonstration picture.

Storage Requirement: 03000 - 04230₈

DECUS NO. 8-108

Increment Mode Compiler (INCMOD)

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

The INCMOD program for the DEC 338 Display allows the user to build a display subroutine composed of increments only. The user inputs information by pointing with the light pen. The program displays the figure he is constructing in each of the four available scale settings. The program is of value as a demonstration and may be of help for maintenance purposes. It occupies locations 00000-01231 and builds the increment mode display file beginning at location 01232.

Storage Requirement: 0000-1231₈

DECUS NO. 8-109

SEETXT Subroutine

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

SEETXT is a subroutine for the DEC 338 Display which can be called instead of the normal typeout subroutine. In addition to typing, it displays all printed characters on the screen corresponding to the last twenty lines which have been typed out.

The program includes the option of suppressing the typing so that output can occur at a much higher rate than ten characters per second. The user has the option of controlling the length of a delay loop in the subroutine so that output rate may range from nearly immediate to Teletype rate.

The maximum number of lines displayed, the scale, and intensity may be altered at any time. There is also the option of clearing the screen or displaying a blinking marker at the current typing position.

Source Language: PDPMAP Assembler

DECUS NO. 8-110

Directory Print (DIREC) for the DEC PDP-8 Disk System

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

This program lists an index of the file directory for the disk on the on-line Teletype. The user has the option of seeing the index to system files or user files, or both.

DIREC can also be used in conjunction with the SEETXT Subroutine for the 338 Display (DECUS NO. 8-109) to obtain a listing of the directory on the display screen.

Other Programs Needed: Disk Monitor System

DECUS NO. 8-111

DISKLOOK

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts

DISKLOOK is a small utility program for a PDP-8 with a 32K DF 32 Disk. Using the on-line Teletype, the user may examine and alter any location (in octal) on the disk. Masked searches are also available.

Storage Requirement: 200-777₈

DECUS NO. 8-112

Sentence Generator

D. Dymont, Digital Equipment of Canada Ltd., Carleton Place, Ontario, Canada

This program generates random English language sentences, using a dictionary (provided by the user) of ten basic word groups (A-J). The dictionary is used in conjunction with a random number generator and a syntactical algorithm to provide an output of randomly constructed English language sentences.

The program is an excellent vehicle for computer demonstration purposes. It may also be used in English teaching programs to aid students in perceiving sentence structure and errors in the use of words.

DECUS NO. 8-113

Obsolete

DECUS NO. 8-114a

Decimal Output Routine for PDP-8 FORTRAN

G. R. Hervey, University of Leeds, England

The program loads over the PDP-8 FORTRAN Operating System (DEC-08-AFA3-PB) and provides output in conventional decimal form: rounded, aligned, and with plus sign, leading zeros (other than one, in the case of fractional numbers), and trailing decimal point replaced by spaces. The FORTRAN trigonometrical routines are over-written. The

source program must begin with two statements assigning integer variables representing, respectively, the numbers of digits required to the right of the decimal point, and the total number of digits (these can be reassigned, by program or manually). Output is called in the normal way, i.e., by TYPE statements referring to FORMAT statements containing the symbol E. If output of a number is not possible in the format requested, the decimal point is shifted to the right in the field; if formatted output is still impossible, or if zero or negative total digits were requested, output reverts to "E" format.

Restrictions: FORTRAN source language programs must begin with two special statements defining format required

DECUS NO. 115a

Double Precision Interpretive Package

Roger E. Anderson, Lawrence Radiation Laboratory, Livermore, California

This program is similar in operation to the Floating Point Package (Digital 8-5-S). It consists of addition, subtraction, multiplication, division, load, store, jump and branch subroutines coupled to an interpreter. It allows direct and indirect addressing in the normal assembly language manner. The operation is faster and more compact than the collected individual double precision subroutines.

Minimum Hardware: PDP-8, 8/S, or 8/I
Storage Requirement: 14 words in page 0 and on additional 2 pages of memory

DECUS NO. 8-116

Obsolete

DECUS NO. 8-117

A PDP-8 Interface for a Charged Particle Nuclear Physics Experiment

W. R. Burrus, E. Madden, C. O. McNew, and R. W. Peelle

Documentation (only) describing an interface constructed to use a PDP-8 computer with a charged-particle detector system employing three solid-state detectors and flight-time analysis. Up to 48 bits from each randomly-occurring event are transferred through the data (break) channel to a hardware-selected buffer region in the core of a PDP-8 computer. Designed for use as a magnetic tape analyzer for the most complex cases, the system assumes that the 48 bits originate in flag bits set by fast logic and in (presently four) amplitude digitizers, all of which are assumed to contain information for the same event. The system includes some limited capability for controlling the course of the experiment, and provides for read-out through the computer of a series of external fast counters. The report summarizes the design concepts, shows schematic flow diagrams, defines the computer instructions associated with the interface system, and gives simple model programs to illustrate methods of applications.

DECUS NO. 8-118

General Linear Regression

Ian E. Bush, Cybertek, Inc., Plainview, L. I., New York

The major section of this program is the "Main Arithmetic IX" which consists of four initializing statements; an input section; a weighting section; a section which cumulates means, sums of squares, etc.; a section which calculates the relevant regression coefficients, etc.; and a section which calculates confidence limits as variances.

The section which calculates the relevant regression coefficients allows for both cases of linear regression, and in the computation of standard error of the intercept, uses (N-2) degrees of freedom to provide a better estimate for small values of N while providing negligible differences from conventional calculation when N is larger.

The section which calculates confidence limits as variances provides a calculation of the variance of the error of the estimate of the dependent variable again using (N-2) degrees of freedom for the general case. This calculation is fully corrected for both random variance within the tested population of data and for the difference between the independent variable and the mean of the independent variable for the population of data.

DECUS NO. 8-119

Off-Line TIC-TAC-TOE Program for the PDP-8 Computer

Dave Hawkins, The Foxboro Company, Foxboro, Massachusetts

TIC-TAC-TOE is a self-learning program which will improve its game as it plays. Whenever its human opponent wins, the program changes its strategy such that it can never be beaten again in the same way. Thus, the program gains "experience" every time it loses. The program will punch its experience on paper tape in binary format on request. This experience tape can be reread by the program at any time and will reset the program to the level of experience it had when the tape was punched. The program will notify the operator if any error is made in reading the experience tape and gets very upset if the player tries to cheat.

| | |
|----------------------|---|
| Minimum Hardware: | PDP-8, ASR-33, or high speed reader and punch |
| Storage Requirement: | Locations 10-4000 (approximately) and will operate with low or high speed tape input/output equipment |
| Source Language: | PAL |

DECUS NO. 8-120

Disk/DECTape FAILSAFE

Charles Conley, Digital Equipment Corporation, Maynard, Massachusetts

This program will punch the contents of the disk (or DECTape) onto paper tape which can be loaded back onto the disk

using the same program. The paper tape is punched in 200⁸ word blocks in binary format, with a checksum for each block. FAILSAFE simplifies and speeds the process of rebuilding the Disk System Monitor after running disk tests.

| | |
|------------------------|--|
| Minimum Hardware: | PDP-8, 8/S, 8/I, with 32K Disk or DECTape |
| Other Programs Needed: | PDP-8 Disk System Builder (DEC-08-SBAB-PB) |
| Storage Requirement: | 0-1177 |
| Source Language: | PAL-D or MACRO-8 |

DECUS NO. 8-121

DECTape Handler

B. Eiben, Digital Equipment Corporation

This program allows quick, controlled data-block transfers between the PDP-8 and DECTape (552 control). It reads, writes and searches in minimum time (interrupt mode), requires minimum space (overlay with last page BIN, RIM, DECSYS Loaders) and occupies only two blocks on tape (block 0 = System, block 1 = Return-System). It is protected against destruction and gives, after the transfer, the status levels for testing purposes. It is usable as a Switch Register controlled program or as a subroutine with or without interrupt, giving the possibility of quick data storage, program shuffling and overlay technique with PDP-8 and DECTape.

DECUS NO. 8-122 A & B

SNAP (Simplified Numerical Analysis)

Developed at Harvard Medical School, Boston, Massachusetts under an NIH grant

SNAP is a computer language for real-time interactive computation which can be learned in less than one hour. It is particularly useful in teaching programming to beginners.

A unique feature of SNAP is its ability to interact on-line with other laboratory instruments. SNAP can accept electrical inputs directly and can read inputs from a real-time clock. Both of these functions are incorporated in a single SNAP instruction.

Another feature particularly useful for biological problems is Table Instructions. A list of 100 numbers may be entered from the keyboard or from punched paper tape.

When ordering tape, please state whether you wish SNAP without EAE, DECUS NO. 8-122A or SNAP with EAE, DECUS NO. 8-122B.

DECUS NO. 8-123

UNIDEC Assembler

C. Stephen Carr, University of Utah, Salt Lake City, Utah

The UNIDEC Assembler runs on the Univac 1108 and passes assembled PDP-8 code over the electronic link between the 1108 and PDP-8. The source statements are punched on

cards for input into the 1108 in a format nearly identical to that of MACRO-8. A printed listing and object code are produced as fast as the cards can be read.

DECUS NO 8-124a

PDP-8 Assembler for IBM 360/50 and above

V. Michael Powers, University of Michigan, Ann Arbor, Michigan

Modifications by Frank K. Bennett, Princeton University

The 360/PDP-8 Assembler is a collection of programs written mostly in FORTRAN IV (G) which operates on the IBM 360/50 and above. It assembles programs for PDP-5 and PDP-8 computers. Once a program has been assembled, it may be punched on cards, saved in a file, or transmitted through the Data Concentrator over data lines. It is also possible to obtain binary paper tapes by use of the Data Concentrator.

The Assembler follows the PAL III operation code and addressing conventions. The input format and program listing conventions are slightly different from those of PAL III, because it is organized around a line format, while PAL III is organized around a paper tape format.

Note: Certain routines called are on the Michigan Terminal System and are not included with the card deck.

DECUS NO. 8-125

PDP-8 Relocatable Assembler for IBM 360/50 and above

D. L. Mills and V. Michael Powers, University of Michigan, Ann Arbor, Michigan

The documentation available describes a method of segmenting PDP-8 programs for the purpose of facilitating program maintenance and residence in MTS (Michigan Terminal System) files. The method provides for program storage on a page-relocatable basis with relocation information contiguous to but not necessarily integral with text information. Linkages between separately assembled program segments are provided in a form very similar to those used in IBM System/360 systems.

Currently available utilities within MTS provides assembly and link-editing facilities, using programs stored either as punched card decks or in MTS files. Utilities are also included for the purpose of paper tape transcription either in PAL-compatible format or in a special format useful for dynamic loading via a data link to a remote machine. In addition to these MTS utilities, two relocating PDP-8 loaders are available which operate using the special dynamic-loading format. Each of these programs occupy one dedicated page of PDP-8 memory and operates in a multicore-bank environment. One of these programs is designed to operate as a stand-alone utility, while the other is designed to operate within the RAMP system.

Cumulative Gaussian Distribution Curve Fitting

Gerald E. Zajac

Submitted by: Howard A. Sholl, University of Connecticut, Storrs, Connecticut

This is a curve fitting program that will take a set of any number of points with any spacing describing a cumulative Gaussian distribution and determine the mean and standard deviation by an iterative least squares differential-correction technique. The mean square error of the final fitted curve is also computed.

Minimum Hardware: 4K PDP-8 with Teletype
Other Programs Needed: FORTRAN Compiler and Operating System
Source Language: PDP-5/8 FORTRAN

DECUS NO. 8-127

XDDT Extended Octal-Symbolic Debugging Program

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts and Robb N. Russell

XDDT, the result of merging the features of the DDT-UP (DECUS NO. 8-19a) and XOD (DECUS NO. 8-89), is an octal-symbolic debugging program for extended memory which preserves the status of the program interrupt system at breakpoints and includes many improvements over its predecessors.

From the Teletype, the user can symbolically examine and modify the contents of any memory location in a variety of formats. Positive and negative block searches with a mask may also be performed.

XDDT includes an elaborate single-breakpoint facility to help the user run sections of his program.

The ability to punch binary tapes is not included in XDDT.

Minimum Hardware: 8K PDP-8
Storage Requirement: With initial symbol table, 4200-7577 of any memory field
Source Language: PDPMAP (DECUS NO. 8-166)

DECUS NO. 8-128

PDP-8 Oscilloscope Display of Mathematical Functions

A. E. Sapega and S. G. Wellcome, Trinity College, Hartford, Connecticut

This is a general-purpose FORTRAN program for oscilloscope display of single-valued functions, $y = f(x)$. The FORTRAN statement of the function can be changed by the user so as to display specific functions of interest to the user. The user must specify a range for the independent variable. Scaling of the function for an appropriate display is carried out automatically by the program. The user may then interrupt the display to respecify the range of either independent or dependent variable. The display will be flicker free on a conventional (nonstore) oscilloscope.

DECUS NO. 8-128 (Continued)

Minimum Hardware: 4K PDP-8, Type 34D Display Unit
Other Programs Needed: FORTRAN Compiler and Operating System, PAL Assembler
Source Language: FORTRAN (main program), PAL (subroutine)

DECUS NO. 8-129

Magnetic Tape Program Library System

Donald C. Uber, Lawrence Radiation Laboratory, University of California, Livermore, California

Programs may be written on and called off IBM-compatible tape by name from the Teletype. BIN and RIM loaders may also be called in from the Teletype. Only the last page of core is used. Library programs may be corrected, modified, or added to at any time. When called in, programs may be relocated in core. It is possible to subdivide programs as they are written on tape and then individually relocate each portion as it is loaded in.

Minimum Hardware: 4K PDP-8, ASR-33, 57A Tape Control with transport
Storage Requirement: 7600-7777
Source Language: MACRO-8

DECUS NO. 8-130A

REBIL8 - Relocating Binary Loader

R. F. LaFontaine, CSIRO, Division of Mechanical Engineering, Victoria, Australia

Sections of the DEC-08-LBAA-LA Binary Loader have been rewritten to extend its duties to loading of suitably prepared relocatable binary program tapes as well as address and data modifications. Requirements are the same as the standard DEC loader, and REBIL8 will load standard DEC binary tapes.

Minimum Hardware: PDP-8/S and ASR-33
Source Language: MACRO-8

DECUS NO. 8-130B

RELCON - Binary to Relocatable Binary Tape Converter

R. F. LaFontaine, CSIRO, Division of Mechanical Engineering, Victoria, Australia

RELCON is used to tag data, used by memory reference instructions for indirect addressing, with the Data Modification Mark (376 Code). It may also be used to adjust addresses so that the relocatable version begins loading memory at page 0 if no address modification is specified. This does not mean that the program will operate in this area of memory but serves to simplify address specification at load time.

Minimum Hardware: PDP-8/S and ASR-33
Source Language: MACRO-8

DECUS NO. 8-131

SRCD, Software Rapid Character Display

David M. Kristol

SRCD (Software Rapid Character Display) is not a program but a method for quick display of a maximum number of text characters. A listing of increment-mode command words is supplied for the sixty-four characters on the Teletype keyboard. Each character is drawn within a 5 x 7 dot matrix followed by two blank points to provide spacing. It is mostly useful for displaying buffers of text, such as for editing programs or in utilization of the display as a satellite processor in time-sharing systems. In these applications, the PDP-8 is frequently sitting in a loop, "listening" for keyboard characters, or simply doing nothing. With SRCD, the main frame is constantly engaged in background work, helping to display characters, and I/O is handled by interrupt servicing routines.

Minimum Hardware: 4K PDP-8, 338 Display

DECUS NO. 8-132

STRIP, A Data Display and Analysis Program for the PDP-8, 8/1

John C. Alderman, Jr., Applied Data Research, Atlanta, Georgia

This program accepts paper tape data listings and displays the result on the display unit. Some elementary computations are made on the data and are also displayed. The program is deliberately designed to be open ended, and most users will want to add features peculiar to their own problem. Almost all functions are carried out in subroutine form, and these subroutines can be called either from the keyboard or within another subroutine.

DECUS NO. 8-133

First Order Kinetics

Kenneth B. Wiberg, Yale University, New Haven, Connecticut

First order kinetic processes are common in chemistry and in other areas. The program accepts up to 42 data points, calculates the rate constant and intercept by the method of least squares, and gives the rms deviation, the correlation coefficient, and an estimate of the error in slope. It permits graphical (CRT) examination of deviations from the least squares line and iteration to a "best" infinity value. It also provides options for plotting the deviation between observed and calculated quantities on a CRT and may be used in other cases in which one wishes to correlate the natural logarithm of one quantity with another, as in linear free energy relationships.

Storage Requirement: Occupies essentially all of core
Source Language: MACRO-8

DECUS NO. 8-134

LSQ (Least Squares Subroutine)

Kenneth B. Wiberg, Yale University, New Haven, Connecticut

The subroutine calculates the slope and intercept for the equation $y_i = mx_i + b$ by the method of least squares. It also returns the rms deviation of y , the correlation coefficient and an estimate of the error in the slope. The calculated values of y and the differences between the given and calculated values are also available on return from the subroutine.

Other Programs Needed: FLOAT, floating point interpreter "C" -(Digital-08-YQYA); Loading Routine
Storage Requirement: 1.5 pages plus page 0 locations
Source Language: MACRO-8

DECUS NO. 8-135

DNHELP, A Directory Assistor Program

David M. Kristol

DNHELP is a four-page disk utility program that may reside in core with DIREC (DECUS NO. 8-110) and DISKLOOK (DECUS NO. 8-111). It is designed to assist programmers in investigating the contents of the DN and SAM blocks on the disk under the DEC Disk Monitor System.

Minimum Hardware: PDP-8 with DF-32 Disk, or TC01 DECTape
Other Programs Needed: System Monitor Head (DEC Disk (Tape) Monitor System) and SYSIO
Storage Requirement: 5000-5777, Biffer from 7400-7577

Note: This program has also been combined with SYSLUK, DECUS NO. 8-141, in SYSHLP, DECUS NO. 8-198.

DECUS NO. 8-136

Fourier Transform Program

W. D. Strecker, Carnegie-Mellon University, Pittsburgh, Pennsylvania

The program, written in PDP-8 FORTRAN II, performs the discrete Fourier Transform of a function defined over $N(N \leq 200)$ evenly spaced points. I/O is via the ASR-33. The program requests the number of function points, then that number of function values, and then prints out the values of the sine and cosine components of the function at each defined harmonic. A conventional (not Cooley-Tukey) algorithm is used since I/O time relative to computing time is significant

DECUS NO. 8-137a

Programs for Storage, Manipulation and Calculation of Data Using DECTape

D. Eugene Hokanson, Veterans Administration Hospital, Seattle, Washington

These programs use DECTape for the storage of data files. Once data has been stored on DECTape, the statistical or calculation programs will operate on particular parts of it selected by the user. All programs are conversant. They ask questions regarding execution and accept answers via the Teletype.

DATRIT is a program to write data on DECTape directly from the ASR-33. Numerical data is stored on DECTape in floating point format.

EDATA is a program to edit data files created on DECTape by DATRIT.

SDT is a program to calculate Mean and Standard Deviation from data files stored on DECTape.

FORT calculates an analysis of variance table similar to DECUS NO. 5/8-9 using data files stored on DECTape.

COVAR calculates the necessary values for an analysis of covariance from data files stored on DECTape. The paired input consists of matching files of x and y data.

LCOVAR is a semi-logarithmic version of COVAR. y values are converted to $\log y$ before calculation so that each "Y" in the output format means $\log y$. This program is useful for semi-logarithmic regression analysis.

TPAIR performs a paired T test on data files stored on DECTape. The input consists of paired files x and y data.

BCALC enables the user to do calculations using data files on DECTape as variables in the calculation. Results of calculation are stored on DECTape. BCALC is a master program for handling the data files. The user must supply a floating point program, which is called by BCALC as a subroutine, for each specific calculation.

LCALC enables the user to do calculations from data stored on DECTape using specific lines of a file as variables in the calculation. The result of the calculation may be stored on one line of the same file or a different file. LCALC is similar to BCALC.

SUBS is a package of four subroutines used by most of these programs. SUBS contains six pointers on page zero and subroutines in the area from 4000 to 7577.

These subroutines are: MESSAGE, Type packed text; UNFLOAT, Unfloat floating point numbers; RWTAPE, Read and write DECTape; FPOINT, Floating point output controller.

FLEX is an extended version of Floating Point which lacks the Output Controller. It is used to overlay the FPOINT section of SUBS in the program which use extended Floating Point.

DECUS NO. 8-137a (Continued)

Minimum Hardware: PDP-8, ASR-33, Two DECtape
TU 55 Transports, EAE

NOTE: Binary and Source files for this program are on
DECtape. The ASCII paper tape offered is an EXAMPLE
CONTROL TAPE for Auto Processing.

DECUS NO. 8-138A, B & C

PAL III.5

James C. Kilbane, Belmont, Massachusetts

Withdrawn at the request of the author 2/16/72

DECUS NO. 8-139

Editor

James C. Kilbane, Belmont, Massachusetts

Withdrawn at the request of the author 2/16/72

DECUS NO. 8-140

Binary Tape Consolidator

James C. Kilbane, Belmont, Massachusetts

Withdrawn at the request of the author 2/16/72

DECUS NO. 8-141

SYSLUK

David M. Kristol

SYSLUK is a four-page utility program for examining and
modifying blocks on the system I/O device, i.e., DF32 Disk
or TCØ1 DECtape. Its operation is independent of which
monitor head is resident, provided either is there. The user
has the facility to examine and modify locations and to per-
form masked searches.

Minimum Hardware: 4K PDP-8 with DF32 Disk or
TCØ1 DECtape
Other Programs Needed: SYSIO - "system device" routine
for DEC Disk (Tape) Monitor
System
Storage Requirement: 200-1177 (buffer from 7377-7577)
Source Language: MACRO-8

Note: This program has also been combined with DECUS NO.
8-135, DNHELP, in SYSHLP, DECUS NO. 8-198.

DECUS NO. 8-142

Binary Punch - Extended Memory

W. L. Lord, Argonne National Laboratory, Argonne, Illinois

This program is a revision of Digital 8-5-U Binary Punch
which allows for extended memory. Tapes produced may be
loaded by Digital 8-2-U Binary Loader.

Storage Requirement: 7600-7730
Source Language: MACRO-8

DECUS NO. 8-143

FFTS-R - A Fast Fourier Transform Subroutine for Real Valued
Functions

James E. Rothman

This subroutine computes the Fast Fourier Transform (FFT) or
its inverse of a data sequence which has been stored in core.
It will accommodate up to 2048 time samples and will trans-
form that number in under 5 seconds.

Minimum Hardware: PDP-8 or 8/I with EAE
Storage Requirement: 3-7, 20-107, 400-6401
Source Language: PAL

Note: When ordering tape and/or listing please specify
whether regular or AXØ8 version is required.

DECUS NO. 8-446 enables this program to be used on
machines without EAE.

DECUS NO. 8-144

FFTS-C - Fast Fourier Transform Subroutine for Complex Data

James E. Rothman

FFTS-C enables computation of the Discrete Fourier Trans-
formation in a minimum amount of time. By using the Cooley-
Tukey algorithm, up to 1024 points may be transformed in
only 4.5 seconds, introducing a reduction of 99 percent in
computation time.

Minimum Hardware: PDP-8 or PDP-8/I with EAE
Storage Requirement: 3-7, 20-55, 400-5777
Source Language: PAL III

DECUS NO. 8-145

Time-of-Flight Analyzer

H. J. Metzdorf, CCR- Euratom Ispra/Varese, Italy

This program enables the computer to interact with the TOF-
converter and to generate spectrum displays on an oscilloscope.
The TOF Converter provides the computer with digital infor-
mation about the time a neutron takes to travel from the
scattering sample to a detector (up to 12 detectors can be
accommodated) and which detector was involved.

DECUS NO. 8-145 (Continued)

The TOF analyzer for which this program was written is in use with a double chopper facility installed at the ISPRA-1 reactor. It consists of a PDP-8 on-line computer with 4K memory, the automatic restart option, and a display unit; a TOF Converter; and conventional counting electronics.

Source Language: MACRO-8

DECUS NO. 8-146

High Speed Executive for the PDP-8, PDP-8/I

R. L. Steel, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

These routines are designed to handle the priority scheduling of up to 12 interruptable devices. Each I/O device is assigned a priority level, and upon receipt of an interrupt from that device, execution of its routine is initiated. If the priority of an I/O device "x" is less than that of an I/O device "y" which is currently being serviced, device "x" will be queued until "y" has been serviced. These routines allow a user to prohibit interrupts on any (or all) levels.

Minimum Hardware: PDP-8 with EAE
Storage Requirement: Three memory pages
Source Language: MACRO-8

DECUS NO. 8-147

Incremental Plotter Printout Subroutines

Michael P. Stryker and Phillip J. Best, University of Michigan, Ann Arbor, Michigan

A group of subroutines providing character-output facilities for the incremental plotter is presented as a package. Virtually all the ASCII characters may be printed in any of 8 formats and 63 sizes. One routine sets a control code to determine the size and orientation of the characters and the direction the line is to run, another prints out a string of characters according to this code, a third prints just one character held in AC 6-11, and a fourth routine prints the signed decimal equivalent of the contents of the accumulator.

Minimum Hardware: PDP-8, Type 350 Plotter and Control
Other Programs Needed: Digital 8-12-U "Incremental Plotter Subroutine"
Storage Requirement: Five memory pages (1177 locations)

DECUS NO. 8-148

Plotter System

Bruce J. Biavati, Computer Applications, Inc., New York, New York

This is a generalized plotting system for the CalComp Plotter allowing "plot time" modification on the data. The main program tape accepts all plotting commands and data from the Teletype. Patch tape #1 modifies the system to a high

speed reader. Patch tape #2 modifies all input through the high speed reader.

Minimum Hardware: 4K PDP-8, CalComp Plotter and High Speed Reader
Source Language: MACRO-8

DECUS NO. 8-149

Core Window

Donald C. Uber, Lawrence Radiation Laboratory, University of California, Livermore, California

The 34D Scope displays the octal contents of any 64 consecutive core locations, beginning at the address set in the Switch Register and Data Field switches (if Extended Memory is used). There are 16 lines, each with an address plus four memory words. A special character generator program refreshes the display 11 times per second.

Minimum Hardware: PDP-8, 34D Scope
Storage Requirement: 15; 7240₈ - 7573₈
Source Language: MACRO-8

DECUS NO. 8-150

PTOD8 High and PTOD8 Low

R. A. Gruenewald, Dr. Neher Laboratory, Netherlands Postal and Telecommunications Service, Leidschendam, Netherlands

PTOD8 (PTT Trace and Octal On-Line Debugging Program for the PDP-8), is a means to debug a running user's program. It features: register examination and modification, multiple breakpoints (traps), memory protection of a chosen block, word search (masked or not masked), tracing a running users program (gives a full printout of consequently executed instructions), is interrupt proof, and also features binary tape punching (automatic leader-trailer code and checksum).

Storage Requirement: PTOD8 requires 1343₈ registers
PTOD8 HIGH: 6200₈ - 7543₈
PTOD8 LOW: 200₈ - 1543₈

DECUS NO. 8-151

On-Line TIC-TAC-TOE

Richard B. Rothman, Groton School, Groton, Connecticut

This program plays the game of TIC-TAC-TOE with the user. By means of a previously stored algorithm, it selects the best move for any given situation. Conversation and ultimate defeat is via the Teletype.

Source Language: PAL

DECUS NO. 8-152a

PDP-8 Music Programs

R. G. Smith and D. J. Harrison, Carleton University,
Ottawa, Canada

The coding program allows the user to type a song on the Teletype and produce a coded binary tape of that song. It accepts musical information in a form more compatible with ordinary sheet music and converts it to a coding scheme.

The playing program plays the song "Penny Lane" via the coding program with the use of a power amplifier and speaker.

A list of additional songs is available upon request.

Minimum Hardware: PDP-8 with D/A Converter, power amplifier and speaker
Restrictions: 6577₈ notes
Source Language: PAL III

DECUS NO. 8-153

Tape/Disk Transfer Programs

Daniel Parrish, Veterans Administration Hospital, Seattle, Washington

This series of programs was written to create and recall disk images on magnetic tape. They were written initially to facilitate rebuilding the disk system in the event of an accidental or deliberate wipeout. The usefulness of the DF-32 was significantly enhanced by the ability to store and easily recall a number of different disk images. A single reel of DECTape can hold up to five complete images, each of which occupies 400₈ blocks.

Minimum Hardware: PDP-8 with DF-32 Disk and TCØ1 DECTape
Other Programs Needed: Tape Read-Write Subroutine
Source Language: PAL III

DECUS NO. 8-154

SWAP

David M. Kristol

Using self-contained I/O, SWAP may be employed to load the disk from or dump the disk onto DECTape. It is faster and more versatile than the Disk to DECTape FAILSAFE.

Minimum Hardware: PDP-8 with DF-32 and TCØ1 DECTape or RS-08
Storage Requirement: 600₈ + 4200₈ buffer
Source Language: PDPMAP (DECUS NO. 8-166)

DECUS NO. 8-155

HEP

Dr. A. K. Head, C.S.I.R.O., University of Melbourne, Parkville, Victoria, Australia

HEP is a program which gives calculating machine type operation and stored program operation. It is based on Floating Point Package (DEC-8-5-S-D) and Floating Point Controller (DECUS NO. 8-44). Calculations have an accuracy of just over six decimal digits and printout is rounded to six decimal digits. It includes facilities for format control, program control and tests, subroutines, and an array of variables. Although it was designed mainly for quick results from small calculations, it also has facilities and space for quite large and elaborate programs. Note, HEPTRACE, DECUS NO. 8-156.

Minimum Hardware: 4K PDP-8 with Teleprinter
Storage Requirement: 0003₈ - 7577₈

DECUS NO. 8-156

HEPTRACE

A. K. Head, C.S.I.R.O., University of Melbourne, Parkville, Victoria, Australia

This program is used in conjunction with HEP (DECUS NO. 8-155) to give trace and one shot facility during the execution of HEP programs.

DECUS NO. 8-157

Square Root Patch

A. K. Head, C.S.I.R.O., University of Melbourne, Parkville, Victoria, Australia

This program is a patch to standard SQRT routine (DEC-8-5-S). It is a shorter and faster way of giving exact roots of exact squares.

Storage Requirement: 6656₈ - 6747₈

DECUS NO. 8-158

AX-Ø8 Symbol Generator

D. Dyment, Digital Equipment of Canada, Ltd., Carleton Place, Ontario, Canada

This subroutine may be called to display single characters or a string of characters on the oscilloscope of an AX-Ø8 (LAB-8) system. Sixty different symbols, in addition to four special "format" codes, are provided by the routine. Software control of character scaling and "margins" on the display is provided.

Minimum Hardware: LAB-8 with oscilloscope
Storage Requirement: 223₁₀ locations
Source Language: PAL

DECUS NO. 8-159

CINET-BASIC

Bud Pembroke and David Gillette, Computer Instruction NETWORK, Salem, Oregon

This interpretive compiler was patterned after Dartmouth's BASIC. It was built by modifying DEC's FOCAL, and uses many of the same subroutines and/or methods. Error messages are given in terms of an error number and line number.

Minimum Hardware: PDP-8 with 4K and an ASR-33
Storage Requirement: Main program locations 0000-3252 and 4600-7600 and user's code from 3252 on.

DECUS NO. 8-160

FASTLOAD

D. Dymont, Digital Equipment of Canada, Ltd., Carleton Place, Ontario, Canada

FASTLOAD is a minimal bootstrap loader for the PDP-8, requiring only eight instructions to load in the upper page of memory.

DECUS NO. 8-161

EXPO - A Flexible PDP-8 Data Acquisition Program

Bruce Arne Sherwood, California Institute of Technology, Pasadena, California

EXPO is a PDP-8 program which reads various kinds of data from experimental apparatus, optionally logs data on magnetic tape, and accumulates one-or two-dimensional histograms of selected variables. These histograms may be displayed on the Teletype or scope, simultaneously with data-acquisition. From the keyboard the user defines what variables are to be histogrammed and under what conditions; variable names are symbolic and numerical parameters are decimal. Also from the keyboard, the user may call for Teletype or scope output with some control of format. Because of its flexible user-oriented input-output, EXPO has proven to be very useful in debugging and utilizing complex apparatus in a high-energy physics experiment; it is likely to be useful in similar experimental situations in science or engineering. The write-up includes a useful general discussion of interrupt handling on the PDP-8.

Minimum Hardware: 4K PDP-8 with EAE, Magtape, Scope Display, and Plotter optional
Storage Requirement: 0-7177 if all options used

DECUS NO. 8-162

Demonstration Programs for the PDP-8

1. PDP-8 Music;
2. Night Watchman's Clock (338 Display);
3. World War I - Snoopy (338 Display);
4. Matching Pennies.

DECUS NO. 8-163 through 8-165

Obsolete

DECUS NO. 8-166

Interim Technical Report, The PDPMAP Assembly System

Michael S. Wolfberg, Massachusetts Computer Associates, Wakefield, Massachusetts and Thomas H. Johnson

This report describes the PDPMAP Assembly System which is used to assemble symbolic programs written for a PDP-8 or DEC-338 with up to 16K memory locations. The system is implemented at the University of Pennsylvania on an IBM 7040 and DEC PDP-8 connected by a high speed data channel (IBM 7904 and DEC DM03). The PDPMAP System uses the powerful assembler of a large computer (IBM 7040 MAP Assembler) to quickly assemble programs for a small computer.

Report only available.

DECUS NO. 8-167

CIRCUITS

D. Whiteley, International Computers, Ltd., Kidsgrove, Stoke-on-Trent, Staffordshire, United Kingdom

CIRCUITS is a program which enables Electronic Circuits to be drawn using the DEC-338 Display system. The complete circuit can be stored on paper tape and read in for future modifications.

Minimum Hardware: 8K PDP-8 with 338 Display, Teletype, High Speed Reader and Punch and character generator

DECUS NO. 8-168

CalComp Plotting Package

John W. Fitzgerald, Stanford Medical School, Stanford University, Stanford, California

This package is a series of subroutines designed to be used with the CalComp and PDP-8. The subroutines are: PLOTX - a modified 8-12-U, general move routine; ALPHA - alpha-numeric packed string plotting; DLTR - an 8-bit ASCII letter drawer; AXIS - an axis drawing routine; NUMBER - a signed 11-bit binary number output routine; DSYM - centered symbol drawing routine and LINE - vector plotting routine.

This package is issued only on DECtape and was compiled using the Fitzgerald Programming System which differs from DEC distributed programming systems. DECUS can offer no assistance in getting the program off the DECtape.

There is a LINCtape available for PDP-12 users. Paper tape of PLOT routine only is available on special request.

DECUS NO. 8-168 (Continued)

Minimum Hardware: A PDP-8 computer with DECTape 350B Interface and CalComp Model 565 digital plotter with a step size of 0.01 inches.

DECUS NO. 8-169

Physical Oceanography Data Reduction Programs for the PDP-8

C. K. Ross, R. Reiniger and A. B. Grant
Submitted by: Joann E. Gavan, Department of Energy, Mines and Resources, Marine Sciences Branch, Dartmouth, Nova Scotia, Canada

This package presents an oceanographic data processing system for use at sea on a small computer with a basic configuration of 4K memory, ASR-33 Teletype, high speed paper tape reader/punch and a 31 inch CalComp Plotter. It is capable of accepting pressure, temperature, salinity, oxygen and silicate as measured parameters.

The following routines may be ordered as separate write-ups and tapes. Please specify whether you are ordering the complete or partial package:

- A. Temperature Formatting
- B. Pack Thermometer Calibration
- C. Thermometer Correction
- D. Pressure Curve Fit
- E. Final Pass
- F. PNUM
- G. PLOPRM
- H. Distance and Bearing
- I. Formatting of Chemistry
- J. Department PLOTCO
- K. Additions to Floating Point Package

DECUS NO. 8-170

FORTTRAN Source Conversion Program

Charles Conley
Submitted by: Richard Palmer, Digital Equipment Corporation, Maynard, Massachusetts

This program will allow the user to convert FORTRAN source programs written for DEC-08-AFC1 (FORTRAN Compiler, Old Version) to the new format, FORTRAN (DEC-08-AFC1-PB).

DECUS NO. 8-171

Real-Time System for Behavioral Science Experiments

Robert H. Tedford

This document describes a program which controls the operations of ten behavioral chambers using four classical experimental designs; Punishment Discrimination (PD), Nondiscriminated Avoidance (NDA), Fixed Ratio (FR), and Differential

Rate of Low Response (DRL). Besides controlling the experiments, certain statistics are accumulated during the experiments for printout at the end of each test run.

Minimum Hardware: PDP-8 with an ASR-33, Requires a special interface between computer and behavioral equipment

Storage Requirement: 4K

DECUS NO. 8-172

Octal Systems Edit

Edward A. Taft III, St. Mark's School, Southboro, Massachusetts

Octal Systems Edit allows advanced users to perform direct octal editing of the information on their systems device. It makes block format compatible with system blocks. All editing is via the Teletype; commands allow reading, writing, and moving blocks; listing, changing, and punching individual words in a block.

Minimum Hardware: PDP-8, 8/1, 8/S with DF-32 or TC01/TU55

Other Programs Needed: Disk/DECTape monitor (DEC-D8-SBAC-PB)

Storage Requirement: 200₈-1177₈ (may be reassembled into any 4₈ pages)

Restrictions: Requires that Monitor Head be present in 7600₈-7777₈

Source Language: PAL-D

DECUS NO. 5/8-173

TIC 5/8

James A. Gillespie, Lawrence Radiation Laboratory, Berkeley, California

TIC 5/8 plays a master game of TIC-TAC-TOE on the display scope. The program can be reset to a learning configuration by hitting two keys on the Teletype, and will begin to learn winning strategies from each game it loses until it has become a master player again. The program makes use of the program interrupt facility and makes necessary changes for a PDP-5 or PDP-8.

Minimum Hardware: PDP-5/8 family and 34D scope

Storage Requirement: 1-3 and 41-3000

Restrictions: Should not be copied after use. Execution time excludes use on PDP-8/S. All program interrupt flags must be cleared for use (room is provided)

Source Language: LRL PDP Assembly Language

DECUS NO. 5/8-174

MEDIUM

Lance A. Carnes
Submitted by: James A. Gillespie, Lawrence Radiation
Laboratory, Berkeley, California

MEDIUM is a demonstration program for use on the PDP-5 or PDP-8 family. Messages typed on the Teletype are displayed on the scope, advancing across the screen from right to left similar to the Times Square News Sign.

Minimum Hardware: PDP-5 or PDP-8 family with 34D
or VC8/I Scope
Storage Requirement: 41_8-1500_8
Source Language: LRL PDP-5 Assembly Language

DECUS NO. 8-175

Post Stimulus Interval Histogram for AX-Ø8

Peter Goldstern, Digital Equipment Corporation

This program, using the Schmitt triggers, generates a post stimulus interval histogram for one channel.

Minimum Hardware: LAB-8
Other Programs Needed: LAB-8 compiler
Restrictions: Maximum count per interval is 4095_{10} . Maximum number of epochs is 4095_{10} . Maximum number of intervals is 3456_{10}

DECUS NO. 8-176

PAL CHOP

Edward A. Taft III, St. Mark's School, Southboro,
Massachusetts

PAL CHOP produces minimum-length copies of PAL source tapes by removing all comments, tabs, multiple spaces, and multiple carriage-return/line-feeds. It is especially useful in facilitating the handling and storage of sections of extremely large programs which have been debugged.

Minimum Hardware: PDP-8, 8/I, 8/L and ASR-33.
High Speed Reader and Punch optional
Storage Requirement: Program occupies 10_8-366_8 ; uses 400_8-1177_8 as buffer
Execution Time: I/O limited
Source Language: PAL-D

DECUS NO. 8-177

COPY

Alexander Smythe
Submitted by: Theodore Green, Taft School, Waterbury,
Connecticut

COPY is an extension of PIP. Its purpose is to copy disk files onto paper tape and vice-versa. COPY's major advantage is that it saves time in putting files on and off the disk. This can be very useful for those with one disk and limited space.

Minimum Hardware: PDP-8, 8/I or 8/S with disk and Teletype
Other Programs Needed: Disk Monitor I/O routine in core and command decoder stored on disk starting in block 15
Storage Requirement: $0-2777_8$; only $0-1474_8$ for program - rest buffers
Source Language: PAL-D

DECUS NO. 8-178

Reverse Assembler

Henry G. duPont, St. George's School, Newport, Rhode Island

The Reverse Assembler accepts a paper tape in binary format and produces either a printed listing or a paper tape that is acceptable to the PAL Assembler as a symbolic tape. It produces the mnemonics for almost all input-output devices as well as PAL III and Floating Point instructions.

Minimum Hardware: PDP-8 with ASR-33
Storage Requirement: $0-5400_8$
Source Language: PAL III

DECUS NO. 8-179

EAE Modifications for Binary Disassembler with Symbols

Alec Smythe
Submitted by: Theodore Green, The Taft School, Waterbury,
Connecticut

This patch permits use of the Binary Disassembler with Symbols, (DECUS NO. 5/8-18C) by users without EAE. The patch shortens the space for the cross reference table by approximately one page, and changes all EAE instructions to JMS's to routines which take their place. The patch also changes the octal type routine to make space for links on page zero.

Minimum Hardware: 4K PDP-8, ASR-33, High Speed Reader
Other Programs Needed: Binary Disassembler with Symbols (DECUS NO. 5/8-18C)

DECUS NO. 8-180

Editor and Assembler for 57A Magnetic Tape System (UCRL-50534)

Donald C. Uber, Lawrence Radiation Laboratory, Livermore, California

The Symbolic Editor and MACRO-8 Assembler have been modified to replace paper tape with IBM-compatible magnetic tape for more rapid and convenient program development.

The Editor reads and writes ASCII text in a file on magnetic tape. Text is stored in "pages" which may be individually accessed by Teletype commands. All the original operations are retained, including paper tape I/O.

MACRO-8 assembles the text file, completing all three passes before halting. Binary output is on high or low speed paper tape. The symbol table and Pass 3 listing may be on Teletype or written in a second tape file for listing on a line printer.

A third program moves pages of text from one area of tape to another whenever re-editing and reassembly are necessary.

Minimum Hardware: PDP-8, 8K memory, ASR-33, 57A Magnetic Tape Control with one transport

Other Programs Needed: Symbolic Editor (DEC-08-ESAB)
High Speed MACRO-8 (DEC-8-8-S)

Storage Requirement: Fields 0 and 1; locations 0-7577
Restrictions: The 57A needs modification for
Extended Memory operations

Source Language: MACRO-8

DECUS NO. 8-181

Automatic Binary Loader and Duplicator-Coder for Auto Bin

Michael A. Robinton, National Semiconductor, Santa Clara, California

Automatic Binary Loader will automatically start tapes it has loaded into core in any memory field.

The Duplicator-Coder for Auto Bin computes checksums and notifies the operator of an error. It will select the correct input/output devices to be used. It can also be used to format the tapes for the Automatic Binary Loader.

Minimum Hardware: Basic PDP-8
Storage Requirement: Automatic Binary Loader 7600₈ -
7754₈; Duplicator-Coder for Auto
Bin 0010₈ - 0431₈

Restrictions: These programs will not load tapes formatted for automatic, memory extension control. (i.e., channel 8-punched); both programs will indicate a checksum error

Source Language: PAL

DECUS NO. 8-182

Memory Compare

Ray H. Jones, Digital Equipment Company, Ltd., Reading, England

Memory Compare resides in page 36₈ of either field. It compares contents of similar addresses in pages 0-35₈ of both fields and outputs any differences detected.

Minimum Hardware: PDP-8 with extended memory
Storage Requirement: 1 page
Source Language: PAL-D

DECUS NO. 8-183

The WANG Loader

L. C. Wang
Submitted by: Richard E. Hummer, University of Maryland, College Park, Maryland

The WANG Loader will load any program that ends at location 7777. The program consists of 8 instructions that are loaded via the toggle switches, and a tape that will boot-in the BIN and RIM loaders.

Minimum Hardware: PDP-8 with ASR-33

DECUS NO. 8-184

Page Routine

F. Weil, Automatic Control Engineering, Ltd., Kent, England

This program will arrange listings in page lengths and sequentially number the pages.

Minimum Hardware: PDP-8 with ASR-33
Storage Requirement: Approximately 200₈ words
Restrictions: Maximum of 99 pages per listing
Source Language: PAL III

DECUS NO. 8-185

Modifications to Symbolic Editor and Symbolic Tape Format Generator

G. R. Hervey, University of Leeds, The School of Medicine, Leeds, England

The modifications to Symbolic Editor (DEC-08-ESAB) are: 200₈ code becomes a valid character which can be stored or generated; T and F output 200₈ code; all three (3) punching commands, T, F and P, are followed by halts to enable the punch to be turned on; T also halts after punching trailer. These changes simplify editing of tapes which contain sections of text or data separated by lengths of leader/trailer.

The modified Format Generator produces a symbolic format which saves tape, editor buffer space and Teletype time.

Minimum Hardware: PDP-8

DECUS NO. 8-185 (Continued)

Other Programs Needed: Symbolic Editor (DEC-08-ESAB)
and Symbolic Tape Format
Generator (Digital 8-21)
Source Language: PAL III

DECUS NO. 8-186

EAE FORTRAN Patch for the PDP-8

P. D. Siemens, Lawrence Radiation Laboratory, University of
California, Livermore, California

This patch to the PDP-8 FORTRAN Operating System utilizes
the extended arithmetic unit option (Type 182 EAE). Four
arithmetic routines were rewritten—alignment, normalize,
multiply and divide. The reduction in execution time is
rather significant.

Another improvement besides the faster execution time was
gained with EAE FORTRAN. Since the multiply routine
calculates a full 48-bit product and rounds instead of trun-
cates to 24-bits, an increase in significance of the product
was noted.

These modifications work with the FORTRAN Operating
System of March 2, 1967. They have not been tested with
any other version, but would "probably" work. No changes
must be made in operating procedure or any other portion of
the program, as this modification loads the regular arithmetic
subroutines.

Minimum Hardware: PDP-8 with Type 182 EAE
Other Programs Needed: FORTRAN Operating System
(DEC-08-AFCO)
Source Language: FORTRAN

DECUS NO. 8-187

Keyboard Controlled Binary Punch

Edward A. Taft III, St. Mark's School, Southboro,
Massachusetts

This program makes binary tape copies of selected areas of
core. It is entirely keyboard controlled, and has provisions
for punching leader, data, checksum and field marks for
extended memory programming.

Minimum Hardware: PDP-8, High Speed Punch and
Extended Memory (optional)
Storage Requirement: 1 page (versions included
occupy 1, 36 and 37)
Source Language: PAL-D

DECUS NO. 8-188

Extended Memory Patch for 4 Word Floating Point Package
(DEC-08-FMHA-8B)

Peter Goldstern, Digital Equipment Corporation

This patch will allow the DEC Floating Point Package to be

entered from any memory bank if the arguments and operands
processed by the Floating Point Routine all reside in the same
memory bank that the package is called from. The patch only
uses free locations within the package.

Other Programs Needed: Floating Point Package
(DEC-08-FMHA-8B)

DECUS NO. 8-189

LKDN: Look Into the Directory Name Block

Barbara M. Rollman, Educational Testing Service, Princeton,
New Jersey

LKDN will find the appropriate directory name entry when
given a file name. It will decode and type out the contents
of the entry. The output gives the disk location of the
directory entry (in xxx.yyy form, see DISKLOOK, DECUS
NO. 8-111) and, optionally, the disk block locations for
each core page stored.

Minimum Hardware: PDP-8 with DF32 Disk
Other Programs Needed: Disk Operating System
(DEC-08-SDAA)
Storage Requirement: Program - location 12₈ and 20₈ -
1377₈, Buffer - locations 1400₈ -
1777₈. If stored on disk, the
program requires 6 blocks; it can
be saved with the command
"SAVE LKDN ! 0-1377;200"
Source Language: PAL-D

DECUS NO. 8-190

PATCH Utility Program

James A. McDonough, Concord Control, Boston,
Massachusetts

This program, a utility routine, allows duplicating and up-
dating of a DECTape file of any PDP-8 TCØ1 format. It is
derived from a combination of ODT (DEC-08-COBO-D) and
4K and 8K DECTape Programming System (DECUS NO.
8 - 64a). The user should be familiar with the operation of
both of these programs.

Minimum Hardware: PDP-8 with TCØ1 Control

DECUS NO. 8-191

Fields

D. Whiteley, International Computers Limited, Kidsgrove,
Stoke-on-Trent, England

Fields, a demonstration program, calculates and displays the
surface potential of a given boundary conditional plane.
Each output facility is called by a 338 Display pushbutton
giving a numerical and/or pictorial result.

Minimum Hardware: PDP-8 with High Speed Punch
ASR-33 Teletype and 338 Display

DECUS NO. 8-191 (Continued)

Storage Requirement: 8K
Source Language: PAL III

DECUS NO. 8-192

T.A.L.C.: Taylor's Algebraic Linear Calculator
Bruce J. Taylor
Submitted by: Theodore Green, The Taft School, Waterbury, Connecticut

T.A.L.C. is a general-purpose calculator designed to evaluate a general algebraic equation, given all quantities involved in the equation. In effect, T.A.L.C. turns any of the family-of-eight computers into a powerful desk calculator capable of evaluating complex algebraic, trigonometric and logarithmic functions. In addition, it utilizes the concept of "idiot-proofing" to virtually eliminate the possibility of an operator error invalidating the equation. The program is easy to use and presents unlimited possibilities in any field where fast and accurate calculations are required.

Minimum Hardware: 4K PDP-8, High Speed Reader, DF32 Disk File and ASR-33/35
Other Programs Needed: Floating Point Package (Digital 8-5-S)
Storage Requirement: 4K
Source Language: PAL III

DECUS NO. 8-193

DISP

S. G. Wellcome, Digital Equipment Corporation, Maynard, Massachusetts

DISP provides a simple means of using the 34D Display with FORTRAN-D. It allows the operator to display varying numbers of points with movable X and Y axes.

Minimum Hardware: 4K PDP-8 with DF32 Disk
Other Programs Needed: FORTRAN-D Compiler (DEC-08-AFCO)
Storage Requirement: 600-777_g, 7400-7577_g
Restrictions: Destroys FORTRAN-D disk read/write option (e.g., Read 3, 10)
Source Language: PAL-D

DECUS NO. 8-194

NMR Simulator

D. F. Juers, R. J. Boettcher, V. J. Hull and H. E. Zimmerman, University of Wisconsin, Madison, Wisconsin

NMR Simulator is designed to calculate the theoretical spectrum of compounds containing hydrogen, fluorine, carbon-13 and other nuclei of spin 1/2. The calculated theoretical spectrum is displayed on an oscilloscope.

Options for punched and typewritten output, change in X-axis offset (sweep offset) and spectrum resolution are available. Chemical shifts and coupling constant parameters may

be varied successively until the displayed spectrum matches that obtained experimentally. Redisplay of a "library" of theoretical spectra is possible by retaining punched output tapes.

Minimum Hardware: 8K PDP-8 Oscilloscope and High Speed Reader/Punch
Storage Requirement: 8K
Execution Time: 1 second to 15 minutes
Source Language: PAL III

DECUS NO. 8-195

POLY BASIC

L. Elekman and Richard Lary, Digital Equipment Corporation

POLY BASIC is a compiler and operating stand-alone system designed for the PDP-8 family. It has a total user program storage of 32K characters in which the disk is utilized. Some of the features of the compiler are:

- a. It has all BASIC system commands
- b. It has all BASIC operations
- c. It contains all built-in functions except TAN
- d. Its accuracy is 1 part in 2^{23} rather than 1 part in 2^{35} , because of word size difference
- e. Maximum program size is 6144 characters as in regular (Dartmouth) BASIC
- f. Maximum usable statement number 4095 rather than 99999
- g. Maximum array space is 3600 characters, and maximum number of statements is 330; however, these can be traded off against one another at the rate of 25 array elements per statement
- h. There are no matrix operations
- i. The argument "EDIT resequence" is implemented and the command "EDIT" rennumbers the user file from line number 100 in steps of 10
- j. There is a set of error messages to signal compilation errors and a set for execution errors

Minimum Hardware: PDP-8 with ASR-33 Teletype and DF32 Disk
Restrictions: Will not run on PDP-5 or PDP-8/S

DECUS NO. 8-196

DET - Detect Key Words

S. G. Cannon, UNIVAC, Salt Lake City, Utah

DET will detect a key word or words from any sentence that is typed via the Teletype. Other words in the sentence will not be affected so that any arrangement of words can be used.

A basic "conversation" type routine called "SPELL" is included to demonstrate the program operation.

DECUS NO. 8-197

Overlay for Standard Editor and PAL III Assembler

John Knox, International Controls Corporation, Houston, Texas

This overlay enables the user of Editor (DEC-08-ESAB) and PAL III Assembler (DEC-08-ASAC) to save approximately half the time required when using the ASR-33/35. This patch has proven to be a great time saver when debugging was necessary.

Minimum Hardware: PDP-8 with 8K
Other Programs Needed: Editor (DEC-08-ESAB) and PAL III (DEC-08-ASAC)

DECUS NO. 8-198

SYSHLP - Monitor System Utility Program

David M. Kristol

SYSHLP is a combined version of DNHELP (DECUS NO. 8-135) and SYSLUK (DECUS NO. 8-141). Besides more convenient alternation between the two programs, SYSHLP features improved search coding in the SYSLUK portion.

Minimum Hardware: PDP-8 with DF32 or TCØ1
Other Programs Needed: System Monitor Head (DEC-D8-SDAA)
Storage Requirement: 200₈ - 2177₈
Source Language: PDPMAP (DECUS NO. 8-166)

DECUS NO. 8-199

Accessing Data Arrays and Teletype Input/Output

David G. Frutchev, Beckman Instruments, Inc., Fullerton, California

These two subroutines provide the user with a powerful, yet concise, programming methodology when used with the Floating Point Package (DEC-08-FMHA).

The array accessing subroutine permits the user to access both fixed and floating point data located anywhere in the first 2K words of core storage regardless of page overlap. Both data storage and retrieval can be performed on terms analogous to single variable, subscripted FORTRAN array terms such as "ARRAY (a*_j+b)."

The second subroutine, TTY Text I/O, provides a concise facility for text output (63 characters), character input, line spacing and page tabulation.

Other Programs Needed: Floating Point Package (DEC-08-FMHA)
Storage Requirement: Array Accessing - 119₁₀ words;
Teletype Text I/O - 56₁₀ words
Source Language: PAL III

DECUS NO. 8-200A

BOSS

Dr. A. S. French

Submitted by: Dr. R. B. Stein, University of Alberta, Edmonton, Alberta, Canada

This disk version of BOSS allows a series of system programs to be brought into core and executed in either one or any number of runs without keyboard input, other than the initial listing of programs and a single decision input at the end of each run.

Minimum Hardware: PDP-8 with DF32 Disk
Other Programs Needed: Disk Monitor System (DEC-08-SDAA)
Storage Requirement: Disk - 2 blocks
Restrictions: File name must begin with a letter
Source Language: PAL III

DECUS NO. 8-200B

DECTape Boss for PDP-8 Computers

A. S. French, University of Alberta, Edmonton, Canada

DECTape Boss is substantially different from the disk version (DECUS NO. 8-200A) although it operates on the same basic principles and appears identical to the user once it is loaded.

Minimum Hardware: PDP-8 with DECTape
Other Programs Needed: Disk Monitor System (DEC-08-SDAA)
Storage Requirement: 3 pages
Source Language: PAL III

DECUS NO. 8-201

DECSW

Kenneth B. Wiberg, Yale University, New Haven, Connecticut

DECSW is a subroutine which accepts the contents of decimal switches at a remote location and converts the number into the following forms:

1. As an insert into a BCD string which may be typed out or displayed on CRT screen.
2. As a floating point number in the floating point accumulator.
3. As the binary equivalent in the accumulator, if the number was an integer.

Minimum Hardware: PDP-8 with digital switches
Other Programs Needed: Floating Point Interpreter
Source Language: MACRO-8

DECUS NO. 8-202

PLOT

J. J. Spruit and L. R. Davila, Fels Research Institute, Yellow Springs, Ohio

PLOT will plot data points on a graph; calculate and plot a linear, least squares regression line and print out the coefficient of correlation, the equation of the regression line and other pertinent parameters.

Minimum Hardware: 4K PDP-8 with a Houston Instrument Complot Plotter Model 6650, DP-1-1 or equivalent

Other Programs Needed: Floating Point Package (Digital 8-5C-S), ALPHA (DECUS NO. 8-203), requiring extended memory if used

Storage Requirement: Page 0, 200-2453, 4650-4751

Restrictions: Maximum number of data points is 190

DECUS NO. 8-203

ALPHA

J. J. Spruit and L. R. Davila, Fels Research Institute, Yellow Springs, Ohio

ALPHA is used for titling graphs on the plotter. It can be used in conjunction with PLOT (DECUS NO. 8-202).

Minimum Hardware: PDP-8 with 8K memory and a Houston Instrument Complot Plotter Model 6650, DP-1-1 or equivalent

Storage Requirement: Page 0, 200-4374

Restrictions: When used in conjunction with PLOT (DECUS NO. 8-202) extended memory is required

DECUS NO. 8-204 a

PATCH - A PDP-8 Binary Paper Tape Patch Program

Charles McComas, Digital Equipment Corporation, Maynard, Massachusetts

PATCH provides a simple, convenient means for making changes to PDP-8 binary format paper tapes, and for creating short binary tapes. Single binary tapes may be patched or merely copied. Several tapes may be combined, with or without changes being made. Additions to tapes may be created. Whole pages of code may be moved or deleted. In certain cases binary words may be inserted within existing binary data. Field expressions may be inserted, changed or deleted.

Changes and creations are made via the Teletype keyboard using simple commands. Data is typed in octal.

NOTE: The DECTape available for this program is in PDP-10 format.

Minimum Hardware: 4K PDP-8, Teletype, or high speed reader/punch

DECUS NO. 8-205

MTSAFE

John Alderman, Applied Data Research, Atlanta, Georgia

MTSAFE is a TC-58 version of Disk/DECTape FAILSAFE (DECUS NO. 8-120). It is fairly self-explanatory and incorporates additional messages for the operator to service the magtape.

Minimum Hardware: PDP-8 with TC-58 Magtape

Other Programs Needed: Disk Monitor System (DEC-D8-SDAA)

Storage Requirement: SA-0200; occupies 100-1377₈ and uses 1400-2177₈ as buffer

DECUS NO. 8-206

DUMP

Barbara M. Rollman, Educational Testing Service, Princeton, New Jersey

DUMP types out the octal contents of any 128-word block on tape or disk. The link (129th) word will be printed and identified. The typeout may be halted in the middle to proceed to the next block on the same device, to switch to a different block and/or device, or to return to the monitor.

Minimum Hardware: 4K PDP-8 with DF32 Disk or TC01 DECTape

Other Programs Needed: DECTape Operating System (DEC-08-SOBO) or Disk Operating System (DEC-08-SDAA)

Storage Requirement: Location 0-1177; starting address is 1000; 2000-2200 is used as buffer

Source Language: PAL-D

DECUS NO. 8-207

Cube Root Subroutine

James Kelly, Digital Equipment Corporation, Maynard, Massachusetts

The Cube Root Subroutine is called with an effective "JMS CUBE" with the argument in the accumulator. The subroutine returns to the memory location following "JMS CUBE" with the result in the accumulator and the remainder in MAGIC. The algorithm makes use of the fact that the third order difference of any list of consecutive cubes is always equal to 6 (six).

Storage Requirement: 27₁₀ locations

Source Language: PAL

DECUS NO. 8-208

Evaluating Determinants (from 2-17)

A. Moses, Computer Application Engineering Co., El Paso, Texas

Evaluates determinants with the order in the range from 2 through 17.

Other Programs Needed: FORTRAN Compiler and Operating System (DEC-08-AFCD)

Storage Requirement: 4K

Source Language: FORTRAN

DECUS NO. 8-209

Editor-With-View

John C. Alderman, Applied Data Research, Atlanta, Georgia

Editor-With-View is the same as the library distributed version of the Disk Editor (DEC-D8-ESAB) with the exception of the V(View) command addition. This command is exactly like the L command for the TTY, except that results are displayed on a storage scope via the software character generator, and the VD8/I or 34D scope controller. The ALT MODE key will display the next line of the text buffer.

Minimum Hardware: 8K PDP-8 with VD8/I or 34D Scope

DECUS NO. 8-210

A Real Time Multiple Task Executive Program with Built-In Console Utility Package for PDP-8/S and PDP-8 Computers

C. D. Martin, Jr. and R. L. Simpson, Oak Ridge National Laboratory, Oak Ridge, Tennessee

This routine schedules process control tasks in a real-time and establishes operating priorities. The program occupies about one-third of a 4096-word memory block and accommodates eight major control tasks.

Minimum Hardware: PDP-8 or 8/S with a real-time interrupt

Source Language: PAL III

DECUS NO. 8-211

Matrix Manipulation System (MMS) for Real Numbers

Hudai Diriltan

Submitted by: Professor Dr. Yakup Paker, Middle East Technical University, Electrical Engineering Department, Ankara, Turkey

The following matrix operations can be performed by the MMS program: inversion, calculating the determinant, transpose multiplication (any combination of rectangular arrays) of two or more matrices, multiplication of matrices by constants, addition and subtraction. The method used for inversion and computing the determinant is gaussian elimination process; for inversion a unity matrix of adequate size is

generated; all other operations are entry by entry arithmetic computations.

Minimum Hardware: 4K PDP-8; ASR-33

Storage Requirement: 600₈ locations for each tape

Source Language: PAL III

DECUS NO. 8-212 and 8-212a

Obsolete

DECUS NO. 8-212b

PALH (Modified)

Michael Schwabe, Institut Fur Ergonomie, Munich, Germany
Submitted by: Kay Hoke, Straub Medical Research Institute, Honolulu, Hawaii

This is a modification of the March 2, 1970 version of PALH which will modify PAL-D in order to accelerate assemblies from DECTape. It will: 1) number pages during the listing, 2) use a row of dots for pagination, 3) permit pagination both on-line and off-line and 4) run under either DECTape monitor or Disk Monitor System.

Minimum Hardware: 8K PDP-8 with DECTape or disk
Source Language: PAL-D

DECUS NO. 8-213

4K ALGOL

University of Grenoble

Submitted by: Charles Conley, Digital Equipment Corporation, Maynard, Massachusetts

ALGOL is an algebraic programming language suitable for a wide variety of scientific and other computer programming applications. With certain restrictions and limitations this 4K ALGOL for the PDP-8 includes all routines necessary to compile, load and execute programs written in a subset of the ALGOL language.

Minimum Hardware: 4K PDP-8; high speed reader/punch is optional

Source Language: ALGOL

DECUS NO. 8-214

DECI: A Subroutine to Type Outputs in Decimal

John M. Martin, University of California, Psychobiology Department, Irvine, California

This routine will type the decimal equivalent of the octal number in the accumulator on the Teletype from -2048 to +2047 with zero suppression.

Minimum Hardware: PDP-8; ASR-33

Storage Requirement: 92₁₀

Source Language: PAL III

DECUS NO. 8-215

Hexapawn

Ralph Mayer, Lexington High School, Lexington, Massachusetts

This version of Hexapawn is similar to that of DECUS NO. FOCAL8-9 with the exception of additional bells and whistles and a smaller storage space requirement.

Minimum Hardware: 4K PDP-8
Source Language: PAL-D

DECUS NO. 8-216

PAL-D Patch

Edward A. Taft III, Saint Mark's School, Southborough, Massachusetts

PAL-D Patch is designed to provide the following added features that are present in field one. It will store excess symbols in field one; ignore rubout characters in input from the high speed reader; and provide formatting of 3rd pass output onto 11-inch long pages. Two known bugs in PAL-D are also corrected.

Minimum Hardware: 8K PDP-8
Other Programs Needed: PAL-D (DEC-D8-ASAA-PB)
Source Language: PAL-D

DECUS NO. 8-217A

PALR

Matthew Simon, Computer Applications, Inc., New York, New York

PALR will determine whether or not the output from the Teletype is an error message. If no error occurs, the output is directed to a TU-20 magnetic tape. Symbols are extended into bank one, not on the disk.

Minimum Hardware: PDP-8 with two banks of core storage, DF-32 Disk, TU-20 magnetic tape drive
Other Programs Needed: PAL-D

DECUS NO. 8-217B

PALM

Matthew Simon, Computer Applications, Inc., New York, New York

PALM is a bank 0 modification to PAL-D whose purpose is to direct output that usually goes to an ASR-33/35 to PALR (DECUS NO. 8-217A).

Minimum Hardware: PDP-8 with two banks of core storage, DF-32 Disk, TU-20 magnetic tape drive
Other Programs Needed: PAL-D

DECUS NO. 8-217C

UTIL

Matthew Simon, Computer Applications, Inc., New York, New York

UTIL enables manipulation of the assembled files that are output on the TU-20 by DECUS NO. 8-217A and 8-217B.

Minimum Hardware: PDP-8 with two banks of core storage, DF-32 Disk, TU-20 magnetic tape drive
Other Programs Needed: PALM and PALR (DECUS NO. 8-217A and 8-217B)
Source Language: PAL-D

DECUS NO. 8-218

Interpreter of Constitution of Coding Tables

Sahut d'Izan, C.E.R.C.I., Paris, France

This program enables the user to code constants which will be used by a specific program of the problem, for non-numerical purpose. Octal representation is the only usable form.

Source Language: PAL

DECUS NO. 8-219

LISS

Andrew S. French, Department of Physiology, University of Alberta, Edmonton, Canada

LISS demonstrates the figures produced by the orthogonal addition of sine and other wave forms. It has the facility to control phase angles in fixed and continuous modes.

Minimum Hardware: LAB-8 with display
Storage Requirement: 8 core pages
Source Language: PAL-D

DECUS NO. 8-220

FRACPT and TRANS

Kenneth B. Wibert, Department of Chemistry, Yale University, New Haven, Connecticut

In treating data collected using an analog-to-digital converter it is frequently convenient to shift the number one unit to the right and consider it as a fraction having the form: S.XXXXXX-XXXXXX, where bit zero indicates the sign and the decimal point is placed between bits 0 and 1. Thus, full scale of the converter would correspond to 0.999_{10} FRACPT and TRANS

are two similar routines which output a number in storage as a BCD decimal fraction. FRACPT leads to the number being typed on the Teletype, whereas TRANS inserts the BCD representation into a BCD string (two characters per word) which may be typed out or displayed on a CRT screen.

Minimum Hardware: 4K PDP-8

DECUS NO. 8-220 (Continued)

Storage Requirement: One page
Source Language: MACRO-8

DECUS NO. 8-221

IFIX/FLOAT

Garth Peterson, Institute of Atmospheric Sciences, South Dakota School of Mines and Technology, Rapid City, South Dakota

IFIX/FLOAT uses the Floating Point Package (DEC-08-YQYA) to convert floating point numbers to signed 12-bit integers or vice versa. It has been written to produce aesthetically desirable results rather than to minimize coding.

Other Programs Needed: DEC Floating Point Package (DEC-08-YQYA)
Storage Requirement: 79 words
Source Language: PAL-D

DECUS NO. 8-222

Disk Memory Retention Test

Edward A. Taft III, St. Mark's School, Southborough, Massachusetts

The DF32 Disk can sometimes drop bits in data written on it and left for a long period of time. There is currently no MAINDEC available that will allow a test pattern to be written and checked at a later time (after the computer has been off for a while, for example, or when the computer has been moved). The Disk Memory Retention Test is designed to allow this test to be made.

Minimum Hardware: PDP-8, 8/I and 8/L with a DF-32 Disk
Storage Requirement: 0200 - 0777
Source Language: PAL-D

DECUS NO. 8-223

Power Spectrum

H. D. Schenk, Deutsche Forschungs-und Versuchsanstalt fur Luft und Raumfahrt E. V., Flughafen, Germany

This program is a routine to calculate the correlation function and the power spectrum of a set of points given on tape. The output is via two D/A converters to draw the function or in digital form by punching the values on the high speed punch.

Minimum Hardware: 4K PDP-8 with PC01
Other Programs Needed: Floating Point #3 (DEC-8-5-S)
Source Language: MACRO-8

Note: Works only with older version of FPP.

DECUS NO. 8-224

PALT: Patch for Improved Text Handling for PAL-D

Frank Battat, Liberty Gold Fruit Co., Inc., San Francisco, California

This patch eliminates the use of stripped ASCII code for packing, instead the logic subtracts the number 237₈ from each ASCII code. This allows ASCII codes 240₈ through 336₈ to be packed two per word but allows for a more efficient unpacking routine.

Minimum Hardware: PDP-8 with Disk or DECTape
Other Programs Needed: PAL-D (DEC-D8-ASAB-PB)
Source Language: PAL-D

DECUS NO. 8-225

CR8/I Overlay for PAL III Assembler

Robert A. Lammert, Digital Equipment Corporation, Northbrook, Illinois

This overlay allows source input for the PAL III Assembler to come from the CR8/I card reader. The overlay precludes input from either High Speed paper tape reader or TTY.

Minimum Hardware: PDP-8, KSR-33 and CR8/I card reader
Other Programs Needed: PAL III
Source Language: PAL III

DECUS NO. 8-226

FAILSAFE for DECTape Library System

Robert A. Lammert, Digital Equipment Corporation, Northbrook, Illinois

This program provides a means of dumping and restoring the DECTape Library System when the user has only one DECTape transport.

Minimum Hardware: 8K PDP-8, High Speed Reader and Punch, DECTape transport
Other Programs Needed: Disk/DECTape Monitor Head for DECTape system. (DEC-D8-SDAA)
Source Language: PAL III

DECUS NO. 8-227 and 10-23

PDP-10/8 Loader

Allan B. Wilson, Max Planck Institut fuer Kohlen forschung Muelheim, Germany

This interactive set of programs when used in conjunction with a special interface between the PDP-8 and PDP-10 allows the following:

- 1. The PDP-8 console Teletype to be used as a regular PDP-10 time-sharing station; and

DECUS NO. 8-227 and 10-23 (Continued)

2. By means of commands to the PDP-10 Time-Sharing Monitor, PDP-8 binary programs are stored on a PDP-10 device and sent to the PDP-8 and loaded. This eliminates the need for paper tape or other program storage means on the PDP-8.

Minimum Hardware: PDP-10 with linescanner and a PDP 8 with special interface to PDP-10 linescanner
Storage Requirement: One page of PDP-8, about 250₈ in PDP-10
Source Language: PAL-10 and MACRO-10

DECUS NO. 8-228

A One-Pass Paper Tape Loader for PDP-8 Disk System (OLOAD)

H. E. Barreveld, Delft University of Technology, Delft, Netherlands
Submitted by: E. Dow, Digital Equipment Corporation, Maynard, Massachusetts

This program is a one-pass binary loader used with the PDP-8 Disk System. The program may load output of PAL-D or LEES (DECUS NO. 8-236).

Minimum Hardware: 4K PDP-8 with DF-32; High Speed Reader and Punch
Other Programs Needed: Disk Monitor System (DEC-D8-SDAA)
Source Language: PAL-D

DECUS NO. 8-229

Card III Overlay

Roger L. Bachand, MITRE Corporation, Bedford, Massachusetts

This program makes PAL III available for input from the card reader option (CR8/I) for reading IBM-026 source cards. The user punches on each card one PAL III line of text using the same symbol and operation as in compiling on ASCII source tape. Operation is the same as PAL III.

Minimum Hardware: 4K PDP-8, ASR-33, CR8/I card reader
Other Programs Needed: PAL III
Source Language: PAL III

DECUS NO. 8-230

Foreground/Background/8 Now

John Alderman, Applied Data Research, Atlanta, Georgia

The Foreground/Background/8 Now system is now in operation. The Disk/DECtape monitor is used as a background program, and there is a successful emulation of the interrupt system for the background user. Most of the standard software will run in the background mode unchanged, (e.g. FOCAL, EDIT, PAL-D). The Executive is transparent to the casual user who thinks that he has a 4K PDP-8 with single DF-32 Disk, and high speed paper tape.

Minimum Hardware: 8K PDP-8, 2 surface DF-32s
Other Programs Needed: Disk/DECtape Monitor (as Background)
Source Language: PAL-D

DECUS NO. 8-231

Data Processing on the PDP-8/S

Frederick W. Holzwarth, George Washington High School, Philadelphia, Pennsylvania

Data Processing on the PDP-8/S is a text which was supplemented by the FORTRAN Programming Manual from Digital Equipment Corporation, the FOCAL Manual and the standard McCrachen text in FORTRAN II. It was designed for use as a course outline for 5 one-hour sessions per week.

DECUS NO. 8-232

TP1Ø

Juergen D. Klauske, Digital Equipment GmbH, Koeln, Germany

TP1Ø copies ASCII files from a PDP-10 format DECtape to the Teletype or high speed punch of a PDP-8.

Minimum Hardware: 4K PDP-8 with TCØ1, TU55, ASR-33 or High Speed Punch
Source Language: PAL-D

DECUS NO. 8-233

An Octal Housekeeping and Debugging Package for PDP-8 (PDP-8/I) with EAE and Disk

George Lauer, Science Center, North American Rockwell Corporation, Thousand Oaks, California

This system was developed to complement the DEC system monitor, not supplant it. It allows the programmer to use the disk as a true random access memory, without regard to block storage, etc. The system is not file oriented. The routines have been written to assure that they do not touch the user program except when commanded to do so. Also, it allows the user to enter floating point constants or change floating point variables in decimal notation.

Minimum Hardware: PDP-8 with EAE, DF-32 Disk and High Speed Punch
Other Programs Needed: SYS/LOAD PUNCH (DECUS NO. 8-234)
Source Language: PAL-D

DECUS NO. 8-234

SYS/LOAD PUNCH

George Lauer, Science Center, North American Rockwell Corporation, Thousand Oaks, California

This program is used to punch out all programs currently listed in the directory name (DN) block. The tape which is generated can be used to reload the DEC Monitor System

DECUS NO. 8-234 (Continued)

Minimum Hardware: PDP-8 with EAE, DF-32 Disk and High Speed Punch
Source Language: PAL-D

DECUS NO. 8-235

Octal Tape Dump for PDP-8/9/10 DECTapes

Frank J. Nagy, Carnegie-Mellon University, Pittsburgh, Pennsylvania

This program allows the user to dump blocks of PDP-8/9/10 DECTapes as octal numbers. The user is asked for the device (DECTape and unit or disk) and the block number. The block is read in and printed as 12, 18 or 36 bit numbers in octal.

Minimum Hardware: PDP-8 with TCØ1 DECTape control (DF-32 Disk optional)
Other Programs Needed: Disk/DECTape Monitor System (DEC-D8-ASAA)

DECUS NO. 8-236

System and User Files Read and Punch Program (LEES)

H. E. Barrevel, Delft University of Technology, Delft, Netherlands

This program is designed to allow the user to punch and restore either user files or system files from one DF-32 Disk while using the Disk System supplied by Digital Equipment.

Minimum Hardware: PDP-8 with DF-32 Disk; High Speed Reader and Punch
Other Programs Needed: A One-Pass Paper Tape Loader PDP-8 Disk System (OLOAD) (DECUS NO. 8-228) and Disk System (DEC-D8-ASAA)
Source Language: PAL-D

DECUS NO. 8-237

MADCAP IV, A Multiplexed ADC and Analog Plotting Program

Gerald W. Dulaney, Digital Equipment Corporation, Maynard, Massachusetts

MADCAP IV allows the LAB-8 user more complete exploitation of his hardware environment by supplying a program matrix into which he can readily insert assembly language routines to perform a specific data acquisition and/or analysis task. Floating point arithmetic, scope display, analog plotting, and both analog and digital data input can be performed by the Basic Package. Additional routines are supplied to perform interactive data treatment (including simulation spectrum stripping, smoothing, integration, etal), slow scan signal averaging, acquisition from a photoelectric curve follower, and to perform mass spectral ionization efficiency measurements.

The program can be adapted by the interested user to work

with a different hardware configuration.

Minimum Hardware: LAB-8, i.e., PDP-8/I with AXØ8 Lab peripheral, X-Y analog plotter, ASR-33, High Speed Reader

DECUS NO. 8-238

EPRSIM, An Electron Paramagnetic Resonance Simulator

Philip D. Morse, III and James S. Vincent, University of California at Davis, Davis, California

An electron paramagnetic resonance (EPR) spectrum simulation program coded in MACRO-8 for the LAB-8 Computer. The program will display spectra derived from either a Gaussian or Lorentzian derivative line shape. The horizontal length of the display is 512 locations and is adequate for many simulation problems. A spectrum may either be displayed on an oscilloscope or an x-y recorder.

Minimum Hardware: LAB-8 and oscilloscope or x-y reader

DECUS NO. 8-239

PAL III/Editor 8K Link Patch

Charles Schultz, Jr., Schultz Instruments, Inc., Gainesville, Florida

This patch allows the Editor in lower core to communicate directly with PAL III in upper core, thereby effectively producing zero-pass assembler. Five-to-one assembly time reductions may easily be experienced. Both programs continue to behave normally in regard to the low speed reader and punch.

Minimum Hardware: 8K PDP-8
Other Programs Needed: PAL III, August, 1965 or later; PDP-8 Editor, August, 1967 or later

Restrictions: Prevents use of high speed punch for Editor and high speed reader for PAL III

Miscellaneous: Reverses the action of switches Ø and 1 for the Editor; switch 1Ø establishes link to PAL III

Source Language: PAL III

DECUS NO. 8-240

END

Elmer J. Bourque, New Brunswick Research and Productivity Council, Fredericton, New Brunswick, Canada

"END" is a termination program stored on Library System and/or Monitor Unit #8 DECTape, which leaves the memory in a state which allows access to all necessary loaders. Designed primarily for the PDP-8 with TCØ1 and high speed reader, it may be modified for any configuration using DECTape. Loaders in memory after execution of "END" are as

DECUS NO. 8-240 (Continued)

follows: The Monitor Bootstrap, the TCØ1 Library System Bootstrap, the High Speed RIM Loader and the Binary Loader.

Minimum Hardware: PDP-8 with Teletype and TCØ1
Other Programs Needed: TCØ1 Library System and/or "Monitor"
Storage Requirement: 200₈-577₈ and 16₈-17₈
Source Language: PAL III

DECUS NO. 8-241

BUZZTAPE READER/WRITER

Evan Suits
Submitted by: Robert L. Isaacson, University of Florida,
Department of Psychology, Gainesville, Florida

The BUZZTAPE READER and WRITER programs can be used to build an inexpensive magnetic tape system for storage and retrieval of data or programs. Both the READER and WRITER occupy locations normally containing BIN. Transfer rate is about 4 msec per 12 bit word, or about 15 seconds for 4K.

Minimum Hardware: AX08, XR option, stereo tape recorder
Other Programs Needed: RIM Loader
Storage Requirement: Reader 7625-7736, Writer 7625-7717
Source Language: PAL III

DECUS NO. 8-242

DĀTAK I

Digital Equipment Corporation
Submitted by: J. B. Pearce, University of Colorado,
Boulder, Colorado

DĀTAK is a single core load interpretive compiler programming system designed for facile manipulation of PDP-5/8 peripherals and data. The program was written by DEC prior to 1965 and is no longer maintained by them. They have replaced DĀTAK, conceptually at least, by their new disk based system INDAC. For the installation not possessing a disk, however, DĀTAK is a valuable tool.

Minimum Hardware: PDP-5 or PDP-8 Family, Teletype, Simple Homemade Clock (See DĀTAK Manual)
Maximum Hardware: Original minimum plus 34D Display oscilloscope and a parallel and serial interface
Source Language: PAL

DECUS NO. 8-243

Amplitude Distribution

H.-D. Schenk, Deutsche Forschungs und Versuchsanstalt für Luft und Raumfahrt E. V., Flughafen, Germany

This program calculates the amplitude distribution of a set of points which are given on tape or are typed on the teletype. The output is via two D/A Converters. The mean, the variance and the standard deviation are typed on the teleprinter.

Minimum Hardware: 4K PDP-8, ASR-33, PC01, 2 D/A Converters (No. 55, 56)
Other Programs Needed: Floating Point Package No. 3 (DEC-8-5-S)
Source Language: MACRO-8

DECUS NO. 8-244

BINSAVE

Michael H. Craven, Digital Equipment Corporation, Maynard, Massachusetts

BINSAVE will punch a specified system or user saved file in binary format. A four instruction patch will allow output to the ASR-33 teletype punch.

Minimum Hardware: Disk or DECTape
Other Programs Needed: Disk Monitor System (I/O Routine)
Storage Requirement: 0-2500
Source Language: PAL-D

DECUS NO. 8-245

Dynamic Octal Disk Debugger

Andrew S. French, Department of Physiology, University of Alberta, Alberta, Canada

This program allows fast efficient inspection and modification of any location on the disk using a visual output. Printout of all locations in a block and listing of directory, contents plus program type, number and starting SAM blocks are available. The program is entirely selfcontained and does not need MONITOR.

Minimum Hardware: LAB-8 and a DF32 Disk
Storage Requirement: 9 Core Pages
Source Language: PAL-D

DECUS NO. 8-246

DF32 Disk Routines

Garth Peterson, Institute of Atmospheric Sciences, South Dakota School of Mines and Technology, Rapid City, South Dakota

DCIO and DCNI are DF32 disk input-output subroutines which operate with the interrupt facility enabled and disabled respectively. Error checking is fairly thorough and includes address checks before each disk operation and write-lock

DECUS NO. 8-246 (Continued)

checks at the beginning and end of each disk write operation. Loading and calling of DCIO are limited to Field 0; loading and calling of DCNI may be in any field, but it must be the same field.

Minimum Hardware: PDP-8 or 8/I with DF-32 Disk
Storage Requirement: 1 page, each routine
Source Language: PAL-D

DECUS NO. 8-247

HELP: A Disk/DECtape Dialogue Program

David P. Weaver, Georgia Institute of Technology, Atlanta, Georgia

This program allows any message typed on the teleprinter to be SAVED and printed upon calling HELP.

Minimum Hardware: PDP-8, ASR-33
Storage Requirement: 118¹⁰ locations
Source Language: PAL-D

DECUS NO. 8-248

SABR - Coded Fast Fourier Transform Subroutine

Gerald N. Cederquist, Cooley Electronics Laboratory, University of Michigan, Ann Arbor, Michigan

Using the Fast Fourier Transform algorithm, this subroutine computes in situ either the direct or inverse discrete Fourier transform of a pure-power-of-two number of complex points. Written for use with the DEC 8K FORTRAN system, it runs in less time and takes less core space than the same algorithm coded in FORTRAN. It has been extensively tested and checked; for example, the subroutine will do a direct followed by an inverse transform of 128 points in 47 seconds with a round trip root mean square error of 1.23 parts per million.

Minimum Hardware: 8K PDP-8
Other Programs Needed: DEC 8K FORTRAN System
Storage Requirement: 5 pages plus 17 locations on page zero
Source Language: FORTRAN

DECUS NO. 8-249

Oscilloscope Vector Generator

J. H. Boardman, South Dakota School of Mines and Technology, Rapid City, South Dakota

This is a subroutine requiring exactly one page (128 words) of memory. Its purpose is to draw a linear vector from any point on an oscilloscope display to any other point. There are 5 arguments in the subroutine calling sequence which specify the starting point (X_1, Y_1), the ending point (X_2, Y_2) and a stepsize. The stepsize (range 1 to 7) determines the point density along the vector.

The ASCII tapes which are offered are with or without com-

ments. Please specify which tape you wish. The binary tape is a program which demonstrates the use of the oscilloscope Vector Generator Subroutine.

Minimum Hardware: PDP-8, EAE, Type 34-D Display
Other Programs Needed: User written main program
Storage Requirement: 128 words (1 page)
Source Language: PAL-D

DECUS NO. 8-250

Fast Fourier Transform (FFT)

Kenneth G. Pavel, Trinity College, Hartford, Connecticut

This program uses the Cooley-Tukey algorithm to perform a Discrete Fourier Transform on up to 1024 data points. Input is through a selected A-D channel. The sampling rate is either 0.01 seconds or on every clock pulse, depending on the switch register. The input waveform is displayed in a scaled manner, and then transformed. The final spectrum is viewed through a variable window which is under the control of A-D channels 34-36, and the switch register.

Minimum Hardware: LAB-8 or PDP-8 with AXØ8 and scope display
Storage Requirement: Approximately 3K of core
Source Language: PAL-D

DECUS NO. 8-251 and FOCAL8-60

A System for Production of Problem Sets with Individualized Data

H. Bradford Thompson, Department of Chemistry, University of Toledo, Toledo, Ohio

This system produces problem sets for use in science and mathematics instruction, in which input data are changed for each student. Two programs are involved, (1) a FOCAL program into which the instructor inserts the algebra required to perform the calculations, and (2) a program which accepts a text with data positions marked, and then inserts individualized data from the FOCAL program (without the answers) and prints the copies. The system will work on any family-of-8 machine for which FOCAL is available.

Minimum Hardware: PDP-8/I with ASR-33
Other Programs Needed: FOCAL (Any version)
Storage Requirement: 4K
Source Language: PAL III, FOCAL

DECUS NO. 8-252

PEEP - A Directory Search Program

J. M. Dickson, Rutherford High Energy Laboratory, Chilton, nr. Didcot, Berkshire, England

This program supplements the LIST option in the DEC PIP program. All the information contained in the DN and SAM blocks of a Disk or DECtape system can be accessed and typed out on the teletype as a complete list, or file-by-file as required. Other features are 1) a count of free blocks and

free files, 2) a dump of the contents of SAM blocks (in an 8 x 16 matrix), and 3) a 'halt' option, which allows the user to change the starting address (entry point) of a file to 7636. The program uses the Disk/DECTape Monitor System SYSIO to read and write on the system device.

Minimum Hardware: Disk(s) (32K) or DECTape
Other Programs Needed: Disk/DECTape Monitor System
Storage Requirement: 4K
Restrictions: Operates in Field Ø, and accesses the system device only
Source Language: PAL-D

DECUS NO. 8-253

Disk Dump on Scope

Brian Underhill, University of Colorado Medical Center, Denver, Colorado

This program displays disk data on the scope screen, a block at a time, in octal. A fast plot routine allows a refresh time of 52 milliseconds or less for minimum flicker. Other functions are available, including searches for strings of words, modification of single words or links on the disk, and hard copy on the teletype.

Minimum Hardware: PDP-8, 34-D Scope Display, DF-32 Disk (Any size)
Other Programs Needed: PDP-8 Disk Monitor System, System I/O Routine
Storage Requirement: Program 0-1377, Buffers 1400-7577
Source Language: PAL-D

DECUS NO. 8-254

Vector Algebra Package

Bryan D. Young, Department of Medical Cardiology, Glasgow Royal Infirmary, Glasgow, Scotland

This package is designed to operate with the Basic Three Word Floating Point Package (Digital 8-5-5) and enables the user to label three dimensional vectors (i.e. three consecutive three-word floating point numbers) by a single symbol. Its use is similar to that of the Floating Point Package in that vector operations can be initiated by a single instruction. The operation of addition, subtraction, dot product, cross product and modulus of vectors can be simply programmed and full input and output facilities for vectors are available.

Minimum Hardware: PDP-8, ASR-33
Other Programs Needed: Basic Three-Word Floating Point Package (Digital 8-5-5)
Storage Requirement: Loc: 2-4, 64-74, 5200-5577
Source Language: PAL

DECUS NO. 8-255

SCED: Scope Editor for the AXØ8

R. H. S. Carpenter, Physiology Laboratory, University of Cambridge, England

This scope editor for the LAB-8, offers fast and convenient editing of symbolic text. Lines may be selected by reference to their initial character, and a movable marker may be used to select particular portions of a selected line.

Minimum Hardware: PDP-8, AXØ8, High Speed Punch and Reader
Other Programs Needed: AXØ8 Symbol Generator (DECUS NO. 8-158)
Source Language: PAL III

DECUS NO. 8-256

Binary to RIM Format Converter

Paul Masson, Picker Nuclear, Montreal, Canada

In some cases it may be necessary to use memory locations between 7600 and 7755. The user program overlays the binary loader, and assembler output is in binary format. The binary to RIM Converter takes as input the assembled tape and produces a copy which can be loaded with the RIM loader.

Minimum Hardware: PDP-8 with High Speed Reader/Punch
Storage Requirement: 78 Memory Locations
Source Language: PAL-D

DECUS NO. 8-257

UCONN-EAP, Editor-Assembler

Gerald E. Zajac
Submitted by: Howard A. Sholl, University of Connecticut, Storrs, Connecticut

This program combines the functions of editor and assembler in one program so that the user can edit and assemble a source program in one operation. The assembler is compatible with PAL III and will also accept literals. The editor is similar to the PDP-8 Editors.

Minimum Hardware: PDP-5 or PDP-8 with Teletype, High Speed Reader is optional
Storage Requirement: 4K
Restrictions: Length of user's source program is two pages
Source Language: MACRO-8

DECUS NO. 8-258

NMRCAT-29: A Simplified Signal Averager Program

James W. Cooper, Department of Chemistry, State University of New York at Buffalo, Buffalo, New York

This is a time averaging program for the PDP-8/I computer

DECUS NO. 8-258 (Continued)

specifically designed for use with the HA-60 nmr spectrometer equipped with a digital frequency synthesizer. It generates a linear sawtooth sweep voltage which is used to drive the frequency synthesizer. The synthesizer then sweeps through a preset range at a rate controlled by the computer. The program also contains display, printout, plot, integration and calibration routines for examining the accumulated average.

Minimum Hardware: 4K PDP-8; ASR-33; AX08 Peripheral; nmr spectrometer and digital frequency synthesizer
Storage Requirement: 0-3, 20-127, 200-3115 and 4000-6777
Source Language: PAL III

DECUS NO. 8-259

Symbolic from Pass 3

M. T. Franklin, The Plessey Co., P. A. Laboratories, Titchfield, Fareham Hants, England

This is a program to produce a modified PAL III symbolic program tape from a previous pass 3 tape using the high speed input-output facilities of the computer. A list of changes, deletions and insertions are read into core store, then the pass 3 tape of the symbolic program to be modified is read on the photo-electric reader and a new symbolic tape is produced at the high speed punch.

Minimum Hardware: PDP-8, ASR-33, High Speed Reader and Punch
Storage Requirement: 1-11/21-1551
Miscellaneous: With some exceptions may also be used with MACRO-8
Source Language: PAL III

DECUS NO. 8-260

TOFAST - Fast Direct and Inverse Discrete Fourier Transform Routines

Peter L. Walton
Submitted by: Dr. William S. Yamamoto, School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania

TOFAST is capable of calculating in place either the discrete Fourier transform (DFT) of real series $\{y_j\}$, $j = 0, 1, \dots, N-1$, where $N = 2^M$ and $M = 3, 4, \dots, 10$, or the inverse discrete Fourier transform (DFT⁻¹) of the Fourier cosine and sine coefficients, a_k , $k = 0, 1, \dots, n$, and b_k , $k = 1, 2, \dots, n-1$, respectively, where $n = N/2$. Output of the DFT is the Fourier cosine and sine coefficients; output of the DFT⁻¹ is the real series. Several modifications are possible which allow for input and/or output to be complex-valued.

Minimum Hardware: 8K PDP-8, (EAE optional, depending on Floating Point Package version)
Other Programs Needed: Early version of DEC's FPP

Storage Requirement: Field 0: 20-37, 64-77, 200-277, 400-1377; Field 1: data array (200-)
Restrictions: Data array must have size 2^M , $M=3, 4, \dots, 10$
Source Language: MACRO-8

DECUS NO. 8-261

QUBIC

Tim Yeager, William Tennent High School, Warminster, Pennsylvania

'QUBIC' plays 3 dimensional Tic-Tac-Toe on an order-4 cube. The program is conversational and uses the Teletype for all I/O. Moves are typed in as 3 coordinates, and outputted using both coordinates and a Teletype printout of the playing board. The strategies employed in playing the game have been found to be extremely good, but the program can be beaten.

Minimum Hardware: 4K PDP-8, ASR-33
Storage Requirement: Locations 10 through 3143₈
Source Language: PAL III

DECUS NO. 8-262

Character Overflow Change to PDP-8 PAL 3

A. G. Price
Submitted by: Mrs. J. Manwaring, Documentation Processing Centre, Quay House, Manchester, England

During pass 3 of PAL 3 assembly listing, input text is accumulated a line at a time in high core. If more than 86 characters are contained on one line, overflow will occur into the area reserved for Binary Loader, since there is no check on the number of characters per line. This revision will inhibit storage of characters after the first 86.

Minimum Hardware: 4K PDP-8, ASR-33
Other Programs Needed: PAL III
Source Language: PAL III

DECUS NO. 8-263

XYPLOT - A Versatile Plot Routine for the D/A Converter

Eugene E. Wells, Jr., U. S. Army Electronics Command, Fort Monmouth, New Jersey

XYPLOT is a one page subroutine which scales, offsets, and simultaneously plots two integer arrays from any two data fields, using the D/A converter and a conventional x-y recorder. Incorporation of a programmed pen lift makes available to those users having the necessary additional hardware a point plot capability, selectable by properly setting bit zero of the variable PENFLG in the calling sequence. Loading of the additional 41 (octal) memory location program GENX, and setting of bit one of PENFLG allows a y-data array to be plotted versus locally generated, equispaced x-data, with the spacing interval user specified.

DECUS NO. 8-263 (Continued)

Minimum Hardware: PDP-8 with D/A Converter
Other Programs Needed: Floating Point Package III
(DEC-08-YQ3A-PB)
Storage Requirement: 1 page, plus 41₈ locations
Source Language: PAL-D

DECUS NO. 8-264

CLOCK - AX08 RC Clock or External Clock Frequency or
Period Measurement

Andre Laviron, INSERM, Hospital Neurologique, Lyon,
France

By option of the switch register this program will allow either
Frequency or Period measurement, normal RC clock rate, RC
clock slowed by 8, RC clock or External clock. Frequency
or Period is typed on the ASR33 every 2 seconds. Precision:
1/8000.

Minimum Hardware: PDP-8/1, AX08, ASR33
Other Programs Needed: Floating Point Package #2
Source Language: PAL

DECUS NO. 8-265

Teletype Parity Conversion Program

R. Lee, University of Kent at Canterbury, Canterbury, Kent,
England

This tape contains two programs. The first will convert a
symbolic tape in ASCII code with parity into one in ASCII
code without parity. The second converts a tape in ASCII
code without parity into one in ASCII code with parity. Us-
ing these programs on-line while typing a symbolic tape will
cause a teletype without parity to punch a tape in parity
code or vice versa. The programs may easily be converted
for use with a high speed reader and punch.

Minimum Hardware: 4K PDP-8, ASR33
Storage Requirement: 200-267
Source Language: PAL III

DECUS NO. 8-266

IBM Editor

Ted Glatke, Stanford University School of Medicine,
Stanford, California

This program provides editing service and 3000₁₀ character
storage for text from an IBM 2741 terminal. In the present
version, it also provides for punched paper tape storage of
materials to be listed on the 2741.

The program permits the following operations: (1) correction
of text by backspacing over the error and entering the cor-
rect character; (2) correction of a line of text by calling back
the line; (3) an unlimited number of listings of text stored in
the buffer; (4) paper tape output.

Peculiarities of the 2741 terminal, including time delays for
data control transfer and carriage travel after tabulation and
carriage return have been accommodated in the program.

Minimum Hardware: PDP-8, PT08, IBM2741 Terminal pl
options to change data transfer
rate and logic levels from PT08
(Options X and F)

Storage Requirement: 0000-0777₈ plus 1000₈-6777₈
for buffer

Source Language: PAL III

DECUS NO. 8-267

DARIC - Data Reduction in Columns

J. J. Antal, Army Materials and Mechanics Research Center,
Watertown, Massachusetts

DARIC is a formatting and computational program which pro-
vides for the reduction of one to six columns of data entered
at the ASR keyboard as a function of a single variable. Com-
putation is via the Digital floating point system through a
user's data reduction program, the writing rules for which are
simplified and standardized by DARIC.

Minimum Hardware: 4K PDP-8, ASR33
Other Programs Needed: Floating Point System (Version D)
and user's data reduction program
Storage Requirement: All but last page of memory
Source Language: PAL III

DECUS NO. 8-268

Miniloader and Miniloader Punch

G. J. Flanagan, The University of Newcastle Upon Tyne,
Newcastle Upon Tyne, England

This is a program which is designed to be loaded as easily as
possible from the switch register. Once loaded, the program
is capable of loading and starting any other program punched
in the correct form, though because of the lack of any check-
ing facility it would normally load a standard binary loader.
The miniloader format is such that, if the program is to be
loaded at the high-numbered end of the field, the length of
the tape is just over half the length of the same program
punched in RIM format.

Source Language: PAL

DECUS NO. 8-269

Morse Code Trainer

Jack Harvey, National Data Systems, Inc., Montvale, New
Jersey

This program will generate International Morse Code signals
as tones in the output to a digital to analog converter. (A
DAC is not required. Any flip-flop register program loadable
from the AC can be used.) It operates in three modes: 1)
Generate random five letter groups, 2) Send characters

typed on keyboard, 3) Send random characters and wait for correct response on keyboard. Speed, character spacing and character set are controlled from the keyboard.

Minimum Hardware: 4K PDP-8 plus flip-flop
Source Language: PAL III

DECUS NO. 8-270a

Disk-DECTape Utility Program

Garth Peterson, South Dakota School of Mines and Technology, Rapid City, South Dakota

The major functions of the Disk-DECTape Utility Program are to save and recover DF32 disk images on DECTape and to build a simple disk 0 to memory field 0 swapping system which allows user-written programs and data to share a single disk. Minor functions include establishing binary loaders, disk and DECTape bootstraps, and a RIM loader in core; depositing and examining messages on DECTape which identify disk images; and clearing DECTapes to all zeroes. Extended memory is desirable.

Minimum Hardware: PDP-8, TC01 DECTape, DF32 Disk
Storage Requirement: 1-3357 (instructions) 1-7577 (total)
Source Language: PAL-D

DECUS NO. 8-271

LIP - Logical "If" Package

Bryan D. Young, University Department of Medical Cardiology, Royal Infirmary, Glasgow, Scotland

LIP enables "IF" statements involving floating point variables to be written in a conventional manner within assembly language programs. The logical relations available are: GT(>), GE(>=), EQ(=), LE(<=), LT(<), NE(≠), logical AND, logical OR.

Minimum Hardware: PDP-8
Other Programs Needed: 3 word Floating Point Package (Digital 8-5-S)
Storage Requirement: 4, 5400-5577
Source Language: PAL-D

DECUS NO. 8-272

IOPACK - A Message and Number I-O Utility Package

Brian Barton and Kurt Metzger, University of Michigan, Ann Arbor, Michigan

IOPACK is one page long and contains: MESSAGE for printing messages, OCTIN and DECIN for inputting unsigned octal or decimal numbers; OCTOUT and DECOU for outputting unsigned octal or decimal numbers.

Minimum Hardware: PDP-8 with Teletype
Other Programs Needed: Teletype printing and reading routines
Storage Requirement: 200₈ locations
Source Language: MACRO-8

DECUS NO. 8-273

Algonquin Assembler

John Kiss, Algonquin College Technical Centre, Ottawa, Ontario, Canada

The purpose of this is to modify the Phoenix Assembler so that it will accept symbolic programs from the card reader, do all three passes automatically, load automatically after assembly, and execute automatically provided no error is found in assembly. No binary tape is punched.

In general the system is supposed to operate without human intervention.

Minimum Hardware: PDP-8, ASR33, Mark Sense Card Reader (HP2761A)
Other Programs Needed: Phoenix Assembler (DECUS NO. 5/8-28a)
Source Language: PAL III

DECUS NO. 8-274

Card Reader Patch to Phoenix Assembler

John Kiss, Algonquin College Technical Centre, Ottawa, Ontario, Canada

This patch, if added to the Phoenix Assembler (DECUS NO. 5/8-28a), will enable the user to enter symbolic programs on mark sense cards on the Hewlett-Packard 2761A Optical Mark Reader.

Minimum Hardware: Mark Sense Card Reader with serial ASCII code output, PDP-8 with ASR33
Other Programs Needed: Phoenix Assembler (DECUS NO. 5/8-28a)
Storage Requirement: 7402-7437
Source Language: PAL III

DECUS NO. 8-275

Grade Compiler

Mark H. Linehan
Submitted by: C. Hamblet, Governor Dummer Academy, Byfield, Massachusetts

The "Grade Compiler" is designed to handle the individual grades of a class of students. It performs the functions of calculating individual averages from typed-in data, storing the final averages and the two-letter code names, typing in alphabetical or rank order all the code names and their corresponding averages, making individual deletions, typing individual averages on demand, calculating the class average, and deleting all the stored data. It will handle up to two hundred and seventy code names and averages in a basic 4K PDP-8 system.

Minimum Hardware: PDP-8 with Teletype
Other Programs Needed: Floating Point Package #2
Source Language: PAL III

DECUS NO. 8-276

Core Editor

Anthony Bolton, Scribner Hill Road, Wilton, Connecticut

This program enables the user to debug his program in core and then get a binary write-out of the program by a simple command. The user can also write a program directly into core by using the insert command which increments the location referenced by typing a space. It has six other commands.

Minimum Hardware: 4K PDP-8, ASR33
Source Language: PAL III

DECUS NO. 5-277

ICBM

Leonard K. Berger, Washington University, St. Louis, Missouri

This is a game program which displays a flying saucer moving across the scope (at a speed which the user sets) and then a rocket is fired to try and shoot down the flying saucer. At any time during the display the program may be restarted by hitting the Return key. The program also has an exit at 7600₈ by hitting the Rubout key. This will go to the DECTape system if available,

Minimum Hardware: 4K PDP-5, ASR33, Type 34 Scope Display
Source Language: PAL III

DECUS NO. 8-278

Single Length Floating Point Package

R. J. Bedding and C. A. Charlesworth, Bath University of Technology, Claverton Down, Bath, Somerset, England

This Single Length Floating Point Package consists of a modified version of DEC-08-YQ1A-PB and is intended as an alternative where input and output accuracy is adequately served by single length working. Entry points and commands are identical with the standard double length version.

The program was developed for on-line calculation employing ADC's and DAC's and is meritorious for its increased speed of calculation.

Minimum Hardware: PDP-8/I and Teletype
Source Language: PAL III

DECUS NO. 8-279

Bar Chart Plotting Subroutine

G. L. Kermez and W. G. Peters, Texas Instruments Limited, Bedford, England

This program was written as part of the main operating program of a power transistor test system produced by the authors. The chart requires 7 constants for its construction. The table

can be as large as required. Many charts can be plotted from one table because the table is not altered in any way by the subroutine. This allows the drawing of a family of charts of one set of readings for different classes and numbers.

Minimum Hardware: 4K PDP-8/L, ASR-33
Source Language: MACRO-8

DECUS NO. 8-280

General Sorting Program

M. J. Raymond, Mullards, Southampton, Hampshire, England

This program will sort alpha-numeric records into ascending order. The user specifies the number of characters in each record and the number of records to be sorted on. Input/Output is via High Speed Paper Tape peripherals on the ASR33 Teletype.

Minimum Hardware: 4K PDP-8, ASR33
Source Language: PAL III

DECUS NO. 8-281a

Binary Tape Splicer ASR 33/75A

Ion Grove-White, University of Aberdeen, Aberdeen, Scotland
Revision by: P. Galen Lenhart, Vanderbilt University, Nashville, Tennessee

This utility program punches a length of leader tape and halts. It then transcribes binary tapes as they are fed in, without interruption on the output tape. It finishes by punching a new checksum and a length of trailer tape. Splicer tapes can be read into memory using the binary loader.

Minimum Hardware: PDP-8, ASR33 or 75A High Speed Punch and Reader
Source Language: PAL

DECUS NO. 8-282

C529: Paper Tape Conversion 5 Track (SIRIUS) to 8 Track (A.S.C.I.I.)

A. J. P. Gore, The Nature Conservancy, Merlewood Research Station, Grange-over-Sands, Lancashire, England

5 track paper tape is translated into 8 track paper tape by inverting the 5 track tape to make the 3 tracks and sprocket holes coincide with the corresponding facilities of the 8 track tape readers of the PDP-8.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, HSR/P
Other Programs Needed: Disk systems programs
Source Language: PAL-D

DECUS NO. 8-283

A.V.S.C. (Analysis of Variance, Single Classification)

J. N. R. Jeffers

Submitted by: A. J. P. Gore, The Nature Conservancy, Merlewood Research Station, Grange-over-Sands, Lancashire, England

This program computes the means, between-groups sum of squares and mean square, and within-groups sum of squares, mean square, and standard error for univariate data. Versions of the program are available for carrying out transformations on the data on input.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, H.S.R.
Other Programs Needed: FORTRAN D disk systems programs
Source Language: FORTRAN D

DECUS NO. 8-284

ASCO - Numerical Sort in Ascending Order

J. M. Sykes

Submitted by: A. J. P. Gore, The Nature Conservancy, Merlewood Research Station, Grange-over-Sands, Lancashire, England

This program sorts data into ascending numerical order.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, HSR
Source Language: FORTRAN D

DECUS NO. 8-285

Teletype Input-Output Package

Garth Peterson, Institute of Atmospheric Sciences, South Dakota School of Mines and Technology, Rapid City, South Dakota

This is a teletype control package containing subroutines for single-character input and output and for output of packed and open text. These subroutines are Single-field oriented, but provide for interrupt-enabled and disabled operation.

Minimum Hardware: PDP-8 with Teletype
Storage Requirement: One memory page
Restrictions: Modification required for PDP-8/S (Described in write-up)
Source Language: PAL-D

DECUS NO. 8-286

Two Patches for Disassembler with Symbols

Gary Coleman, The Taft School, Watertown, Connecticut

The first patch for DECUS NO. 5/8-18C (Disassembler With Symbols) allows the user to get a cross reference table of addresses which have been defined on the symbol table. It provides the user with the capability to trace a single address (or several addresses) through a program without having to

sift through many pages of other addresses. The second patch allows the disassembler to run on a PDP-8/S by replacing the illegal operate instructions with a legal instruction. This permits a PDP-8/S to accept 6 lettered symbols as opposed to 2 lettered symbols without this patch.

Minimum Hardware: PDP-8/S, ASR33, High Speed Reader
Other Programs Needed: DECUS NO. 5/8-18C and DECUS NO. 8-179
Source Language: PAL III

DECUS NO. 8-287

A PDP-8 Program to Provide Teletype Entry Into the IBM JET System

E. G. Baxa, Jr., Duke University, Department of Electrical Engineering, Durham, North Carolina

This program in effect uses the PDP-8 to simulate a teletype machine which is equipped with X-OFF, X-ON, and EOT features to accomplish entry into an IBM 360 computer with the Job Entry Teletype (JET) interface. Minimal requirements included as peripheral equipment to the basic PDP-8 are an alternate teletype with FORTRAN keyboard and a standard Dataphone Set. The program provides for teletype entry into the Jet System from the keyboard or paper tape reader. A teletype page print and/or tape punch record of the transmission is obtained.

Other Programs Needed: TUCC
Source Language: PAL

DECUS NO 8-288

GRAYCONV (Gray Code to Binary Code Converter)

Kees Bruin, Digital Equipment Corporation, The Hague, Holland

GRAYCONV converts a binary word in gray code from 1 to 12 bits to an equivalent binary word.

DECUS NO. 8-289

"ULKA" The Ultimate Kaleidoscope

Dr. A. S. French, University of Alberta, Edmonton, Alberta, Canada

"ULKA" is a true kaleidoscope program for use on the LAB-8 computer. Unlike other kaleidoscope programs "ULKA" is completely automatic. No user interaction is required to produce a dazzling array of patterns.

Minimum Hardware: LAB-8
Source Language: PAL-D

DECUS NO. 8-290

Skinny BIN Loader

Garth Peterson, Institute for Atmospheric Sciences, South Dakota School of Mines and Technology, Rapid City, South Dakota

This is a condensed paper tape binary loader, designed to avoid conflict with the TC01 DECTape Library bootstrap or with the disk data break.

Minimum Hardware: PDP-8 with Teletype, High Speed Reader is desirable
Other Programs Needed: RIM Loader
Source Language: PAL-D

DECUS NO. 8-291

Tape to Memory Comparitor (6-channel)

T. D. Brenig-Jones, Digital Equipment Co., Ltd., Reading, England

This program compares the contents of a 6-channel binary format tape with those of core memory, and prints any differences detected.

Minimum Hardware: 4K PDP-8, ASR33, High Speed Reader
Storage Requirement: 1 page, locations 7400 to 7577
Source Language: PAL III

DECUS NO. 8-292

Fast Fourier Transform and Fast Walsh-Fourier Transform

R. G. Smith, Carleton University, Ottawa, Ontario, Canada

Program 1 (FFT) computes the 512 point energy density spectra of two real signals using the Fast Fourier Transform algorithm. The FFT of a single complex signal may also be computed with minor modifications to the program. Program 2 (FWFT) computes the 512 point Fast Walsh-Fourier Transform of a real signal. Fixed point arithmetic is used throughout both programs for all computations. A hardware bit-inverter is employed for speed, and auto-ranging is used to decrease roundoff error.

Minimum Hardware: PDP-8 with EAE, A/D converter (at least 2 channels), Display System, External Interrupt and Hardware Bit-Inverter
Storage Requirement: 0-4177
Source Language: PAL

DECUS NO. 8-293

Atomic Coordinate Program

Kenneth B. Wiberg, Yale University, New Haven, Connecticut

This program facilitates the development of the atomic coordinates of a molecule with bond lengths and angles as

the input data. It contains facilities for rotating, translating and modifying coordinates, and will automatically insert secondary and tertiary hydrogens on a carbon skeleton. The resulting data may be punched on tape in a form which may be read back in at a later time.

Minimum Hardware: 4K PDP-8
Source Language: MACRO-8

DECUS NO. 8-294

Lettering Program

Peter L. Barnett and Joseph B. Scrandis, Computer Applications, Incorporated, New York, New York

This program produces large, easily read lettering on paper tape using either the high or low speed punch. All printed teletype characters are included, and non-printing characters are ignored. The letters are eight columns high and proportional in width. If used with the disk monitor system, the program will return to it if a Control/C is typed.

Minimum Hardware: PDP-8/1 with either high or low speed (teletype) punch
Storage Requirement: 200-1423
Source Language: PAL

DECUS NO. 8-295

COMBIN

A. Moses, Computer Application Engineering Company, El Paso, Texas

COMBIN is a combined loader for BIN and CBL paper tapes. The CBL format tapes described in DECUS NO. 8-26 can be loaded in about 75% of the time required to load equivalent BIN tapes. Therefore, many installations now have most of their tapes converted into CBL format. The problem was to have both a BIN and a CBL loader on the last page of memory so that they could be protected. As a sacrifice, the RIM loader is no longer on the protected last page of memory.

Minimum Hardware: PDP-8/L, 4K
Storage Requirement: 7600-7772
Restrictions: No High Speed Reader
Source Language: PAL

DECUS NO. 8-296

Edit Routine

J. Russell Lemon, United States Air Force, Rome Air Development Center, Rome, New York

This is a minimum length (slightly over 3 pages) edit routine capable of editing, reading into, reading out of and jumping to any core location. It accepts only valid inputs (octal only). Program input can be either ASCII, binary or RIM. Output can be ASCII, binary or RIM tape. The program can edit itself and is a useful tool for programming in machine language.

DECUS NO. 8-296 (Continued)

Minimum Hardware: PDP-8 and Teletype
Storage Requirement: 6760-7577
Source Language: Machine Language

DECUS NO. 8-297

TRACE

Kenneth B. Wiberg, Yale University, New Haven, Connecticut

TRACE resides in field 1 and operates in an interpretive fashion on programs in field 0. It combines many of the features of PALEX (DECUS NO. 5/8-55) and DDT as well as handling instructions to the floating point interpreter. Provisions are made for examining and modifying single word and also floating point entries. Locations and single word entries may be given symbolically or in octal form. TRACE gives a complete record of any desired portion of the user's program and will simulate the entire program including IOT's.

Minimum Hardware: 8K PDP-8
Storage Requirement: All of one field (normally Field 1)
Source Language: PAL-D

DECUS NO. 8-298

OCTMON - An Octal Monitor for the PDP-8 Computer

Peter Lemkin, National Institute of Health, Bethesda, Maryland

OCTMON is an octal debugging monitor for the PDP-8 that facilitates debugging for machines with several memory fields. It is relocatable within a field, and may be put in any field. It uses 1400 (octal) locations and 13 (octal) locations in page 0 of its resident field. It also uses 11 (octal) locations of any other field in which there is a breakpoint. Only one restorable breakpoint is allowed at any time and may be in any field. There are options to dump out sections of memory, punch and read bin tapes, enter octal numbers into memory, start the program being tested, and enter a number into the MQ. The monitor will work without EAE, extended memory and without DECTAPE/DISK systems.

Minimum Hardware: PDP-8
Source Language: MACRO

DECUS NO. 8-299

Latency Histogram and Calculation

Eugene S. Boyd, University of Rochester Medical Center, Rochester, New York

This program plots a histogram of, and calculates the mean and SD of the latency of a variable phenomenon, such as an evoked response. It finds either the maximum or minimum value within a defined region of the curve and measures latency from beginning of the sweep or some point of interest, such as a shock artifact. Groups of points, as in bimodal distributions, may be handled separately.

Minimum Hardware: LAB-8/I
Other Programs Needed: (DEC-08-YQ2A-PB and DECUS NO. 5/8-23B are incorporated in binary tape)
Storage Requirement: 4K
Source Language: PAL III

DECUS NO. 8-300

Noise Generator

H. -D. Schenk, Deutsche Forschungs - und Versuchsanstalt fur Luft - und Raumfahrt EV, Flughafen, Germany

This program, which is written as a subroutine, creates a pseudo-random voltage with a gaussian probability density function. Also the appropriate binary noise is available. The bandwidth can be selected by the programmer.

Minimum Hardware: 4K PDP-8, D/A Converter (#55), Digital Output Register (#30)
Storage Requirement: One page of memory
Source Language: MACRO-8

DECUS NO. 8-301

STOR: A Store Instruction for the PDP-8 Disk Monitor

Joseph Green, University of Alberta, Edmonton, Alberta, Canada

STOR provides a method for storing the disk monitor system on magnetic tape (unit 8) at the end of the working session, and for restarting the disk monitor at the beginning of a new session on the PDP-8.

Minimum Hardware: 4K PDP-8, DF32 Disk File, 32K, DECTape Drive
Source Language: PAL-D

DECUS NO. 8-302

Overlay Modifications to the Floating Point System Packages, DEC-08-YQYA

Peter L. Walton
Submitted by: Dr. William S. Yamamoto, School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania

This is an expansion of the present 4 floating-point packages into 24 different packages having capabilities of basic functions, extended functions, output controller, output formatter with 4 I/O functions, extended memory referencing ability and EAE utilization. Also an error in the present normalization routine is corrected.

Minimum Hardware: 8K PDP-8, EAE
Other Programs Needed: DEC-08-YQYA
Source Language: MACRO-8

DECUS NO. 8-303

Alterations of the Basic Floating-Point Package and Additional Subroutines

W. Roos, Philips Research Laboratories, Eindhoven, Netherlands

Using the basic floating-point package DEC-08-YQ1B, or the other existing versions, this package can only be called from instruction - and data field zero. For a PDP-8/I with extended memory it becomes necessary for additional subroutines to overcome this drawback.

Restrictions: Data and instruction fields must be the same. Addresses of additional subroutines must be locations 5, 6 and 7 of page zero
Source Language: PAL

DECUS NO. 8-304

Pseudo-Noise (P-N) Sequence Test

R. G. Smith, Carleton University, Ottawa, Ontario, Canada

This program can be used to determine the statistical characteristics of a pseudo-random sequence generator. The probability density function can be studied with the aid of an amplitude histogram, and measures of the "randomness" can be determined with correlation diagrams, sample function displays, and scattergrams. All diagrams are displayed on the CRT.

Minimum Hardware: PDP-8 with EAE, A/D Converter, CRT display
Storage Requirement: Program: 0-776; Data: 2001-5776; Axis points: 1001-2000
Source Language: PAL

DECUS NO. 8-305

PAL III Assembler Overlay for Card Reader Input

B. J. Little, Sandia Corporation, Livermore, California

This overlay replaces high speed reader input with card reader input. Character validity and data loss check is made on input cards. Error diagnostics allow recovery from most read and hardware error halts.

Minimum Hardware: PDP-8/I, ASR-33, CR-8/I. High Speed Punch optional
Other Programs Needed: PAL III Assembler (DEC-08-ASB1-PB)
Restrictions: Card input to be in Hollerith code
Source Language: PAL III

DECUS NO. 8-306

LDR - A One Pass Transparent Loader

Douglas Henry, Physics-Astronomy Department, Vanderbilt University, Nashville, Tennessee

LDR replaces standard Disk Monitor loader but never requires a second pass and is completely transparent. It is in two files: LDR, which is called by the user to start the load and .LDR, which does most of the work.

Minimum Hardware: 4K PDP-8, DF32, Teletype
Other Programs Needed: Disk Monitor head must be in core
Restrictions: Requires blocks 367-375 for scratch
Source Language: PAL-D

DECUS NO. 8-308

PDP-8 Morse Code Sender

Wayne L. Dohnal

Submitted by: Dr. William C. Orthwein, Southern Illinois University, School of Technology, Carbondale, Illinois

The program reads input from ASR keyboard or tape reader and translates all valid characters into Morse Code. Output in the form of a square audio wave is taken from D to A Converter #1 and fed into an audio amplifier. Invalid input characters are ignored by the program.

Minimum Hardware: 4K PDP-8, D/A Converter, audio amplifier with speaker
Restrictions: No input buffer in program - Keyboard input cannot be faster than code output
Source Language: PAL III

DECUS NO. 8-309

Patches and a Utility Program for LAB-8

Charles P. Merrill, Digital Equipment Corporation, Maynard, Massachusetts

This is a patch for the Basic Averager to allow the high speed punch to dump the ASCII values which are received after a T command in the first section.

Minimum Hardware: PDP-8/I or 8/L with AX08 (LAB-8)
Other Programs Needed: LAB-8 Basic Averager and Advanced Averager
Storage Requirement: 4K
Source Language: PAL III

DECUS NO. 8-310

BIN Punch for Extended Memory

Rainer Schongar, Siemens, Munich, Germany

This program is useful for simple loading of tested FORTRAN programs via the Binary Loader. The field instructions for the Binary Loader are automatically generated by this program.

DECUS NO. 8-310 (Continued)

In one field the Binary punch for extended memory shares the core memory with the Binary loader.

Source Language: PAL

DECUS NO. 8-311

Card to Tape Conversion with Diagnostics

B. J. Little, Sandia Corporation, Livermore, California

Converts cards punched in Hollerith code to paper tape punched in ASCII code on either high or low speed punch. I/O devices are operated at maximum speed. Character validity and data loss checks are made on input cards. Error diagnostics allow recovery from most conversion halts.

Minimum Hardware: PDP-8/I, ASR33, CR-8/I
Storage Requirement: Program: 0000-0600, Buffer: 0600-7600
Source Language: PAL III

DECUS NO. 8-312

DECTape Emulator

John Alderman, Applied Data Research, Atlanta, Georgia

This pair of patches to the Disk/DECTape Monitor Builder, and PIP, together with the FOCAL program for tape generation, will allow the TC-58/TU20 IBM-Compatible- Magtape unit to emulate a non-systems device DECTape for operation with the monitor. The coding also serves as a coding example for both interrupt and non-interrupt magtape handlers. The "Block" format is exactly that used by David Custer in "A Disk Simulator Using a Single Industry Standard Magnetic Tape Unit" published in DECUS Fall 1969 Symposium.

Minimum Hardware: 8K PDP-8, TC-58, TU20
Other Programs Needed: Disk Monitor System Builder and DF32 Disk System PIP, UIOF
Source Language: PAL-D

DECUS NO. 8-313

Obsolete

DECUS NO. 8-314

8K FORTRAN Library CR8/I Card Reader Input Routine

Rainer Schongar, Fa. Siemens AG, Munich, West Germany

This routine reads 12 row, 80 column punched cards by a simple FORTRAN statement (i.e., READ (3,10).... where 3 is the card reader Device Number) as well as by input from the teletype.

Minimum Hardware: 8K PDP-8/I, CR-8/I
Other Programs Needed: 8K FORTRAN System with modified Part 1 of Tape I (IOH with extended system transfer table)

Storage Requirement: 3 pages
Restrictions: A "CALL ECARD" is necessary to initialize the routine before the first use in a FORTRAN program
Source Language: SABR

DECUS NO. 8-315

Block-Modify

Rudi Stange, Digital Equipment GmbH, Munchih, West Germany

This routine allows examination and modification of specified Disk (DECTape) block contents. Input and Output is compact and space saving.

Minimum Hardware: 4K PDP-8, Disk or DECTape
Other Programs Needed: Disk Monitor
Storage Requirement: 2 pages plus one for buffer space
Source Language: PAL-D

DECUS NO. 8-316

CORR (Compute Correlation Matrix)

J. N. R. Jeffers
Submitted by: A. J. P. Gore, The Nature Conservancy, Lancashire, England

This program computes the means and standard deviations and the matrix of correlation of coefficients, for multivariate data. A separate version of the program transforms the data to their common logarithms before computing means, sums of squares, etc.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-317

EIG (Compute Eigenvalues and Eigenvectors)

J. N. R. Jeffers
Submitted by: A. J. P. Gore, The Nature Conservancy, Lancashire, England

The extraction of eigenvalues and eigenvectors is carried out by means of a group of programs, the intermediate stages of the computations being stored on the disk. The eigenvalues, and the associated eigenvectors, are extracted one by one, starting with the largest eigenvalue, and the process can be terminated as soon as sufficient eigenvalues have been extracted from the basic data matrix. The programs were designed to enable principal component and canonical variate analyses to be carried out.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-318

PART (Partitioning of Treatment Sums of Squares)

J. N. R. Jeffers
Submitted by: A. J. P. Gore, The Nature Conservancy,
Lancashire, England

PART is designed to enable the treatment sum of squares from an experimental design to be partitioned into any desirable set of orthogonal or non-orthogonal comparisons. The treatment effect, and the variance ratio are also computed for each comparison.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-319

RAND (Computation of Random Fractions)

J. N. R. Jeffers
Submitted by: A. J. P. Gore, The Nature Conservancy,
Lancashire, England

This program computes a designated number of random fractions in the range 0.0000 to 0.9999. The computed fractions represent a sample from a uniform distribution.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-320

MMMS (Calculation of Minimum, Mean, Maximum and Standard Deviation)

J. N. R. Jeffers
Submitted by: A. J. P. Gore, The Nature Conservancy,
Lancashire, England

This program calculates the minimum, arithmetic mean, maximum and standard deviation of any number of sets of up to 20 variables, presented in a standard order. It is intended as a simple method of summarizing multi-variate data, and is used as an auxiliary program for other multivariate programs, for example, the CCMP program.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO 8-321

REG-2 (Curvilinear Regression) REG-4 (Linear Regression)

Submitted by: A. J. P. Gore, The Nature Conservancy,
Grange-over-Sands, Lancashire, England

REG-2 - This program computes the values a, b and c for a second degree polynomial equation of the form: $Y=a+bX+cX^2$ where X and Y can represent any number of values.

REG-4 - Linear regression for simple linear, exponential and hyperbolic relationships.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-322

CCMP (Correlation of Components) and CVAL (Computes Values of Principal Components)

J. N. R. Jeffers
Submitted by: A. J. P. Gore, The Nature Conservancy,
Grange-over-Sands, Lancashire, England

CCMP calculates the correlation between two sets of components to produce a rectangular matrix of correlation coefficients. It can also be used to correlate two sets of variables for which the correlations within each set have already been calculated or are of no interest.

CVAL computes the values of the first n principal components for each of the original data points of the data matrix. It may also be used to compute the values of canonical variates.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-323

CRC (Convert Peak Heights on an Auto-Analyzer Chart to PPM and Percentage)

Pat E. Hodgson
Submitted by: A. J. P. Gore, The Nature Conservancy,
Grange-over-Sands, Lancashire, England

1) Converts standard peak heights to optical density; 2) Computes linear regression $y=a+bx$; 3) Converts sample peak heights (ppm concentration) to optical density and ppm; 4) Subtracts blank values, if any, from the samples; 5) Calculates percentage concentration.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-324

TSP - Trend Surface Plotting

J. N. R. Jeffers

Submitted by: A. J. P. Gore, The Nature Conservancy,
Grange-over-Sands, Lancashire, England

This program consists of a group of segments for which the output of one segment is the input of the next. It enables the significance of linear, quadratic, and cubic trend surfaces to be determined for each of a number of variables on the coordinates of their distribution in two-dimensional space. The significance of the various surfaces having been determined, the fitted surface can be plotted by means of a contour map on the teletype.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-325

SBSM - Calculation of Duplicate Sub-Samples from Primary Data

A. J. P. Gore, The Nature Conservancy, Lancashire, England

This program is designed for use following a standard sub-sampling routine. Such a routine takes duplicate sub-samples of materials which would be too laborious to sort completely. It specifically refers to mixed vegetation cropped from quadrats of given size but could be applied to any analogous sampling situation. A sub-sub-sampling procedure is incorporated to allow for materials within the sub-samples which are still too laborious to sort, in this specific instance, live and dead plant parts. The output data can be used in an analysis of variance to test for effects of both sampling and sub-sampling.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-326

MLWI - Malawi Land Use Survey Analysis

J. N. R. Jeffers

Submitted by: A. J. P. Gore, The Nature Conservancy,
Lancashire, England

This program was developed to undertake the analysis of the data from the Malawi Land Use Survey. It calculates the proportions and areas of land in each of 15 land-use classes, together with their standard errors. The proportions and areas in the broad classes of "cultivated," "uncultivated," and "uncultivable" are also computed, with the standard errors.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-327

CLAN (Cluster Analysis) and GRMN (Calculate Group Means)

J. N. R. Jeffers

Submitted by: A. J. P. Gore, The Nature Conservancy,
Grange-over-Sands, Lancashire, England

CLAN performs a cluster analysis on data for which the nearest neighbor to each individual point has been calculated. The Algorithm groups the points into clusters which contain a pair of mutually nearest points and all points which refer to points already included in the groups as their nearest neighbors.

GRMN calculates the means of groups of points selected from a larger matrix of points and variables. It is intended for the calculation of means of multivariate data which have previously been subjected to cluster analysis, so as to prepare the data for the next stage of the clustering process.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-328

NNAN (Nearest Neighbor Analysis) - OREG (Orthogonalized Regression Analysis) - OREH (Additional Orthogonal Regression Coefficients)

J. N. R. Jeffers

Submitted by: A. J. P. Gore, The Nature Conservancy,
Grange-over-Sands, Lancashire, England

NNAN computes, for each set of points, the nearest neighbor in n-dimensional space, and the distance to this neighbor.

OREG calculates the orthogonalized regression of one or more dependent variables on the principal components of up to 20 regression variables.

OREH, an auxiliary program to OREG, adds the corresponding orthogonalized regression coefficients for nominated components to give a single vector of standardized regression coefficients.

Minimum Hardware: 4K PDP-8/I, DF32 Disk, High Speed Reader
Other Programs Needed: FORTRAN D Disk Systems Programs
Source Language: FORTRAN D

DECUS NO. 8-329

TSS/8 FOCARL

Ted Emigh

Submitted by: Mark Bramhall, Digital Equipment Corporation,
Maynard, Massachusetts

FOCARL is an adaptation of FOCAL for use on TSS/8 systems. It offers all the power of FOCAL, plus several extra features, plus the ability to write long programs.

DECUS NO. 8-329 (Continued)

Minimum Hardware: TSS/8
Storage Requirement: 4K Disk file

DECUS NO. 8-330

TSS/8 ALGOL

University of Grenoble
Submitted by: James D. Bailey, Digital Equipment Corporation,
Maynard, Massachusetts

TSS/8 ALGOL is 4K ALGOL (DECUS NO. 8-213) adapted
for TSS/8. It is a compile and go system which, like 4K
ALGOL, permits most of the features of subset ALGOL 60.

Minimum Hardware: TSS/8
Other Programs Needed: TSS/8 EDIT for source program
preparation, also DECUS NO.
8-213
Storage Requirement: 8K Disk file

DECUS NO. 8-331

Roulette

Ronald Servi and Leslie Servi, Lexington High School,
Lexington, Massachusetts

This program plays a game of roulette. The user has 100
chips to start, with which he can bet on any number from 0 to
20. Three bets are allowed for every spin of the wheel on 1,
2 or 4 numbers.

Minimum Hardware: PDP-8
Other Programs Needed: CINET-BASIC (DECUS NO.
8-159)
Source Language: CINET-BASIC

DECUS NO. 8-332

The Civil War Game

Ronald Servi, Lexington High School, Lexington,
Massachusetts

This program, created to fulfill a U. S. History assignment,
presents a three month picture of the Civil War in the form of
a report to the commander-in-chief of the Union Army. The
player decides which strategy, amount of weapons, men and
money are necessary. The computer, in addition to playing
for the South, also determines what action takes place during
the war.

Minimum Hardware: PDP-8
Other Programs Needed: CINET-BASIC (DECUS NO.
8-159)
Source Language: CINET-BASIC

DECUS NO. 8-333

8K PAL-D Assembler for 4K Disk Monitor System

Charles H. Conley, Digital Equipment Corporation, Maynard,
Massachusetts

This 8K version of the PAL-D Assembler will assemble large
programs much more quickly than the 4K version.

Minimum Hardware: 8K PDP-8, DF32 or RF08 disk,
of DECTape
Storage Requirement: 8K
Source Language: PAL-D

DECUS NO. 8-334

KVEDIT

Edward Friedman and Evan Suits, Digital Equipment
Corporation, Maynard, Massachusetts

KVEDIT is the standard PS/8 Text Editor modified for scope
display. All normal editing commands are available as well
as three additional commands for display control.

Minimum Hardware: 8K PDP-8, DECTape or Disk,
KV8/I Graphics
Other Programs Needed: PS/8 Operating System
Source Language: PAL8

DECUS NO. 8-335

COLPAC

Mark Bramhall
Submitted by: Paul Scriven and Mark Bramhall, Digital
Equipment Corporation, Maynard, Massachusetts

COLPAC is an 8K to 12K version of FOCAL with many extended
and added instructions and routines. COLPAC is short for
Carleton On-line Language for Plotting and Arithmetic
Calculations.

Minimum Hardware: 8K PDP-8/I, KV8I, 8K PDP-8/L
BAO8 KV8L
Storage Requirement: 8K or 12K
Source Language: PAL

DECUS NO. 8-336

DECTape Library System Modifications

William Leal
Submitted by: Ernest Hayden, Speech Communications
Research Laboratory, Santa Barbara, California

The tapes and documents provided permit the PDP-8 user
running under the DEC-08-SUA1-LA DECTape Library System
to call in one program from another, and the ability to write
programs which may be executed, and, when completed, leave
storage undisturbed, much like the system programs. These
programs are called phantom programs. Users running under
DIGITAL-8-7-S Rev 7/25/66 may make use of the phantom