RSX-11/IAS SIG DECUS U.S. CHAPTER

THE MULTI-TASKER

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The Newsletter of the RSX-11/IAS Special Interest Group

Contributions should be sent to: Editor, The Multi-Tasker, c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 01752

European members should send contributions to: Colin A. Mercer, Tennant Post, High Street, FAREHAM, PO16 7BQ, Hants, England

Members in Australia or New Zealand should send contributions to: Clive Edington, CSIRO, Computing Research 314 Albert St., East Melbourne, VIC 3002, Australia

Letters and articles for publication are requested from members of the SIG. They may include helpful hints, inquiries to other users, reports on SIG business, summaries of SPR's submitted to Digital or other information for the members of RSX-11/IAS SIG.

All contributions should be "camera-ready copy" e.g. sharp black type in a 160x240 mm area (8 1/2" x 11" paper with 1" margins) and should not include xerox copies. If you use RUNOFF to prepare your contribution the following parameters have been found to be satisfactory:

.PAPER SIZE 60,80 .LEFT MARGIN 8 .RIGHT MARGIN 72 .SPACING 1

These parameters assume output on a lineprinter with a pitch of 10 char/inch. Adjust the parameters to maintain the same margins if another pitch is used.

TABLE OF CONTENTS

Columns

Articles

Special Sections

READ THIS FIRST

This is the last issue of volume 15. The combined date of May/June is misleading. We are not skipping an issue. Instead, the issue date is being advanced one month so in the future, the date reflects the month you receive the Multi-Tasker and not the month it is prepared. Because it is the last issue for FY '82, the annual DECUS forms are appended for you to reproduce and use.

See the article on RSX-11M V4.0 for some problems with on-line system generation of V4.0 using RSX-11M V3.2. Also, there are some notes on undocumented features in RSX-11M V4.0. This is hopefully the first in a series on RSX-11M V4.0. Please send any problems, hints, and thoughts to the Multi-Tasker ASAP so we all don't invent the same wheels.

SIG Leadership Changes

One of the reasons I find computers so fascinating is the high rate of change. Nothing stands still in this industry. But there is one part I would like to see never change - my friends at DECUS. Unfortunately, the change applies equally well to people as to machines and programs.

The RSX-11/IAS SIG is losing four of its best. More importantly, I will be seeing less of four friends: George Hamma, Margaret Knox, Jim McGlinchey, and Phillip Cannon. All are moving on to new frontiers inside and outside of DECUS.

George was recently elected to the U.S. Chapter Executive Board as SUG Coordinator. The demands of the new job require him to resign as RSX-11/IAS SIG Chairman effective July 1, 1982.

Marg finally got delivery of her new VAX and is moving into the VAX/VMS SIG. Again, she will be resigning from the Executive Committee on July 1.

Jim has started a new company, Ra Enterprises, which requires his full energies. He is leaving a large hole as RSX-11/IAS SIG Symposium Coordinator.

Phil is getting his wish and moving to the west coast. His new job will not use PDP-11's, so again, he is resigning on July 1.

All will be hard to replace, but one of the strengths of the SIG is a wealth of talent. Legare Coleman has been appointed by the Executive Committee as the new RSX-11/IAS SIG Chairman and Legare will be appointing others to fill the vacant slots.

I will miss Phil the most. George, Marg, and Jim will still be at symposia and doing what they do best: dressing up (down, some say) for the Magic sessions, making sure I find my room at night, keeping Digital honest about Fortran Debuggers, and help close down the suites on the last night.

But Phil must give up DECUS - at least for a while. Each of you owe more than you know to Phillip Cannon. Without him rounding up his band of rouges and staying up nights each symposium, there would probably be no such thing as tape copy. And without tape copy, you could not have CCL or virtual disks or SRD or WHO or the Tools. And without tape copy, your local user group might not exist. Phil contributed mightly to the Q&A sessions, was there when Magic started, and worked long and hard to help improve the DECUS library. Phil also has the distinction of being related to the second youngest DECUS member in the world and, given the hours he kept working for the SIG, married to the most understanding wife in the world.

The SIG has gone through turnover like this in the past and will go through it again in the future. But all of us owe a thank-you to these four for the last few years.

Ralph Stamerjohn
Multi-Tasker Editor (May 5, 1982)

Phone: (314) 694-4252 (3-5 pm, CST)

DIGITAL Responds to SPR Resolution

At the Spring 1981 DECUS Symposium in Miami, the RSX-11/IAS SIG passed a resolution calling for DIGITAL to publish all answers to all Software Performance Resports and all unanswered, raw SPR's from customers. The text of the resolution follows:

> "Given Digital Equipment Corporation's current policy of publishing only selected RSX/IAS SPR's and their responses, customers paying for this service are not promptly informed of possible errors, or their fixes. This results in degraded or incorrect system performance, or a duplication of effort to detect and fix problems."
>
> "Be it therefore resolved that Digital publish in each and every SPR for RSX, IAS, and associated layered products in the Software Dispatch as follows: all valid SPR's received by Digital on or before the tenth of each month, and not previously published, shall be published in the next month's Software Dispatch. Valid SPR's are those to which Digital is under contractual obligation to respond to. This resolution does not require publication of those SPR's for which non-publication has been requested by the submittor."
>
> "Be it further resolved that Digital publish each and every SPR response for RSX, IAS, and associated layered products as follows: all SPR responses mailed to a customer on or before the tenth of the month shall be published in the next month's Software Dispatch."
>
> "The SIG membership realizes that additional cost may be incurred to support this additional service."

In response to the resolution, DIGITAL has adopted the following new policy regarding what should be published in the Software Dispatch.

> "As a general practice, all answers to Software Performance reports communicating a 'Correction Given' or 'Documentation Correction' response should be published in the appropriate software publication (i.e. SOFTWARE DISPATCH). Answers communicating a response other that the above mentioned should be published only if the answer provides relief to multiple members of the user community (e.g. provides a workaround or bypass to a problem not correctable in the current release of the product)."

This policy statement is believed to be currently in effect for all Digital software engineering groups. The DIGITAL response covers only the second part of the resolution. DIGITAL will still continue the policy of not publishing raw SPR's.

From Five Years Ago

Gail Green
Multi-Tasker Historian

This month's "From Five Years Ago" covers both May and June 1977. The following two articles, concerning the SIG's 1977 efforts to improve the handling of SPRs, are fully reproduced. The articles provide some history on the current SPR problem.

> MAY 1977 (Vol. 7, No. 5) SPRs - Further Developments
>
> As part of our project to help improve the handling of SPRs by Digital, I have reviewed the current procedures related to the publication of SPRs, both raw and processed, in the Software Dispatch. In general, Digital does not publish articles resulting from SPRs that involve (1) unreproducible problems or problems for which insufficient information is provided, (2) user errors (although frequent user errors of a similar nature often generate articles clarifying the proper procedures), (3) unsupported software including superceded releases beyond the support termination date, (4) duplications of previously published information, (5) user-modified software, (6) suggestions, or (7) matters sensitive to the security of the system (e.g., an SPR that required publication of material that would permit the general user to access passwords of other users would not be published; rather, the solution would be distributed to field support personnel for transmission to affected sites.)
>
> Raw SPRs are not published if (1) they involve an unsupported version of the software, (2) the problem is invalid (e.g., the problem as stated reveals that the user did not apply previously published fixes), (3) the SPR as submitted is not reproducible or requires publication of more than one page of an attachment (the attachment must also be reproducible), (4) the problem has been published

previously either as a raw SPR or as a published article, (5) the problem is stated unclearly so as to confuse the reader and cause more difficulties, (6) the SPR is marked "Do not publish", (7) it represents a problem of very limited interest (for example, an SPR reporting a difficulty with RSX-11D V6B output on an LA180 attached to a PDP-11/34 would not be published because neither the 11/34 nor the LA180 is supported in V6B), or (8) the SPR is a suggestion only. A major problem with the publication of raw SPRs involves the submission of SPRs to SPR centers other than Maynard. These SPRs, mostly submitted from Europe, are forwarded directly from the receiving center to the maintainers (in Maynard for RSX-11M/S, in Reading for RSX-11D/IAS). Consequently, these SPRs are never seen in raw form by the group responsible for publication of the Software Dispatch and, as a result, only SPRs from North America are published in raw form.

Of the 44 SPRs sent to the SIG since the first of the calendar year, 39 had not been published in any form as of the March Software Dispatch and did appear to meet the criteria for publication outlined above. At the current time the Software Communications office in Maynard is researching these 39 SPRs to determine exactly how they were disposed of and what reasons were given for non-publication. I hope to have a report on the disposition of these SPRs within a few weeks, so that we can rationally re-assess the SPR publication policy of The Multi-Tasker. - Mark F. Lewis

JUNE 1977 (Vol. 7, No. 6) SPRs - Further Developments

As promised last month, we now have additional details, about what happened to the SPRs that met the criteria for publication, but were not published either in fixed or raw form in the Software Dispatch. We forwarded copies of these SPRs, which represented almost 90 percent of the SPRs sent to the SIG for publication in The Multi-Tasker. As soon as the procedures and guidelines for publication of raw SPRs have been revised, we will publish them. - Mark F. Lewis

Other May-June Highlights

* George Hamma provided a summary of RSX-11D directives as implemented in RSX-11M V2, for those undergoing conversion efforts.

* Mark Lewis criticized the new (one-year-old) format for DECUSCOPE and the value of the publication in the new format. The format had changed from a collection of user-written technical articles to a vehicle for society news and a forum for users with general, non-technical problems.

* The June issue included a questionnaire requesting feedback on the value of the DECUSCOPE publication and reaction to the possibility of subscription fees for SIG publications.

DECUS/RSX SIG Library News

Paul Tompkins
Library News Editor

Over the years, DECUS, through the DECUS library, and the RSX-11/IAS SIG, through the SIG tapes, have accumulated a huge set of useful software. If you have news about any of this software, please send to the Multi-Tasker c/o this column. This includes any problems discovered, patches to existing software, short notes on library submissions you found useful, or any other information you may have. Send submissions to Multi-Tasker - Library News, c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 10752.

Most Frequently Ordered DECUS Library Programs

During February 1982, the program/tapes most frequently shipped by the DECUS Library, on a world-wide basis, were as follows. The number in parentheses is the total copies shipped for the program.

1)	11-SP-18	(33)	C Language System
2)	11-370	(22)	DUNGEON: A Game of Adventure
3)	11-456	(21)	DUPLEX: Serial Communication Between Computers
4)	11-SP-10	(20)	RSX Special Collection #1
4)	11-SP-11	(20)	RT-11 Special Collection
4)	11-SP-12	(20)	RSX Special Collection #2
7)	VAX-6	(19)	SPICE2: General Purpose Circuit Simulator
7)	11-LR-2	(19)	RSTS-11 Library Tape #2
7)	11-SP-16	(19)	Symposium Tape from the PASCAL SIG, Spring 1980
10)	11-314	(18)	RT-11 RUNOFF, Version: M01-C, April 1980
11)	VAX-LIB-1	(17)	Special VAX Package
11)	11-LR-1	(17)	RSTS-11 Library Tape #1
11)	VAX-SP-1	(17)	Symposium Tape from the VAX SIG, Fall 1979
14)	11-417	(16)	MINC BASIC/FORTRAN IV, Virtual Terminal Support
15)	11-464	(15)	SPACE WAR: for Cursor Addressing CRTs
15)	11-SP-25	(15)	APL for RSX-11M and RSX-11M PLUS

New Submissions to DECUS Library

The following list of new and revised programs is condensed from the abstracts published each month in the DECUS U.S. Chapter Library Comittee newsletter "OFF THE SHELF". I will try to publish the complete abstracts for all of these during the next few months.

New Catalogs Available

The new DECUS 1982 library catalogs are now available. Your last issue of DECUScope had an order form. An order form is included in the Forms section of this newsletter. Paper catalogs are $3.00. Microfiche versions are available for free.

11-SP-6	DDT22: Mapping DDT/Sysaid Package (Revision) 600' Magtape (MA)	RSX-11D,M,S,IAS
11-SP-8	RSX/IAS Fall 1979 San Diego Symposium (Revision) 2400' Magtape (PA)	RSX-11M,IAS
11-SP-14	Fall 81 European RSX Tape (New) 2400' Magtape (PA)	RSX-11D,M,S,IAS
11-SP-18	C Language System (New) 2400' Magtape (PA)	RSX-11M V3.2
11-SP-19	Fall 80 Structured Languages SIG Tape (New) 2400' Magtape (PA)	RSX-11D,M,S
11-SP-20	Fall 80 European RSX-11 and VAX Tape (New) 2400' Magtape (PA)	RSX-11D,M,IAS
11-SP-21	Fall 80 RSX/IAS SIG Tape (New) 2400' Magtape (PA)	RSX-11D,M,S,IAS
11-SP-23	Spring 81 Canadian RSX-11 Tape (New) 2400' Magtape (PA)	RSX-11M V3.1,3.2
11-SP-24	Tektronix 8001/8002/8550 Communication (New) 600' Magtape (MA)	RSX-11D,M,IAS
11-SP-25	APL-11 for RSX-11M and RSX-11M+ (New) 2400' Magtape (PA)	RSX-11M,M+,IAS
11-SP-28	Fall 81 Canadian RSX-11 Tape (New) 2400' Magtape (PA)	RSX-11D,M,S,IAS
11-346	PASCAL Compiler Version: October 1981 (Revised) 600' Magtape (MA)	RSX-11D,M,IAS
11-421	Seven BASIC Games Version: Feb 1981 (Revised) 600' Magtape (MA), Floppy(KA)	RSX-11D,M,IAS
11-468	DOC: Document Output Program (New) 600' Magtape (MA)	Ind.(MAC,F4P)
11-470	VSV-01 Device Driver for RSX-11M (New) 600' Magtape (MA), Floppy (KA)	RSX-11M

11-473	FILES (New) 600' Magtape (MA), Floppy (KA)	RSX-11M V3.2
11-474	VT 152.TEC (New) 600' Magtape (MA), Floppy (KA)	Ind (TECO)
11-477	Calendar Printing (New) Floppy Diskette (KA)	Ind (PASCAL)
11-478	Roman Numerals to Arabic Conversion (New) Floppy Diskette (KA)	Ind (PASCAL)
11-479	PASCAL Record Management-11 Sept 81 (New) 600' Magtape(MA), Floppy(KA)	RSX-11M
11-480	HEX: Hexadecimal File Management Utility (New) 600' Magtape (MA)	RSX-11M V3.2
11-481	IFTRAN Precompiler for PDP-11 FORTRAN (New) 600' Magtape (MA)	RSX-11M V3.2
11-484	PLC: Programmable Logic Controller DRV (New) 600' Magtape (MA), Floppy (KA)	RSX-11M V3.2
11-485	TREAD: IBM Standard (RECFM=FB) Tapes (New) 600' Magtape (MA), Floppy (KA)	RSX-11M V3.2,3.1
11-487	DV11/3271 Driver for RSX-11M V3.0 (New) 600' Magtape (MA), Floppy (KA)(no manual on floppy)	RSX-11M V3.0
11-488	RSXPROM (New) 600' Magtape (MA), Floppy (KA)	RSX-11M V3.2
11-497	Floating Point & Math Package,LSI-FPP (New) 600' Magtape (MA)	RSX-11M V3.2
11-498	IAS105: VT105 FORTRAN Graphics Package (New) 600' Magtape (MA)	IAS
11-500	GENERAL: The Great War Game, Aug 81 (New) 600' Magtape (MA), Floppy (KB)	RSX-11M V3.2
11-502	PLOT-11M Version: V1.2, Oct 80 (New) 600' Magtape (MA)	RSX-11M V3.2
11-505	LSIRT:Real Time Operating System w/o MM (New) 600' Magtape (MA)	Independent

New Submissions to DECUS Library - Abstracts

DDT22: Mapping DDT/Sysaid Package
11-SP-6 (revision)

Version #: V03, January 1982
Author(s): Glenn C. Everhart, RCA, Mt. Holly, NJ
System(s): IAS, RSX-11D V6 or later, RSX-11M V3 or later, RSX-11S V3 or later, RT-11 V2 or later, BSX and MSX are provided.
Languages: MACRO-11, FORTRAN IV-PLUS

Documentation on magnetic media.
Media (Service Charge Codes): 600' Magtape (MA)

A debugging and PDP-11 system package (mainly RSX-11 oriented) is provided. A symbolic debugger, two operating systems-11, and several utilities are included. They run on PDP-11/03 through PDP-11/70 (possibly VAX also.)

DDT22 is a symbolic debugger with PDP10-like commands. It can run on any PDP-11 and handle all languages. It gives a large superset of ODT commands including instruction display, floating point, long integers, watchpoints, and NAMED addresses; can read symbol table files or debug disk images in RSX-11. DDT22 can be built totally nonprivileged and debug tasks from a separate task in RSX11M/M-PLUS (and probably VMS), requiring only 200 words or so of task space. Versions able to examine arbitrary memory can be built also by a powerful DDT build command file.

DDTSYM is a mod of the DEC flavor of DDT, allowing 22 bit space access but no other extras. GHASP is a generalized FORTRAN histogrammer/scatterplot maker. FPEM is a floating point emulator for 11M/11S (11M-PLUS?) systems that need no sysgen. When run (in its own partition, fixed), it makes the PDP-11 appear to have a floating point processor a la 11/45 except no F.P. traps. RSX-11 must not know about it, F4P must be built with F4PEIS in its OTS to use, and tasks need /FP switch. It has been used for years and currently has no problems.

VDDRV gives virtual, optionally encrypted disks for IAS/RSX-11D systems for all functions except task load. This permits use of secure databases by unmodified software, space management, handling foreign disks on part of a volume, etc.

NPUT and NGET are used to move fields of "n" bits from any bit address to any other bit address. DSKFIX is my handy old disk patcher (DDT is better at it!). DISOWN renames all tasks at the terminal and gives them to CO: allowing other copies to be run or users to log off. If the line that changes UCB is removed, DSO just renames tasks (Fine under M/M-PLUS). RCONEW is the locked file recoverer (still only single header).

BSX is a simple, tiny realtime exec for standalone use (or under RSX-11M) and MSX is a distributed exec for multiple PDP-11s (with some security kernel code). Both assume memory management and both run standalone, no DEC software included. One develops tasks with BSX or MSX emulating themselves under RSX-11 or IAS, then moves them to standalone systems. Use these if you can't afford RSX-11S

licenses.

Note: The following improvements have been made: bugfixes, various enhancements, support for RT-11 V4 and RSX-11M-PLUS V2, improved DDT generation.

Restrictions: DDT22 has not been tested under RSX-11M-PLUS V2 with I/O space enabled; support code is present but untried except in V1.

RSX/IAS Fall 1979 San Diego Symposium Tape
11-SP-8

Version #: 79 FASD
Author(s): Various
Submitted: Phillip H. Cannon, Science Applications, Inc., Oakbrook, IL
System(s): IAS V3.0, RSX-11M V3.1, 3.2
Languages: Various

Documentation on magnetic media.
Media (Service Charge Codes): 2400' Magtape (PA)
Format: DOS

This submission represents most of the material submitted to the RSX/IAS SIG at the Fall DECUS Symposium in San Diego for inclusion on the RSX/IAS Symposium Tape. There are 1,046 files using a total of 12,629 blocks and organized into 61 accounts. The file READT1.TXT in account [2,2] contains an abstract of programs on the tape. The account [2,2] contains command files that are helpful in installing the tape on your system. You will find mention of a second tape in account [2,2]. This will not be available until the Spring 1980 DECUS meeting in Chicago. However, the abstracts of the material on the second tape are in file READT2.TXT in account [2,2]. No guarantees are made as to the completeness, usability, or quality of the programs on the tape. The material has not been checked or reviewed and documentation may or may not be included.

The following is a very brief description of the programs to be found on the tape.

[300,*] TPC a neat program to replicate this tape, FORTRAN interface to FCS macros, some TECO macros, modifications to RUNOFF, use of illegal instruction trap in the RSX-11M executive, a version of SRD.

[365,1] SRD 5.0 from the FILES-11 working group in the RSX/IAS SIG.

[301,*] SELECT allows terminal oriented option selection, FORTRAN callable MATRIX routines, Inter computer communications programs (4800 baud) written in FORTRAN under 11M V3.1, V3.2 and uses TT: driver, Graphic representation of most of the control blocks in the 11M V3.1 pool space.

[302,*] MULTI-TREK multi terminal STARTREK (IAS), subroutine to make spooler requests, HANGUP hangs up modems not in use, search a file for strings, convert I/O error codes to ASCII strings.

[305,100] RUNOFF - latest version from DECUS Library.

[307,*] Contains programs to help you recover the files on a disk pack after a disaster (say parity error in storage bit map).

[310,*] Directories of past Symposium tapes that have comments about the type and quality of the software.

[312,315] 22 bit DDT, RSX-11M floating point emulator allows you to run F4P on a machine without floating point hardware, a program to give nicely formatted directory listings.

[323,*] Another set of commented directories of past symposium tapes.

[324,*] Primarily IAS accounting programs, plus a cross assembler command line scanner.

[325,*] An image processing utility and an image display driver and access package.

[340,20] A Keyword index program and template document generator.

[342,1] Teco version 35

[344,*] CCL a console command language that lets you define your own MCR commands on RSX-11M V3.2 (makes your system easy to use and can save pool space by reducing the number of installed tasks), a small RMDEMO for 11M V3.2, a system performance accounting package.

[357,*] The FORTRAN Cross-Reference program (XRF) and object module diss-assembler (DOB), are improved versions from the rall '77 SIG tape, a potpourri of correction files for new features in RSX-11M V3.2, routines for Digital Pathways' clock (TCU-130) and VOTRAX voice synthesizer.

Symposium tape from the European RSX Library Group
11-SP-14

Version _#: Fall 1981, Hamburg
Author(s): Various
Submitted: Roland Kessi, Swiss Institute for Nuclear Research, Switzerland
System(s): IAS, RSX-11D, RSX-11M, RSX-11S
Languages: Various

Partial documentation on magnetic media.
Media (Service Charge Codes): 2400' Magtape (PA)
Format: DOS-11

This tape contains the programs submitted by users at the European 1981 DECUS Symposium. The following is a very brief description of the programs to be found on this tape:

-Submissions from the Netherland

README.1ST of the NL-RSX SIG submissions

FORTRAN-IV-Plus verifier
A down line load utility
Utility to renumber labels in FORTRAN programs
Directory sorting program
Terminal simulator and FORTRAN debugging tool (IAS only)

-Submissions from Germany

RECFIL - recover deleted files
HELP for IAS (IAS only)
Implementing background tasks (IAS only)
Some useful TECO macros
Mini post mortem dump for RSX-11M

-Submissions from Switzerland

RSXLIB (CERN) library
A collection of macros to write device driver tables
Utility to take online system dumps
An additional page for RMD

-Submissions from Israel

FLECS - a FORTRAN preprocessor
SUPDUK - a structured macro library
An INCLUDE preprocessor

-Submissions from Hungary

A magtape ACP supporting foreign tapes

-Submissions from Training seminar notes

Notes of Stamerjohn's training seminar on ACPs

No guarantees are made to the completeness, usability, or quality of the programs on this tape. The material has not been checked or reviewed and documentation may or may not be included.

C Language System
11-SP-18

Version #: November 1980
Author(s): David Conroy, Martin Minow, Robert Denny, Charles Forsythe
Submitted: Martin Minow, Digital Equipment Corporation, Tewksbury, MA
System(s): RSTS/E V7.0, RSX-11M V3.2, RT-11 V3B, VAX/VMS V2.0
Languages: MACRO-11, C

Documentation on magnetic media
Media (Service Charge Codes): See ordering information listed below.
Format: DOS-11

"C" is a general purpose programming language well suited for professional usage. The DECUS "C" distribution contains a complete "C" programming system including:

- A compiler for the "C" language. The entire language is supported except for floating-point, macros with arguments, bit fields, and enumerations.
- A common runtime library ('standard I/O library') for "C" programs running under the RSX-11 or RT-11 operating systems. By using this library, "C" programs may be developed on one operating system for eventual use on another.
- A RSTS/E extensions library allowing access to all RSTS/E executive services.
- An RSX-11/M extensions library allowing access to all RSX-11/M executive services.
- More than 20 "C" programs, including a cross-reference lister for "C" programs, a lexical analyzer program generator, cross-assemblers for several microcomputers, and several games.
- Extensive documentation for the compiler and runtime libraries.

All software is distributed in source format. "C" may be built to run under RSTS/E V7.0, RSX-11M V3.2, RT-11 V3B, OR VMS V2.0 (compatibility mode). It may be modified to run on earlier versions of these operating systems.

For a description of "C", the reader is referred to The C Programming Language by Brial W. Kernighan and Dennis M. Ritchie, Englewood Cliffs, NJ: Prentice Hall, 1978.

Associated Documentation: The "C" language is described in Kernighan and Ritchie, "The C Programming Language" Prentice Hall ISBN 0-13-110163-3.

Note: One copy of the Release Notes (11-SP-18A) will be shipped automatically with all magtape requests.
- Order 11-SP-18 for the 2400' Magtape (PA)
- Order 11-SP18A for Release Notes (AA)

The following documentation is on the magtape:

- Order 11-SP-18B for the Reference Manual (EA).
- Order 11-SP-18C for Lex: A Lexical Analyser Generator Library (EA).
- Order 11-SP-18D for the Tool Library Reference Manual (EA).
- Order 11-SP-18E for the RSX-11M V3.2 Executive C Extensions Library (EB).
- Order 11-SP-18F for the Compiler and Library Software Support Manual (EC).

Working Group News

Elizabeth Bailey
Working Group News Editor

For the benefit of recent newcomers to the RSX SIG (as well as for my own benefit!) my first column will describe the purposes and current status of most of the RSX working groups. A few groups have been omitted for one reason or another; they will be covered in future Working Group Columns.

Several working group chairmen expressed a need for new members and new ideas. A list of working group chairmen was printed in the December/January 1982 issue of the Multi-Tasker. If you would like to participate in any of these groups, contact the appropriate working group chairman.

The TRAINING group tries to determine new topics for which training courses are needed. The SIG Steering committee makes some recommendations, but the working group also looks to the SIG membership for new ideas. This group did the planning for the pre-symposium seminars which were held in Atlanta.

The RSX UNSUPPORTED VERSIONS group was organized recently for the benefit of those users who, due to small system size or lack of funds, choose not to upgrade and therefore are still running RSX versions 3.0 or 3.1. This group will shortly pick up version 3.2 as well, since indications are that a number of users currently do not plan to upgrade to version 4.0. This group is trying to formulate a user to user support mechanism for patches and for adding some of the features available in the newer systems to the older systems. For example, an article describing some patches to support 9-character file name in FLX on versions 3.0 and 3.1 appeared in the March 1982 issue of the Multi-Tasker. Another activity in process is the compilation of a differences document to note the changes between different versions of RSX11M for users who may switch from one version to another.

Because there are substantial differences between the three RSX versions, this group plans to organize into three subgroups, one to handle each version. At the time of this writing (before the Atlanta symposium), a volunteer was needed to handle responsibility for version 3.2.

The SYSTEM PERFORMANCE AND ACCOUNTING group gathers material on performance measurement and optimization of RSX-11M. It became involved in accounting primarily for the purpose of monitoring system performance. This group has submitted programs on previous SIG tapes and presented sessions at previous DECUS symposia on performance measurement, performance monitoring, and system tuning. An enhancement package for RSX version 4.0 will appear on the upcoming SIG tape.

The DECUS LIBRARY group evaluates programs from the DECUS library. Approximately 30 programs have been distributed to working group members and are currently in the process of being evaluated.

The VIRTUAL DISKS group's purpose in life is to maintain and consolidate the implementation of virtual disk packages and keep them compatible. It is currently in the process of working on a virtual disk driver for RSX-11M/M+ which will allow the user to combine multiple devices or files into one virtual volume.

The IAS group is in an uncertain state at this time. It was originally started after DEC announced the non-support of IAS after June, 1983. Since DEC is reconsidering, this group is waiting on the final decision before evaluating the scope of its future activities.

The FILES-11 working group is alive but much in need of direction. The original intent of the group was to maintain SRD, a very nice utility because it sorted the directory entries and allowed wild character support. Version 4 of RSX/PIP now has wild character support so we need to redefine the current role and future focus of this working group.

The PROCESS CONTROL group works with computer control of industrial and manufacturing processes. Usually, although not always, this involves working with the ICS-ICR11 driver. The group provides two functions: a front for discussing the users' needs with DEC, and a user forum for exchanging information. A mailing list is available for the purpose of locating users who have implemented specific applications and specific equipment. Questionnaires have been sent to the people in this group in order to update the current status of each group member.

The SRD group's main goal is the creation of a "standard" reliable version of SRD which combines the useful features of the various SRD's currently in use. The working group will submit its version to the sumposium tapes and to the DECUS library. It will act as a point of contact for users with problem reports., recommendations, and modifications they wish to submit. Users will be informed via the Multi-Tasker where to find their version and what problems have been reported.

The working group members have not had the time to create a version for the Spring 1982 Atlanta tape, but they exptect to have a tested version on the Fall 1982 Anaheim tape.

Help Yourself

David DiGiacomo
Help Yourself Editor

"Help Yourself" is a place for you to get your tough questions answered. Each month, questions from readers will be published. If you have a question, send a letter to the Multi-Tasker - Help Yourself, c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 01752.

We would also like to publish the answers to questions. If you can help someone, contact the Multi-Tasker. Your answer will be sent directly to the person in need and published in the next edition.

Answers to Previous Questions

HP 7221 Support

Chris Doran of the Sira Institute had a partial answer for Randy Bialles's question about support subroutines for the HP 7221 plotter (December/January Multi-Tasker). He suggests three possible sources:

1. PLOT-21 from Hewlett-Packard. This package is quite cheap, but is written in HP 3000 FORTRAN and requires some conversion to run under RSX. The main problem is the large size of the object code.

2. Directory [310,135] on the Spring 1980 (Chicago) RSX SIG tape has some HP 7221 routines, also written in FORTRAN.

3. The "Plot Processor" from Sira Institute Limited (South Hill, Chislehurst, Kent BR7 5EH, England) interprets a device independent plotter command file and drives one of several output devices. It uses separately loaded device driver overlays (a la RMDEMO), and currently supports the HP 7221 and HP 2648A. The plotting functions provided include basic line-drawing, automatic scaling of data to user-specified units and a defined plotting area, rotation about any angle and position, extensive character set (ASCII, Greek, Cyrillic, APL, and mathematical symbols), and area fill.

ReGIS Color Output

Kreigh Tomaszewski reported that Houston Instruments replied to his question about ReGIS compatible plotters (November Multi-Tasker) with a letter stating that they will be soon be releasing a line of ReGIS compatible color pen plotters. He also received several answers to his question about auto-dialer software, some referring him to Martin Heller's DECUS library submission ("DUPLEX", 11-456 -- does not support auto-dialing).

Overlapped Seek for Small Disks

I was alarmed to find that the RL01/RL02 disk driver (DL:) simply spins in a tight loop waiting for the seek operation to complete before issuing a data transfer. Does anyone have a modified version of this disk driver that performs seek overlap? Also, does anyone have an RK05 driver that performs seek overlaps?

D. Bruce McIndoe, Computer Sciences Corporation, 8728 Colesville Road, Silver Spring, MD, 20904. Phone (301) 589-1545.

From the "Help Yourself" Editor

The RL11/RLV11 controller does not interrupt on seek complete (as the RK11 does), so that the driver has to loop to know when to initiate the data transfer. Overlapped seeks on multiple RL01/RL02's are possible, however, as described in the RL01/RL02 Disk Subsystem User's Guide, EK-RL012-UG-002. Also, some information on RK05 overlapped seeks appeared in the February 1977 Multi-Tasker. Does anyone have working V3.2/V4 compatible drivers?

Computer Automation Cross Assembler

Does anyone have a cross assembler for the Computer Automation LSI 2/20 to run on an 11/34 under RSX-11M?

Dirk Ourston, Northrop Corporation, Electro-Mechanical Division, 500 East Orangethorpe Avenue, Anaheim, CA, 92801. Phone (714) 871-5000.

Expanding IAS Node Pool

At the DevIAS meeting in January, Cliff Harvey, IAS product manager, announced that a group within DEC was working on a method of expanding the IAS node pool. Does anyone have more information about this rumor? We are in great need of many more nodes.

Jim Kelsay, U.S. EPA, MD-34, Research Triangle Park, NC, 27711. Phone (919) 541-3975.

From the "Help Yourself" Editor

A session named "IAS Node Pool Expansion" is scheduled for the Atlanta symposium (which has not taken place as of this writing). The session is being given by Digital. The Multi-Tasker will carry more information in the next issue.

RM80 Support Under IAS

The code to support RM80 disk drives is included in the IAS V3.1 DR: driver (this driver also supports RP07's, RM05's, and RM03's). Has anyone tried this out?

Jim Kelsay, U.S. EPA, MD-34, Research Triangle Park, NC, 27711. Phone (919) 541-3975.

Hints And Things

"Hints and Things" is a monthly potpouri of helpful tidbits and rumors. Readers are encouraged to submit items to this column. Any input about any way to make life easier on RSX/IAS is needed. Please beware that items in this column have not been checked for accuracy. Send any contributions to Multi-Tasker - Hints and Things, c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 01752.

Common RSX Spelling Errors

David DiGiacomo

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Philadelphia, PA 19104

Careful study of the RSX SIG tapes and the Multi-Tasker reveals that RSX "Wizards" find it almost impossible to correctly spell certain common words. Although chronic misspelling is a harmless vice among one's peers, it may inspire contempt (as opposed to the normal respect and/or awe) among callow "new users". I have compiled the following list in the hope of sparing our illustrious RSXperts from further embarrassment, and ask readers to send in their own favorites.

Compatible	Parameter	Separate
Delimiter	Privilege	Subterranean
Global	Receive	Supersede
Label	Retrieve	Weird
Mnemonic		

Visi-Disc

Colin Mercer

Prosig Computer Consultants Limited
Fareham, Hants
Great Britain

Background

At the 1981 European DEC Symposium, the subject of non-rotating electronic disks came up at the magic session. Such a device allows DMA block transfers to and from memory to allow very fast disk-like I/O. Anders Wahlberg of Sweden pointed out that Digital really made two different devices with these characteristics, the ML-11 and the VS-11. This note brings you up to date on current progress in the field.

As you know the original suggestion for a visual disc based on the VS11 was made by Anders Wahlberg during the RSX Magic Session at the DECUS Hamburg in September 1981. Since that time Anders has actually implemented the disc driver and can now see RSX swapping in living colour. It apparently adds a new dimension to crash dump analysis.

Actually seeing disc blocks being allocated and fragmentation happening appears to give users a better appreciation of what goes on at the physical level in a file system. Perhaps this will become yet another Essential Training Aid (ETA) or even a management Total Objective Yardstick (TOY) for disc performance monitoring.

It is possible the product will be marketed under the name Visi-Disc in Europe (and Visi-Disk in the U.S.A.). An annoucement is expected imminently. Effects upon the RSX community are being evaluated together with a research suggestion for a stero model.

A PO.E.M.

Blessings on thee, little crash,
Reducing all my work to ash.
With snapshots of the core
PMDing on the floor.
And your rudeness at TI:
Leaving 'fore I could say BYE.
Taking all my code from me;
Just when I'd purged my UIC

And gone back for a minor edit,
Little crash, that's when you did it!
Once more the deadline must be slashed...
Blessings on thee, little crash!

Andy Scincenteto

Upgrading to a New CPU

Ron Papajcik

Horsburgh & Scott Company
5114 Hamilton Avenue
Cleveland, Ohio 44114

We decided to upgrade our current RSX-11M V3.1 system to a more powerful configuration. We had stayed on V3.1 because our turnkey numerical control tape preparation software worked well enough and there was no advantage to upgrading to V3.2. We do anticipate an ungrade to RSX-11M V4.0. However, in the two and a half years we have used the V3.1 system, our needs for NC tape preparation have grown and we need more CPU power, more disk storage, and more terminals.

The original configuration consisted of a PDP-11/40, 2 RL01 disk drives, 128 KW MOS memory and 4 DL11-B serial line interfaces. The new system consists of a PDP-11/44, 2 RL02 disk drives, 256 KW MOS memory, and a DZ11-A. Since our most pressing need was more CPU power, I felt that we wanted to avoid a sysgen to upgrade to V3.2, since V4.0 would be available in another two months. Therefore, I wanted to take my DL11's and RL01's from the 11/40 and move them to the 11/44 in place of the new DZ11 and RL02's. Obviously, since I had not sysgened those devices into my V3.1 system, I could not expect them to function. However, I was hoping that a 11/44 CPU would run a system generated for a 11/40. Inquiries with the local DEC office did not offer a greate deal of encouragement. Generally, the attitude was either "It won't work" to "It cannot hurt to try, but don't be suprised if it does not work."

We bravely proceeded since we would save ourselves a great deal of work. After installing the 11/44, we cabled the RL01 drives into the 11/44 RL controller, leaving the drives physically in the 11/40 bay. We also moved the DL11's to the 11/44 backplane. We booted the system and it came up and ran fine. Two problems surfaced shortly. TT1: and TT3: were not working. After much research and effort we determined that the DL11 for TT3: had died during the move. Fixing TT1: proved to be more difficult. We determined that the TU58 interface on the PDP-11/44 had the same CSR address as the DL11. At first we attempted to patch RSX and move the DL11 CSR address and vector to some new location. That was only partially successful. Finally, we found the dip switch settings necessary to move the TU58 CSR address and vector. Moving the TU58 allowed our DL11 to answer and the system works fine.

Also, note that if you have a machine full of core memory, your local field service may be interested in working a trade-in of your core for a new MOS memory board. The savings in maintenance costs alone will pay for the cost of a the new MOS memory board.

Two Debugging Hints

Phil Miller

Century Computing, Inc.
1220 East-West Highway
Silver Spring, Maryland 20910

Monitoring Subroutine Calls

F4P routines compiled with any of the TR (trace) options generate a call to NAM$ (an OTS routine) upon entry. Thus, all subroutine calls in a task can be monitored with a single breakpoint on NAM$. When NAM$ is reached, the following information is available:

(1) The two words on top-of-stack contain the called subroutine name in RAD50.

(2) R5 is the argument list pointer.

(3) The current line number of the calling program is located at $SEQC. (This value is the exact line number for routines compiled with TR:ALL, the "block" line number for routines compiled with TR:BLOCKS, and is undefined for routines compiled with TR:NAMES.)

(4) The word at $NAMC points to the traceback list. The first entry describes the calling program, the next entry describes the caller's caller, and so on. Each entry in the list has the following format.

first word:	link to next entry
second word:	line number of next entry
third word:	first three characters of subroutine name (RAD50)
fourth word:	second three characters of subroutine name (RAD50)

The addresses of NAM$, $NAMC, and $SEQC will be reported in the TKB map if the object module list for TKB contains LB:[1,1]SYSLIB/LB:$NAM:$OTV/MA. Also, note that ODT has features for translating RAD50 (%) and for following pointers (@).

ODT in Operational Tasks

Tasks built with ODT are not appropriate for operational use because (a) it is not "friendly" to require the user to type the G after RUNning the task and (b) ODT tasks require "operator attention" when run from a command procedure. To work around this problem, some installations build every task twice: once as *.TSK for operational use and once as *.ODT with ODT for diagnosing problems. This awkwardness is caused by the missing RSX functionality to enable/disable ODT in an existing task file.

It is straightforward to write a program which tickles the task header on disk to enable/disable ODT. (The algorithm is described below.) With such a program, all tasks can be built with ODT and ODT can be logically disabled for operational use.

Disabling/enabling ODT involves manipulating the header block of the task file. The format of the task file is described in Appendix B of the Task Builder Manual. To disable ODT, move the task's initial value of R0 to offset H.IPC of the task's header block. The header block's virtual block number is at offset L$BHRB of the first virtual block. The initial value of R0 is in the header block, one word before the guard word, whose offset is stored at H.GARD. Note that if the initial value of R0 is zero, the task was not built with ODT.

To re-enable ODT, move the word at offset L$BXFR of the first virtual block to offset H.IPC of the header block.

From The Wizards Book Of Magic

The Magic sessions at the symposium have become one of the most popular features of the RSX/IAS SIG. This column has the same purpose: to exchange and discuss ideas on non-standard RSX and IAS programming. Readers are encouraged to submit items to this column and are also warned that the material here have not been checked for accuracy. Also, implementation of any items from this column will be completely unsupported. The material here is potentally dangerous: incorrect usage could result in system crashes and other incorrect system operations. Send any submissions to Multi-Tasker - Magic, c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 10752.

Rotating Lights for Machines Without Lights

David DiGiacomo

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Here is a program for those RSX users who have always wanted to have rotating patterns in their data lights, but have never had data lights on their CPU's. Instead of the data lights, LEDS lights in sequence those extra LEDs on the keyboards of your logged-out VT100's. As listed, LEDS attempts to rotate the LEDs once per second -- if you have many VT100's, you may wish to increase, reduce, or eliminate "rottim". Also, if you happen to have a gap in your terminal numbers (i.e. TT0:, TT1:, then TT23:), LEDs will not see the terminals past the gap.

LEDS uses R0-R4 to store information which may be of interest to those who like to snoop around with RMDEMO. Specifically, R0 is the currently assigned TT unit, R1 is the current LED number (ASCII), R2 is incremented on each pass, R3 is the last TT unit which actually had an escape sequence sent to it, and R4 is the number of I/O timeouts which have occurred (and I don't know why one would).

Although LEDS is essentially frivolous, it does provide a diagnostic function (it proves that the terminal and computer are active and connected properly), as well as a rough indication of system load. Note that the proper method for clearing the screen of a logged-out VT100 with LEDS running is to type <NO SCROLL> <SET-UP> <0>.

```
        .Title  LEDS
        .Enabl  LC
        .Ident  " 4 782"

;+
; LEDS by D. DiGiacomo
;
; This program rotates the LEDS on any logged-out VT100's in
; an RSX-11M system.  It requires the full-duplex terminal
; driver with most of the options.  Also, it looks at devices
; TT0:, TT1:, etc. until the ALUN$ fails, so weird situations
; will confuse it.
;
; TKB commands: LEDS/PR:0/-FP=LEDS,LB:[1,1]EXELIB/LB:EXEDF/SS
;               /
;               ASG=TT:1
;               PRI=1
;               STACK=16
;               TASK=LEDS
;               UNITS=1
;               //
```



```
;-
        .mcall  alun$s  astx$s  cmkt$   dir$    glun$   mrkt$
        .mcall  qiow$   wtse$

esc     = 33    ; ASCII escape char.
rotefn  = 1     ; event flag for rotation timer
rottim  = 1     ; rotation delay, seconds
trmefn  = 2     ; event flag for terminal I/O
trmlun  = 1     ; LUN           "
tmoefn  = 3     ; event flag for I/O timeout
tmotim  = 15.   ; I/O timeout, seconds

cmkt:   cmkt$   tmoefn          ; cancel I/O timeout marktime
glun:   glun$   trmlun,lunbuf   ; get terminal LUN information
rotmrk: mrkt$   rotefn,rottim,2 ; rotation delay marktime
tmomrk: mrkt$   tmoefn,tmotim,2,tmoast ; I/O timeout delay marktime
rotwat: wtse$   rotefn          ; wait for rotate timer

; Get terminal characteristics QIOW
gmcqio: qiow$   sf.gmc,trmlun,trmefn,,,,<gmcbuf,gmclen>

; Send LED escape sequence QIOW
rotqio: qiow$   <io.wbt!tf.wal>,trmlun,trmefn,,,,<rotmsg,rotlen>

; Cancel escape sequence I/O QIOW
kilqio: qiow$   io.kil,trmlun,trmefn

lunbuf: .blkw   6               ; LUN information buffer
gmcbuf: .byte   tc.cts          ; terminal characteristics buffer
gmccts: .byte   0               ; control-S, control-O status
        .byte   tc.ttp
gmcttp: .byte   0               ; terminal type
gmclen  = .-gmcbuf              ; characteristics buffer length

rotmsg: .ascii  <esc>"[0;"      ; LED escape sequence
rotled: .ascii  "1q"            ; ASCII LED no. goes here
rotlen  = .-rotmsg              ; length of escape sequence

        .even


LEDS:   mov     #'0,r1          ; initialize LED no.
        clr     r2              ; initialize pass no.
        clr     r3              ; initialize last terminal
        clr     r4              ; initialize timeout count
        clr     r5
        br      15$             ; branch around wait

10$:    dir$    #rotwat         ; wait for rotate timer
15$:    dir$    #rotmrk         ; start rotate timer
        inc     r2              ; bump pass count
        inc     r1              ; rotate LED
        cmp     r1,#'4          ; past LED 4 ?
        blos    20$             ; no, continue
```

```
        mov     #'1,r1          ; yes, restart w/LED 1
20$:    movb    r1,rotled       ; copy LED no. to esc. seq.
        mov     #-1,r0          ; start unit scan w/TT0:
30$:    inc     r0              ; next unit
        alun$s  #trmlun,#"TT,r0 ; assign LUN to TTn:
        bcs     10$             ; failed, wait for rotate timer
        dir$    #glun           ; get LUN info
        bcs     30$             ; failed, try next unit
        bit     #fd.tty,lunbuf+g.lucw   ; is it a terminal?
        beq     30$             ; no, oddly enough
        bit     #u2.log,lunbuf+g.lucw+2 ; yes, is it logged on?
        beq     30$             ; yes, try next unit
        dir$    #gmcqio         ; no,  get terminal characteristics
        bcs     10$             ; failed, wait for rotate timer
        bitb    #1,gmccts       ; is it in ^S state?
        bne     30$             ; yes, don't send escape seq.
        cmpb    #t.vl00,gmcttp  ; no,  is it a VT100?
        bne     30$             ; no,  don't send escape seq.
        dir$    #tmomrk         ; yes, start I/O timeout timer
        bcs     10$             ; failed, wait for rotate timer
        mov     r0,r3           ; set last terminal indicator
        dir$    #rotqio         ; send LED escape sequence
        bcs     10$             ; failed, wait for rotate timer
        dir$    #cmkt           ; cancel I/O timeout marktime
        br      30$             ; and try next unit

tmoast: tst     (sp)+           ; I/O timeout AST- pop event flag
        inc     r4              ; indicate failure
        dir$    #kilqio         ; and kill I/O
        astx$s                  ; back to main program

        .end    LEDS
```

Putting VIRTUAL Arrays in Common

Chris Doran

Sira Institute Limited
South Hill
Chislehurst, Kent
Great Britian, BR7 5EH

A drawback of FORTRAN's virtual arrays is that they may not be placed in COMMON and thus shared between subprograms, except by passing as arguments. This is not always convenient.

The object code produced by VIRTUAL declarations sets up a "mapped array" PSECT named $VIRT (see TKB manual, section A.1.8). The task builder's special processing of this psect always gives it a concatenated (CON) attribute, so virtual arrays are always local to the segments where they are declared. The patch described in this note enables the PSECT attribute to be changed to overlaid (OVR), placing all virtual arrays in a task into the same common area.

They are then globally accessible throughout the program. VIRTUAL then becomes a special case of COMMON.

There are two ways of doing this. The simplest is to alter the two words in TKB where the CON attribute is set. Add the following two lines to the task builder build command file (BIGTKBBLD.CMD):

```
GBLPAT=P3PRE:$PRCLM+4470:20344
GBLPAT=P3LBSR:$PRCLM+4470:20344
```

and rebuild TKB. All tasks built with the modified task-builder then overlay virtual arrays. The mapped PSECT type cannot be generated by programs written in Macro-11, so this should not affect any DIGITAL utilities, although other high-level languages possible use the facility.

A safer solution is to make concatenation or overlaying a TKB option. The three files below, IODAT.PAT, P2OPT.PAT, and PRCLM.PAT, applied to the respective TKB object modules implement a new "VARRAY" task builder option. The new syntax is:

```
VARRAY=CON      or      VARRAY=OVR
```

with the default being ths standard of CON. The PAT checksums are:

IODAT.OBJ	066245	IODAT.POB	014641
P2OPT.OBJ	124225	P2OPT.POB	064404
PRCLM.OBJ	115206	PRCLM.POB	007035

Note that consecutively declared arrays should not be assumed to be contiguous in memory. For example, statements VIRTUAL A(1000) in one program segement and VIRTUAL B(500),C(500) in another will overlay B and C onto A. But it is not correct to take C(1) as equivalent to A(501) as it would be with normal COMMON.

This idea has been used successfully with both F4P V3.0, and F77 V4.0 under RSX-11M V3.2. It has not been tried with FOR and the patches will probably be different under RSX-11M V4.0.

IODAT.PAT

```
        .TITLE  IODAT
        .IDENT  /28A/

; 28A   CJ Doran 26-Mar-82
;       Add globally accessible $VAROC for new VARRAY option.

        .PSECT
$$$=.
.=$$$+16
$VAROC::.WORD   CS$VAS*400!CS$TYP!CS$GBL!CS$REL,$VAROC  ;Default CON

        .END
```

```
        .TITLE  P2OPT
        .IDENT  /24A/

; 24A   CJ Doran 26-Mar-82
;       Add VARRAY option

        .PSECT
$=.
.=$+26
        JSR     PC,INIT                 ;Initialize, including $VAROC
.=$+354
$P2OPE:
.=$+612
INIT:   MOV     #CS$VAS*400!CS$TYP!CS$GBL!CS$REL,$VAROC ;Default CON
        JMP     $STOPT                  ;Set other defaults and return

        .PSECT  ARGBLK,D,GBL
$$=.+220
.=$$
        .WORD   $RR                     ;1 Radix-50 parameter

        .PSECT  OPTBLK,D,GBL
$$$=.
.=$$$+466
        .RAD50  /VARRAY/                ;Option name
        .BYTE   1,1                     ;Always one parameter
        .WORD   $$,VARRAY               ;Action routines
$KWRDE::

        .PSECT  OPCD$I,I,GBL
$$$$=.
.=$$$$+1726

; Process new option
; VARRAY=CON or VARRAY=OVR

VARRAY: CMP     @R5,#^RCON              ;Is it CON
        BEQ     SETCON                  ;Yes, go set flags
        CMP     @R5,#^ROVR              ;No, must be OVR
        BEQ     SETOVR                  ;Yes, go set flags
        MOV     (PC)+,R3                ;Else load error message
        .BYTE   E$R29,S$V1              ; "INVALID KEYWORD"
        JMP     $P2OPE                  ;Print error and try next line

SETOVR: MOV     #CS$VAS*400!CS$TYP!CS$GBL!CS$REL!CS$ALO,$VAROC  ;Set OCT
        RTS     PC

SETCON: MOV     #CS$VAS*400!CS$TYP!CS$GBL!CS$REL,$VAROC         ;Set CON
        RTS     PC

        .END
```



```
        .TITLE  PRCLM
        .IDENT  /07A/

; 07A   CJ Doran 26-Mar-82
;       Set mapped array PSECT type to OVR or CON as set by new
;       VARRAY option.

        .PSECT
$$$=.
.=$$$+4474
        MOV     $VAROC,C$SFLG(R1)       ;Set flags

        .END
```

RSX-11M V4.0 Release Notes (continued)

Ralph Stamerjohn
Multi-Tasker Editor

RSX-11M V4.0 is out! This version is good! Digital has done an excellent software engineering job, even to the point of changing all messages to upper/lower case. By the time you read this, you should have gotten your kit if under warranty support or on auto-update subscription service.

This is the first in a series of articles on RSX-11M V4.0 problems, hints, undocumented features, and other information. If you find something about RSX-11M V4.0 you did not know about, send a note to the Multi-Tasker so everyone else finds out also.

1.0 SYSGEN PROBLEMS

The only problems reported to date are small errors in the .BLD files in [1,20]. The problems will only occur if doing a V4.0 system generation under V3.2 and following the release note procedure to update V3.2 INDirect MCR (section 3.2.2, page 30).

The problems are that some of the .BLD files have .DATA statements which do NOT have a space following the .DATA. This causes a syntax error to IND and terminates the SYSGEN command file. In some cases, the problem is the .DATA statement is followed by a return (<CR>). These lines can be fixed by appending a space to the line. In other cases, the .DATA statement is followed by a horizontal tab (<TAB>). These lines can be fixed by changing the tab to a space.

Joe Sventek did an exhaustive search on [1,20]*.BLD and found the following files need to be editted (note, because of conditionals, not all files may generate an error for a particular generation):

```
[1,20]ACNBLD.BLD
[1,20]CFLBLD.BLD
[1,20]FTBBLD.BLD
[1,20]MCRBLD.BLD
[1,20]RMDBLD.BLD
[1,20]SAVBLD.BLD
[1,20]VMRBLD.BLD
```

2.0 PROBLEM RUMORS

It has been reported that on PDP-11/24 and PDP-11/44 processors with dual RL02 controllers, the second controller will not work. I do not have this configuration and cannot verify it. If anyone can, I would like to hear from you. I am told Digital is working on the problem.

3.0 DOCUMENTATION ERRORS

The SYSGEN manual has a few errors. The most glaring I have found so far is question 5 (EAE support) in the Target Configuration section (page 4-14). The explanation states that "This question does not appear if the target processor has a memory management hardware (KT-11) or is not a UNIBUS PDP-11 (for example, a PDP-11/03, PDP-11/23, and LSI-11). **SYSGEN automatically includes EAE support for those systems.**"

In fact, the opposite is true. EAE support cannot be selected for those systems because the EAE is not supported on this system. SYSGEN does work correctly, only the documentation is wrong.

The Executive Reference Manual documentation for the new STIM$ directive (Set System Time) states on page 5-195 that "When this directive changes the system time by a specified amount, it also effectively changes the time anything resident on the clock queue by the same amount. Thus, time synchronization of events is maintained."

I believe this statement is incorrect. I examined the module DRGTP where the directive is processed and can find no code that updates the clock queues. Even if it is, I am not sure what it means. If I use the directive to change the time back one hour, does my mark time due to elapse in 10 seconds get changed to go off in 1 hour and 10 seconds or still go off in 10 seconds? Can anyone confirm my belief that the code only changes the time and date and has no effect on the clock queues?

The manual set I received had only an update for the Macro-11 Reference Manual (AD-5075B-T1). However, my RSX-11M V3.2 Macro-11 Refernce manual is order number DEC-11-OIMRA-B-D. The only problem this caused was a skew in the table of contents from page iv to v. The contents now jump from section 6.8.1.2 to section 7.3.5.

4.0 UNDOCUMENTED FEATURES

All releases of RSX-11M have undocumented or documented but hidden features. It is a great game to find them out. For example, I always use OPEn to patch a 777 at the start of CSI$2 in every utility. I then find the switch table address and dump it with OPEn to find any undocumented switches. So far, I have seen or heard about the following and would like any additional input.

4.1 Machine-Readable Manuals

The help files in [1,2]HELP.ULB are incredible. In fact, they are so good that machine-readable manuals on MCR, DCL, Indirect MCR, Executive directives, all Utilities, ODT, FCS, RMS, ERRLOG, and System-Library routines can be generated. You can simply extract and print the help files or get carried away like me and actually use Runoff to pretty-print them. My basic procedure was to use the BUILD module in [1,2]HELP.ULB to extract all the modules, edit the root modules MCR.HLP and DCL.HLP into files on MCR commands, DCL commands, RMS and its utilities, Indirect MCR, Utilities, and general documentation (directives, FCS, system library routines).

I then use the command file below to build the various master Runoff help files. The command file changes all help keywords in header levels, strips leading blanks, processes blank lines in paragraphs, converts synonyms into forward references, and processes lines starting with tabs as literals. Note, two of the help files had lines longer than 80 characters which causes the command file to terminate. One was RMS.HLP which had two such lines. Unfortunately, I cannot remember the other file or the lines in question.

The resulting Runoff files took about two days to edit the exceptions into pretty formats, but once done we printed 50 copies (including microfiche sets) and are now thinking of cutting our manual set order in half.

```
.ENABLE SUBSTITUTION
;
; Edit .HLP file into Runoff format.
;
;       Assume all help files have  been extracted  from HELP.ULB
;       and are in this account. If not, type ^Z to next question
;       and setup help files.
;
.ASKS HLPF Name of master  help  file
.ASKS OUTF Name of Runoff output file
;
;       We will now pause so you can edit this file. You may want
;       to reorder some of the text or remove some. When finished
;       continue the command file.
;
.PAUSE
;
;       Starting processing...this will take some time.
;
.OPEN  #0 'OUTF'.RNO
.;
.SETN  FN 1
```

```
        .OPENR #'FN' 'HLPF'.HLP
        .;
        .SETF LITRL
        .SETF BLINE
        .;
        .; Read next input line.
        .;
.NXTLN: .READ #'FN' LINE
        .;
        .; Check for EOF and pop up to previous file if done.
        .;
        .IFF <EOF> .GOTO DISPT
        .CLOSE #'FN'
        .DEC FN
        .IF FN = 0 .GOTO IDONE
        .GOTO NXTLN
        .;
        .; Get first character and dispatch on type of line.
        .;
.DISPT: .SETS CHAR LINE[1:1]
        .IF CHAR = "    " .GOTO TABLN
        .IF CHAR = " "    .GOTO SPACE
        .IF CHAR = "@"    .GOTO INDIR
        .IF CHAR = "#"    .GOTO SYNOM
        .IF CHAR = "1"    .GOTO HEADL
        .IF CHAR = "2"    .GOTO HEADL
        .IF CHAR = "3"    .GOTO HEADL
        .IF CHAR = "4"    .GOTO HEADL
        .IF CHAR = "5"    .GOTO HEADL
        .IF CHAR = "6"    .GOTO HEADL
        .IF CHAR = "7"    .GOTO HEADL
        .IF CHAR = "8"    .GOTO HEADL
        .IF CHAR = "9"    .GOTO HEADL
        .IF LINE = ""     .GOTO BLANK
        .;
        .; Output normal lines as normal. If in literal, come out.
        .;
.NORML: .IFT  LITRL .IFT BLINE .DATA #0
        .IFF  LITRL .IFT BLINE .DATA #0 .P
        .IFT  LITRL .DATA #0 .END LITERAL
        .SETF LITRL
        .SETF BLINE
        .DATA #0 'LINE'
        .GOTO NXTLN
        .;
        .; Output lines starting with tabs as literals.
        .;
.TABLN: .IFF  LITRL .DATA #0 .LITERAL
        .IFT  BLINE .DATA #0
        .SETT LITRL
        .SETF BLINE
        .DATA #0 'LINE'
        .GOTO NXTLN
        .;
        .; Flag a blank line seen. It will be output later.
```



```
        .;
.BLANK: .SETT BLINE
        .GOTO NXTLN
        .;
        .; Remove any leading spaces from input line.
        .;
.SPACE: .TEST LINE
        .SETS LINE LINE[2:<STRLEN>]
        .SETS CHAR LINE[1:1]
        .IF CHAR = "    " .GOTO TABLN
        .IF CHAR = " "    .GOTO SPACE
        .IF LINE = ""     .GOTO BLANK
        .GOTO NORML
        .;
        .; Get indirect help file and chain to new file.
        .;
.INDIR: .TEST LINE
        .SETS LINE LINE[2:<STRLEN>]
        .INC  FN
        .OPENR #'FN' 'LINE'.HLP
        .GOTO NXTLN
        .;
        .; Output help keywords as header levels and set blank line.
        .; Also output to terminal so we know something is happening.
        .;
.HEADL: .IFT  LITRL .DATA #0 .END LITERAL
        .SETF LITRL
        .SETT BLINE
        .DATA #0 .HL 'LINE'
        ; .HL 'LINE'
        .GOTO NXTLN
        .;
        .; Output synoymns as line refering to actual text.
        .;
.SYNOM: .IFT  LITRL .IFT BLINE .DATA #0
        .IFF  LITRL .IFT BLINE .DATA #0 .P
        .IFT  LITRL .DATA #0 .END LITERAL
        .SETF LITRL
        .SETF BLINE
        .TEST LINE
        .SETS LINE LINE[2:<STRLEN>]
        .DATA #0 See section 'LINE' below
        .GOTO NXTLN
        .;
        .; All done, close output file. You will still need to make
        .; edits to get the format correct.
        .;
.IDONE: .CLOSE #0
```

4.2 EGCML

In the help files on system libraries are notes on EGMCL form of the Get Command Line modules. This extended form has some nice extensions like indirect command file extraction from user libraries, control of terminal timeout, and write with break through of Control-O terminal state.

4.3 INDSYS.CLB

In [12,10] on the distribution kit is a file INDSYS.CLB. This file is a library of neat Indirect MCR command files, which again is documented in the help files. Among the contents are the following:

* INDDMP dumps all defined symbols and values to TI:!
* INDPRF fully parses filename specifications!
* INDCFG displays the current build parameters of Indirect MCR.
* INDSFN returns system configuration status ($FMASK).
* INDVFY displays all values on indirect special symbols.
* QIOERR outputs an ASCII message, given the error code.

5.0 THINGS NEEDING INVESTIGATION

My one week with RSX-11M V4.0 has wetted by curiosity in several areas. I want any and all inputs, no matter how trivial you may feel they are. But here is a list of areas I am especially interested in publishing in the Multi-Tasker. If you get into any of them, please write up a note and send to the Multi-Tasker.

* The release notes talk about an interactive introduction to RSX-11M for getting new people started. I would like to hear from new users on how effective they found this.
* I would like to hear from anyone who has never seen RSX-11M before and is starting with RSX-11M V4.0. How do you find it? What things did you not understand?
* I would like to hear from anyone coming from a version older than V3.1. How great is the jump skipping directly to V.40?
* If someone has only RK05's, what is a system generation like?
* What are external headers?

* What are ancillary control devices?
* RSX-11M V4.0 seems to have invented a language for describing devices to error logging. If anyone adds a user-written device, I would like a note on how you did it.
* The DCL implementation uses a table-driven parser that seems to be quite fully documented. Also, all sources are available. If anyone adds new DCL commands or modifies current commands, how did it go?
* If anyone has a technique, especially an automated procedure, for generating loadable drivers with loadable data bases, how do you do it? Along the same line, I am interested in any techniques that allow the same system and privilege tasks to work on systems with different devices. There must be a way to generate a 22-bit executive that works on PDP-11/24's, 11/44's and 11/70's that only differ in their devices and amount of memory.
* Does BRU work? Would someone like to volunteer to run a set of worst case tests on BRU, doing things like save and restoring directories with thousands of files, large multi-header contiguous files, and any other conditions that can be dreamed up.
* The executive commons move a lot, but there might be other code that could move to open up even more pool. Is there? It seems to me that CRASH and ERROR might be obvious modules to move out of the low core executive.

The Journey from RSX to VMS -- Part II

Site Prep and New User

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Site Preparation

Digital Field Service promptly arrived to do our site survey and preparation guide for the VAX installation. The goal of their report is to cite their requirements for power, air conditioning, space, and facilities. Our site is fairly straight forward since we already have DEC equipment:

1. existing air conditioning is more than adequate (some would say it is an arctic zone...)
2. existing filtered power will handle the VAX, although during the cutover period the PDP-11 will be on unfiltered power. A large box will be added to hold the VAX circuit breakers.

3. all new receptacles for the VAX to plug into (for power) are needed. There is a phenomenal number of different type plugs needed (5 for us!). Since we have a raised floor, I decide to have the receptacles placed on rubber cords rather than wall mount them. This way we can move the VAX easily. By the way, the Site Prep Manaul (May 1981) has some boo-boos in it: 11/780 CPU expansion cabinet uses an "E" connector not a "B"; and the TU77/78 does require power ("Ç"). Be sure to check with field service before you have contractors install power!

4. our space is adequate for the VAX. During the transition period it will be very crowded and we will eliminate our very popular tours. Digital wants at least a 30inch service area on all sides of their equipment.

5. the VAX is a "right-hand" machine only -- the CPU expansion and UNIBUS cabinets all attach to the right of the CPU (when looking at it from the front). Unfortunately, a left-hand system would work better for us. I briefly considered turning the VAX to face the wall, but someone finally finds another configuration that works. Now the UNIBUS cabinet wil be within the cabling tolerances of our Vector General graphics system (25 cabling feet max).

6. we need to order a direct phone line. Our phone system is the PBX type, and the Remote Diagnosis computer cannot ask the phone operator for the VAX'es extension number. The last VAX installed in Austin has not yet received their modem from field service (6 month delay) so this is not a rush order.

7. DEC will come check our to be installed power prior to installing the VAX. They are especially serious about a good isolated ground for every receptacle.

8. we will install a thermal shutoff so that if air conditioning fails during the night and the room overheats, power will be turned off.

New User

Fortunately for us, a local company is taking delivery of a VAX 11/750 and will let us watch the installation and learn on the machine. My first impression of the 750 is that it is tiny. Just about the right heigth to have a plant put on top. Installation was delayed a day because the wiring was incorrect -- the contractors had daisy-chained the grounds together rather than isolating them. Extra air conditioning was not yet available for this system, but since it was January, the machine could be kept adequately cooled by killing heat to that building. Needless to say, the extra air conditioning was immediately installed!

After installation came the "sysgen". RSX'ers, remember all those hours of answering questions, the grinding assemblies, the ... well you know what a pain an RSX sysgen can be. The VMS one is so simple! It takes 25 minutes to read in the DSC TU58 cartridges (5 minutes for 780 floppies), 1 hour to read the VMS 2.3 tape including verify (using a TS11 tape), then conversationally boot the system, specify MINIMUM.PAR to initially configure, apply 2.4 updates (we goofed here and asked for a listing so this took time), reboot using a more correct PAR (e.g. 16USER), autoconfigure, and voila! Of course there is a trade-off -- on RSX there is a long sysgen and little or no tuning of the system. VMS is exactly the opposite.

Unfortunately VMS did not work the first time because it could not find the DZ's. Digital redid the software install to no avail. The problem turned out to be that the 750 was shipped with an unordered DUP-11. Field service removed it but did not realize that the DZ's addresses were affected. Both are in floating space with the DUP first, so removing the DUP means that the DZ addresses must be moved for Autoconfigure to work. After this, VMS "ran like a champ".

We logged on as soon as possible to begin looking at VMS. Since most of our user community will never read a VMS manual we decided to also not read the manuals first. This way we will know first hand how robust and usable the HELP system is for our users. So here are some observations about the HELP system:

1. "HELP subject..." gives everything available on the subject but "HELP subject qualifier..." does not work. Unfortunate if you want to know everything about a qualifier.

2. There is no help for compatibility products such as PIP. BOO.

3. Help on RSX is very forgiving about slashes on qualifiers. VMS is rigid. If the subkey needs a slash, you must include it.

4. One help subject is "SPECIFY" and other help files reference it. This was initially confusing since there is no DCL command SPECIFY (I know, I tried it). This subject is "how to specify things..." Not prereading the manuals can cause trouble.

5. Help on subdirectories demonstrated a hole in the system. VMS help rarely provides a live example, only text explanantion. It is very hard to imagine the subdirectory format from the text. A simple example (CREATE/DIR [TOP.SUBDIR]) would have been a big help.

6. Help on the lexical functions (heavily used in indirect commands) is all blocked together. You must read the entire section to find your one function.

The above is the bad aspect of the VMS help files (especially for the non manaul reader). The good news is that we got a lot of work done, and learned a lot using the help system. Only rarely will an average user need to resort to manuals. We'll prepare a 10 page introductory document for our users, add some obvious help files such as Fortran syntax, and go with it. By the way, the spring 1981 VMS SIG tape has a nice help file for DSR.

Next month: off to manager school.

USER Program Corrections

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The USER program and related files published in the March 1982 issue of the Multi-Tasker (Vol. 15, No. 8) have some errors in the handling of warning messages to terminals. The article was titled "Idle Terminal Monitor" and started on page 30.

The following SLP command file corrects the version that was published in the Multi-Tasker. Also, a minor bug in the generation command file is corrected.

A correct version of the program will be submitted to the Atlanta symposium tape and the the DECUS library.

I apologize for any problems this may have caused. If anyone finds more problems, please get in touch with me.

USER.SLP

```
-2,2
        .IDENT  /V01.06/                ; DECUS release version
-38,38
;       27-Feb-82  Warning message flags cleared for active terminals
;       15-Mar-82  Correct conditionalization in warning routines for HTs
-92,92
;       If DECnet HT: support is selected, the user monitor MUST be
;       started AFTER DECnet is completely up. The user monitor may try
;       to access the DECnet HT: driver structures while they are being
;       built or accessed by DECnet if the monitor is loaded and run
;       before DECnet is up; this will cause flaky, intermittent crashes
;       during DECnet startup, and the cause will not be immediately
;       obvious.
;
;       An additional problem with systems which support DECnet (whether
```



```
;       or not idle HT: support was included) is that no task appears to
;       be active on a terminal which is logged in to a remote site via
;       RMT. This places a time limit on a remote session of the sum of
;       the warning times (default of 30 minutes). Anyone with any idea
;       of how to solve this problem should contact me and, if feasible
;       a patch will be promptly generated.

-165

.IF DF RS.NSL                           ; If number of HT: terminals defined

-170,171
-534,534
;       Terminal logged in with active task; reset necessary flags

30$:    BIC     #<TM.1ST!TM.2ND!TM.3RD>, TRMDAT(R0)     ; Clear warning flags
        CLR     TRMDAT+2(R0)            ; Active task; clear idle counter
-559,559
;       DECnet terminal logged in with active task; reset necessary flags

70$:    BIC     #<TM.1ST!TM.2ND!TM.3RD>, NETDAT(R0)     ; Clear warning flags
        CLR     NETDAT+2(R0)            ; Active task; clear idle counter
-581,582

CKTIME: CLR     R1                      ; R1 is terminal number
        CLR     R2                      ; R2 is offset in terminal data block

.IF DF RS.NSL                           ; If DECnet is supported

        CLR     R3                      ; Assume terminal type is TT

.ENDC                                   ; DF RS.NSL

-646
        MOV     #1, R3                  ; Terminal type is HT:
-742
;                R3 - 0 if terminal TT, 1 if terminal HT
-769,773
.IF DF RS.NSL                           ; If DECnet is supported

        TST     R3                      ; Is this a TT or an HT
        BEQ     15$                     ; If a TT, jump around HT code

        CLR     NETDAT(R2)              ; Clear all flags for HT
        BR      20$                     ; And continue

15$:    CLR     TRMDAT(R2)              ; Clear all flags for terminal

.IFF                                    ; If DECnet not supported

        CLR     TRMDAT(R2)              ; Clear all flags for terminal

.ENDC                                   ; DF RS.NSL
```

```
;       Log the forced logout on the system console

20$:    CALL    DATSUB                  ; Load console message time and date
-794
;                R3 - 0 if terminal is a TT, 1 if an HT
-801,801

.IF DF RS.NSL                           ; If DECnet is supported

WARONE: TST     R3                      ; Is this a TT or an HT
        BEQ     5$                      ; If a TT, skip HT code

        BIT     #TM.1ST, NETDAT(R2)     ; Has the first message been sent?
        BEQ     10$                     ; If not, go issue it

5$:     BIT     #TM.1ST, TRMDAT(R2)     ; Has the first message been sent?

.IFF                                    ; If DECnet not supported

WARONE: BIT     #TM.1ST, TRMDAT(R2)     ; Has the first message been sent?

.ENDC                                   ; DF RS.NSL

-814

.IF DF RS.NSL                           ; If DECnet is supported

        TST     R3                      ; Is this a TT or an HT
        BEQ     25$                     ; If a TT, skip HT code

        BIS     #TM.1ST, NETDAT(R2)     ; Set first message sent flag

        RETURN                          ; Return to caller

25$:    BIS     #TM.1ST, TRMDAT(R2)     ; Set first message sent flag

        RETURN                          ; Return to caller

.IFF                                    ; If DECnet not supported

-818
.ENDC                                   ; DF RS.NSL


-825
;                R3 - 0 if terminal is a TT, 1 if an HT
-833,833
.IF DF RS.NSL                           ; If DECnet is supported

WARTWO: TST     R3                      ; Is this a TT or an HT
        BEQ     5$                      ; If a TT, skip HT code

        BIT     #TM.2ND, NETDAT(R2)     ; Has the second message been sent?
        BEQ     10$                     ; If not, go issue it
```



```
5$:     BIT     #TM.2ND, TRMDAT(R2)     ; Has the second message been sent?

.IFF                                    ; If DECnet not supported

WARTWO: BIT     #TM.2ND, TRMDAT(R2)     ; Has the second message been sent?

.ENDC                                   ; DF RS.NSL

-846

.IF DF RS.NSL                           ; If DECnet is supported

        TST     R3                      ; Is this a TT or an HT
        BEQ     25$                     ; If a TT, skip HT code

        BIS     #TM.2ND, NETDAT(R2)     ; Set second message sent flag

        RETURN                          ; Return to caller

25$:    BIS     #TM.2ND, TRMDAT(R2)     ; Set second message sent flag

        RETURN                          ; Return to caller

.IFF                                    ; If DECnet not supported

-851,857
.ENDC                                   ; DF RS.NSL


        .PAGE
        .SBTTL  WARFIN  Issue Final Warning


;
;       WARFIN - Issue Final Warning to a Terminal
;
;       Inputs:  R1 - Target terminal number
;                R2 - Pointer to terminal data block
;                R3 - 0 if terminal is a TT, 1 if an HT
-864,864

.IF DF RS.NSL                           ; If DECnet is supported

WARFIN: TST     R3                      ; Is this a TT or an HT
        BEQ     5$                      ; If a TT, skip HT code

        BIT     #TM.3RD, NETDAT(R2)     ; Has the final message been sent?
        BEQ     10$                     ; If not, go issue it

5$:     BIT     #TM.3RD, TRMDAT(R2)     ; Has the final message been sent?

.IFF                                    ; If DECnet not supported

WARFIN: BIT     #TM.3RD, TRMDAT(R2)     ; Has the final message been sent?
```

```
.ENDC                                   ; DF RS.NSL
-879,881
.IF DF RS.NSL                           ; If DECnet is supported
        TST     R3                      ; Is this a TT or an HT
        BEQ     25$                     ; If a TT, skip HT code
        BIS     #TM.3RD, NETDAT(R2)     ; Set final message sent flag
        RETURN                          ; Return to caller
25$:    BIS     #TM.3RD, TRMDAT(R2)     ; Set second message sent flag
        RETURN                          ; Return to caller
.IFF                                    ; If DECnet not supported
        BIS     #TM.3RD, TRMDAT(R2)     ; Set second message sent flag
        RETURN                          ; Return to caller
.ENDC                                   ; DF RS.NSL
/
```

USERGEN.SLP

```
USERGEN.CMD/-AU-USERGEN.CMD
-166,166
.IFF DECNET .GOTO NONET
.IFT NETSUP .DATA LB:'NETUIC'RMHPRE/PA:1, -
.NONET:
/
```

Notes or Overlaying FORTRAN Tasks

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Introduction

Since "making programs fit" is such a popular PDP-11 pastime, I would like to pass on some techniques concerning the use of overlays. The techniques described here are used under RSX-11M; IAS and RSX-11M+ applicability is assumed but has not been tested.

References

In addition to the RSX manuals (especially, the Task Builder and the FORTRAN manuals), there are several excellent Multi-Tasker references:

(1) "Overlaying the FORTRAN OTS", June 1978, page 14.

(2) "Building Overlaid FORTRAN Programs", Ron Schaefer, July 1979, page 22.

(3) "Comment on Building Overlaid FORTRAN Programs", Don Harbaugh, December, 1979.

(4) "Using ODT in Overlaid Programs", Kenneth Johnson, August 1980, page 122

(5) "Reducing the Size of a FORTRAN Program", Larry Baker, February, 1982.

In addition to the above references, several .ODL files (e.g., FCS11M.ODL) are delivered with F4P to assist in overlaying the OTS and FCS libraries. These files are well-commented and are recommended reading.

Use of ODT

ODT requires about 3 Kbytes. If a task does not have room for ODT, whatever overlaying effort is required to provide room is probably worthwhile.

Reference (4) describes how to place ODT breakpoints in overlays. The following note supplements reference (4):

> Breakpoints in an overlay should be removed before another overlay is loaded. This is because ODT temporarily removes all breakpoints whenever ODT is re-entered (so that the programmer may see the actual contents of breakpointed instructions), and re-plants the breakpoints when the programer proceeds. ODT does not know which overlays are in memory, so a breakpoint intended for overlay A may be mistakenly re-planted at the same address in overlay B.

Use of Libraries

For a highly-overlaid task with many object files, it is recommended that all the object modules be placed in a library before task building. This technique (which is used in linking the RSX monitor) has the following advantages:

(1) A substantial decrease in task builder run time may be realized.

(2) In ODL, subroutines can be referenced individually, e.g., "APPLIB/LB:SUB". (If a library is not used, then ODL is constrained to referencing object modules. An object module typically contains multiple subroutines because, in a large application coded with small subroutines, it is not practical to have one source and one object file per subroutine.)

The library technique does not require that each subroutine be individually referenced; the following ODL factor defines an overlay consisting of the subroutine ABC and all subroutines in APPLIB called by ABC:

```
ABC:  .FCTR  APPLIB/LB:ABC - APPLIB/LB
```

F4PNIO.OBJ

The "no I/O" version of the OTS is delivered with F4P as F4PNIO.OBJ. (Unfortunately, no such file is delivered with FOR.) This library is much smaller than the normal OTS because FCS and the OTS interface to FCS are not needed. F4PNIO can be used for applications which do no file I/O; READ and WRITE statements are restricted to non-file structured devices. F4PNIO.OBJ appears to be identical to F4P11S.OBJ, the RSX-11S version of OTS.

F4PNIO is also appropriate for tasks which do file I/O by calling user-written macro subroutines interfacing directly to FCS or RMS. In addition to saving space, this approach bypasses the substantial processing burden imposed by FORTRAN I/O.

Small Subroutines

A popular coding practice is to limit each subroutine to an "intellectually manageable" size of fewer than 50 lines of code. A popular criticism of the technique is that, in a task with many such subroutines, the memory burden imposed by all of the argument passing is prohibitive.

We vote for the small subroutines: the additional memory required (and the associated work in making the task fit) is many times repaid in reliability and maintainability. An additional feature of small subroutines is flexibility in overlaying: With small subroutines, one is rarely tempted to decompose a subroutine in order to spread it between overlays.

Bouncing

Consider the following ODL segment:

```
X:  .FCTR  A-B-*(C,D)
```

If C calls D, the task builder will report the error as an undefined reference. However, the task builder does not detect "bouncing", the error produced by C calling B and B calling D. The problem with bouncing is that when B returns to C there is no linkage to cause C to be re-loaded.

The typical run time manifestation of bouncing is a trap with C showing as the active subroutine in the traceback display. The traceback will also report a current line number in C corresponding to the CALL B. C's variables examined with ODT after the trap will appear to be garbage because D is the active overlay.

The fix is to place C and D in the same segment or to get C and D in different co-trees.

VOTING STATISTICS

```
TOTAL RSX-11M  BALLOTS:   714   82.7%
TOTAL RSX-11S  BALLOTS:    31    3.6%
TOTAL RSX-11M+ BALLOTS:    49    5.7%
TOTAL 11M/11S/M+ CLASS:   794   92.0%

TOTAL IAS      BALLOTS:    58    6.7%
TOTAL RSX-11D  BALLOTS:    11    1.3%
TOTAL IAS/11ID   CLASS:    69    8.0%

TOTAL ALL BALLOTS CAST:   863  100.0%

RSX-11M  VERSIONS: 3.2: 615  3.1:  77  3.0:  16  4.0:   2  ???:   4
RSX-11S  VERSIONS: 2.2:  17  2.1:  13  2.0:   1  ???:   0  ???:   0
RSX-11M+ VERSIONS: 1.0:  49  ???:   0  ???:   0  ???:   0  ???:   0
IAS      VERSIONS: 3.0:  21  2.0:   1  1.2:   0  3.1:  36  ???:   0
RSX-11D  VERSIONS: 6.2:   6  6.B:   0  6.A:   0  ???:   5  ???:   0
```

CLASS	BALLOT	VOTES	ITEMS	V/B	I/B	V/I
RSX-11M	714	25387	13053	35.556	18.282	1.945
RSX-11S	31	1228	617	39.613	19.903	1.990
RSX-11M+	49	1820	960	37.143	19.592	1.896
IAS	58	2204	978	38.000	16.862	2.254
RSX-11D	11	401	255	36.455	23.182	1.573
TOTAL	863	31040	15863	35.968	18.381	1.957

```
AVERAGE VOTES PER ITEM:  413.87
AVERAGE VOTING FREQUENCY:  24.51

BALLOTS NOT VOTING TOTAL 40 VOTES:   310   35.9%
BALLOTS SHORTENED TO 40 VOTES:        11    1.3%
BALLOTS VOTING ONLY ONE VOTE/ITEM:   124   14.4%

SITES REPORTING SYMPOSIUM ATTENDANCE:   534   61.9%
SITES REPORTING ONE SYMPOSIUM        :   114   13.2%
SYMPOSIA PER SITE REPORTING          :   6.4
```

MISCELLANEOUS ITEMS

EDITOR PREFERENCES:

EDI	208 SITES
EDT	261 SITES
TECO	84 SITES
OTHER ED.	57 SITES

STRUCTURED LANGUAGE PREFERENCE:

PASC	114 BALLOTS	367 VOTES
C	52 BALLOTS	187 VOTES
FORH	0 BALLOTS	0 VOTES
F77	17 BALLOTS	48 VOTES
ADA	55 BALLOTS	174 VOTES
PL1	61 BALLOTS	132 VOTES
F4P	5 BALLOTS	9 VOTES
RAT4	1 BALLOTS	1 VOTES
DIBO	1 BALLOTS	3 VOTES
AMY	1 BALLOTS	5 VOTES
BASI	1 BALLOTS	1 VOTES
NONE	0 BALLOTS	0 VOTES
OTHE	19 BALLOTS	35 VOTES
????	8 BALLOTS	10 VOTES

MENU ITEMS

1.0 COMMUNICATIONS

1. Merge DECNET functions into DCL a la VMS.
2. Provide command terminal support in DECNET across operating systems (i.e., IAS to RSX-11M).

2.0 CONSOLE SERVICES

3. Provide a mechanism for incorporating user-defined commands into the system command line interpreter (MCR/PDS). Alternately, allow invalid MCR/PDS commands to be passed to a user-written CLI and document this interface.
4. Allow users to log on using either DCL or MCR commands regardless of present terminal CLI status; set the terminal to the appropriate CLI.
5. The time stamp written to the console log should include the date.
6. Add to terminal driver or MCR the ability to recall the last command line.
7. DMO should have a switch to force a final dismount even if files are open on a volume.
8. Add support for default MCR Indirect Command Processor device and UIC. This would allow sites to establish libraries of command files.
9. DMO should indicate what files are open, and which tasks have the files open, if a dismount can not complete.
10. Add option to INS to prevent non-privileged users from running non-checkpointable tasks.
11. Extend IND to allow arguments to be passed to the indirect command file with the invocation.
12. Limit the number of unsolicited input lines queued for a single terminal to a reasonable number.

3.0 DEBUGGING TOOLS

13. PMD dumps are difficult to interpret. Modify PMD to optionally save the image of the aborted task for later use as target of octal or (better) symbolic assembler debugger.
14. Provide assembly language symbolic debugging tool with support for PDP-11 instruction mnemonics and local and global symbols.

4.0 DOCUMENTATION

15. Document in detail the differences between IAS and RSX-11M as a guideline for implementation of RSX user tasks under IAS, and vice-versa.
16. Document the use of each file on the distribution kit, especially which ones may be deleted or off-loaded under what conditions.
17. Provide documentation and/or feature updates as direct page replacements, with changes marked by change bars.
18. Add an index to the RSX-11M SYSGEN Manual.
19. Rewrite the RSX/IAS I/O Operations Manual with emphasis on more tutorial information for the first-time user and details of the RSX/IAS file system.

5.0 EDITORS

20. Provide a screen-mode keypad editor with support for user-defined terminal types. The editor should make effective use of the operating system, terminal driver, and terminal features to minimize impact on the system.
21. All editors should copy the status of the protection bits of the input file when closing the output file, if input and output files
22. Add enhancements to EDT. Specifically, Allow EDT to have access to all control characters. Allow EDT to insert a string at the beginning of a line. Extend macro capability to character mode and allow repetitive macros in line mode.
23. Add enhancements to EDI. Specifically, enable EDI to

save the current search string and refer to it via a single special symbol. Add a command to EDI to abort a page search.

6.0 EXECUTIVE SERVICES

24. Provide a facility for checkpointable, transient resident libraries.

25. Add an RSX11M-like ASN function to IAS.

26. Create a means for users to write exec directives without needing to modify the executive, particularly the table of ID codes in the directive dispatcher. Reserve at least one directive code for user allocation.

27. Include support for stop for global, group global, and local event flags.

28. Add option to return error on attach request (IO.ATT) if device is already attached.

29. Add the ability to reset a timeout (on terminal, etc. input) without canceling all mark times outstanding.

30. Add a facility in the executive which enables the user to chain executive directives together. This would prevent performance degradation due to system context switch overhead while executing several consecutive directives.

31. Queue send data blocks on disk when the memory queue reaches a predetermined limit.

7.0 FILE SYSTEM

32. Add modifications to BRU to increase its usefulness. Specifically, Make BRU append additional backup sets to a continuation tape. Modify BRU to (optionally) create UFD's on a Files-11 volume being restored, in an "additive" manner; i.e., without using the INITIALIZE command. Support BRU under IAS. The BRU switches /CREATED and /REVISED have the parameters :BEFORE and :AFTER. A new parameter, :BETWEEN, is needed.

33. Provide system library routines that allow user programs to perform complete wild-card "find" operations. The routines should include support for wild-card directories and wild-card and character filenames.

34. Provide a magnetic tape utility which, given the proper formatting description, would read most commonly used foreign-format magnetic tapes.

35. Limit the number of unsolicited input lines queued from a single terminal to a reasonable number.

8.0 HARDWARE

36. Offer Winchester disk technology in small disk drives (10-50 MB) for RSX/IAS systems.

9.0 IAS

37. Add capability to add user written DCL commands to PDS.

38. Provide Logic Manuals for PDS and TCP.

39. Add an RSX11M-like ASN function to IAS.

40. Add more manual control information and manual control of scheduler levels for all active tasks, such as moving a task from and to batch level, from and to real-time.

41. Include RMS file copy facility in the DCL COPY command.

10.0 LANGUAGES

42. Add enhancements to BASIC-11. Specifically, Allow command line specification of a program to be loaded and run, so that BASIC programs can be run from command files. Implement a default '$' device/directory for library programs. Supply a SYS function which will return the amount of free space available so that an imminent string storage overflow can be detected. Supply a BASIC-11 compatible compiler that doesn't require RMS. Print error code on FCS error. Accept filenames in lower case. Support all types of FCS files.

43. Provide a COBOL switch to eliminate internal I/O buffers when not required.

44. Add enhancements to FORTRAN and F4P compilers. Specifically, Support ALL system calls and options from FORTRAN. Provide warnings for non-ANSI standard coding

in FORTRAN and F4P. Provide initialization macros for the FORTRAN OTS so that if a MACRO-11 program calls a FORTRAN subroutine, it can properly initialize the FORTRAN OTS. Add the equivalent of conditional assembly parameters. Add the equivalent of MACRO-11 macros.

45. A standard structured language should be chosen by DEC and supported across ALL operating systems and calls to appropriate layered products.

    (Fill in language name on ballot)

46. Provide a cross reference facility for FOR/F4P.

47. Add option to FOR/F4P to flag undeclared variables and mixed-mode variable usage. Also add option to perform parameter type checking on subroutine and function calls.

48. Supply an EXPAND utility to process a MACRO-11 source file and expand all macros in the resulting output file.

11.0 RSX-11M

49. Implement batch facility for RSX-11M.

50. Provide time-sharing services like IAS for RSX-11M.

51. An additional RSX-11M Distribution should be added for those installations which have 11/34, 11/60, etc. systems. This level would not be bound by the requirements to support 16K systems, and therefore could have some of the RSX-11M PLUS features added without the requirement of an 11/44 or 11/70.

12.0 RSX-11M PLUS

52. Make DCL source available.

53. Provide supervisor mode library facility BASIC-PLUS Libraries on RSX-11M PLUS.

54. The limitation on task size of 32KW should be increased to 64KW or larger.

13.0 RSX-11S

55. Reconfigure RSX-11S so that its executable code can be run from Read-Only Memory (ROM).

14.0 SOFTWARE SUPPORT

56. Provide a limited telephone consultation service for the occasional caller on a tight budget.

57. Provide an installation-wide contract for support of systems under basic and DEC support agreements.

58. Supply Software Dispatch as a separate item, not bundled with other services.

15.0 SYSTEM ADMINISTRATION

59. Provide capacity planning and benchmark tools which can be used to predict the correct CPU, I/O,a nd Operating System for the User's application.

16.0 SYSTEM GENERATION

60. Relax the 16K minimum memory requirement for RSX so that utilities such as PIP and FLX can be expanded with all the functionality that the users request.

61. SYSGEN documentation should have more information on system optimization. Options should be more thoroughly explained as to their impact.

62. Change SYSGEN so that Phase One builds RSX11M.OLB. The current SYSGEN procedure deletes RSX11M.OLB at the beginning of Phase II, making it very inconvenient to just run Phase II.

17.0 TERMINAL SERVICES

63. Add enhancements to TTDRV. Specifically, add a device-independent Clear Screen function. Add System Level Typeahead. Enhance the Full-Duplex Driver to

support Programmable Parity, Programmable Character Length, Transmit Break (long space). Support disconnect of remote terminals that log off and do not log on within some period of time.

18.0 UTILITIES

64. Change utilities which are waiting for receive data or Mark Time requests to use the STOP form of these directives.

65. Create a Utility to do in-place disk compression, a la the RT-11 Squeeze function.

66. Improve the documentation of utilties. Specifically, Document which utilities would benefit by being installed with an increment. Document exit status of all utilities. Allow file specification by File ID in all utilities.

67. Provide general purpose tape utility (ASCII/BCD/EBCDIC).

68. Provide utility that will display the system data structures in a CDA-like format.

69. Add enhancements to LBR. Specifically, Add a listing switch to display all the global references within an object module. Improve speed on Universal Libraries.

70. Add enhancements to PIP. Specifically, Allow PIP to display index file statistics. Provide a way to mark a file as contiguous when you rally know it is, e.g., after a DSC. Enable PIP to manipulate the carriage control attributes of a file.

71. Improve functionality of QMG. Specifically, Add 9-Character Job Names. Allow specific file deletion within a job. Allow indirect command files for print job control. Document the QMG/PRI/despooler interface. Modify QMG to display print job size. Expand the number of forms types available for spooling.

72. Add enhancements to TKB. Specifically, Allow a TKB option to set the starting virtual address of one or more PSECTs. Remove or increase the 255 block size limit on TKB's work file.

73. VMR INSTALL should re-use deleted space in the task table during updated REM's and INS's. VMR should recover gracefully when an indirect command file tries to REMove a task that is not INStalled.

74. Add support to PIP for file selection on basis of lock bit or zero-length.

75. CMP should extend itself, and use a disk overflow area if necessary, when it needs more buffer space

RSX/IAS 1981 MENU VOTE
TOP 12 ITEMS

RANK	ITEM	
1	61.	SYSGEN documentation should have more information on system optimization. Options should be more thoroughly explained as to their impact.
2	45.	A standard structured language should be chosen by DEC and supported across ALL operating systems and calls to appropriate layered products.
3	8.	Add support for default MCR Indirect Command Processor device and UIC. This would allow sites to establish libraries of command files.
4	44.	Add enhancements to FORTRAN and F4P compilers. Specifically, support ALL system calls and options from FORTRAN. Provide warnings for non-ANSI standard coding.
5	47.	Add option to FOR/F4P to flag undeclared variables and mixed-mode variable usage. Also add option to perform parameter type checking on subroutine and function calls.
6	65.	Create a Utility to do in-place disk compression, a la the RT-11 Squeeze function.
7	46.	Provide a cross reference facility for FOR/F4P.
8	16.	Document the use of each file on the distribution kit, especially which ones may be deleted or off-loaded under what conditions.
9	14.	Provide assembly language symbolic debugging tool with support for PDP-11 instruction mnemonics and local and global symbols.
10	33.	Provide system library routines that allow user programs to perform complete wild-card "find" operations. The routines should include support for wild-card directories and wild-card and character filenames.
11	9.	DMO should indicate what files are open, and which tasks have the files open, if a dismount cannot complete.
12	74.	Add support to PIP for file selection on basis of lock bit or zero-length.

TOTAL RESULTS

	TOTALS				RSX-11M CLASS				IAS CLASS			
ITEM	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.
1	36	394	43	22.0	36	393	41	23.8	71	1	71	1.4
2	54	246	61	10.0	55	225	61	9.4	42	21	44	15.9
3	26	532	27	30.0	24	494	27	30.4	25	38	29	26.1
4	58	183	60	10.2	56	183	59	11.1	74	0	74	0.0
5	43	343	36	25.7	44	332	35	27.1	52	11	53	10.1
6	42	356	44	21.8	43	333	43	22.8	40	23	52	10.1
7	52	260	45	21.7	54	228	48	21.2	29	32	26	27.5
8	3	920	2	49.7	3	867	2	51.0	17	53	19	34.8
9	11	696	11	40.9	18	580	15	38.4	3	116	2	69.6
10	62	133	56	11.9	62	125	56	12.0	59	8	51	11.6
11	28	506	19	34.4	34	417	24	32.5	10	89	7	56.5
12	53	257	48	20.9	49	247	47	21.4	54	10	47	14.5
13	47	296	46	21.1	46	288	44	22.5	60	8	65	4.3
14	9	704	14	38.8	8	675	12	40.6	33	29	35	18.8
15	57	191	62	9.5	65	69	64	5.5	1	122	9	55.1
16	8	739	10	42.4	10	643	10	41.2	7	96	6	56.5
17	29	496	26	30.8	26	459	26	30.9	26	37	24	30.4
18	20	597	8	42.9	17	582	5	45.0	50	15	38	18.8
19	21	573	15	37.9	28	455	18	35.0	2	118	1	71.0
20	27	511	35	27.1	35	414	37	25.3	6	97	12	47.8
21	56	203	54	16.5	59	160	55	14.6	22	43	15	37.7
22	45	323	47	21.0	45	311	46	21.4	51	12	46	15.9
23	48	283	51	19.5	52	239	53	18.3	21	44	22	33.3
24	24	556	32	27.9	20	547	30	29.5	57	9	55	10.1
25	68	53	67	4.3	67	34	67	3.3	44	19	45	15.9
26	23	563	28	29.8	21	546	25	31.6	48	17	57	8.7
27	40	370	49	20.4	39	344	50	20.5	35	26	36	18.8
28	34	467	31	28.7	30	449	31	29.3	45	18	33	21.7
29	51	269	50	19.8	47	263	49	20.8	64	6	59	8.7
30	17	627	34	27.7	14	603	32	28.5	38	24	37	18.8
31	49	275	42	22.8	50	246	45	22.4	32	29	27	27.5
32	18	610	17	37.2	19	569	14	38.8	24	41	32	21.7
33	10	703	5	44.8	9	652	4	45.0	19	51	13	43.5
34	19	606	21	33.5	23	538	21	33.2	14	68	17	36.2
35	67	62	68	3.5	66	57	66	3.7	67	5	68	1.4
36	15	643	20	33.8	13	613	19	34.8	31	30	31	23.2

	TOTALS				RSX-11M CLASS				IAS CLASS			
ITEM	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.
37	66	81	66	4.4	69	29	68	2.6	18	52	30	24.6
38	70	39	71	2.0	72	14	72	0.6	36	25	39	17.4
39	75	4	75	0.5	74	1	74	0.1	68	3	66	4.3
40	72	29	72	1.7	74	1	74	0.1	34	28	34	20.3
41	69	48	69	3.5	70	23	69	2.6	37	25	48	13.0
42	64	95	65	5.0	63	88	65	4.9	62	7	64	5.8
43	74	7	74	0.7	73	6	73	0.6	71	1	71	1.4
44	4	881	3	48.0	4	804	3	47.2	11	77	8	56.5
45	2	974	13	38.8	2	914	13	39.4	15	60	23	31.9
46	7	783	9	42.6	7	693	9	41.2	9	90	5	59.4
47	5	868	4	46.2	5	777	6	44.8	8	91	4	62.3
48	65	90	64	7.4	64	81	63	7.3	58	9	58	8.7
49	22	563	25	31.2	22	542	22	33.1	43	21	56	8.7
50	60	171	57	11.0	57	164	57	11.7	63	7	67	2.9
51	39	373	38	24.4	38	362	36	25.7	52	11	53	10.1
52	71	32	70	2.2	68	30	70	2.3	69	2	69	1.4
53	73	18	73	0.9	71	17	71	0.9	71	1	71	1.4
54	59	173	63	9.2	58	164	62	8.9	56	9	50	11.6
55	61	164	58	10.3	60	159	60	10.6	66	5	63	7.2
56	13	669	22	32.8	15	599	23	32.6	13	70	18	34.8
57	35	456	39	23.5	32	433	40	24.2	39	23	43	15.9
58	31	472	30	29.0	31	438	33	28.5	28	34	20	34.8
59	16	635	18	35.8	12	618	16	37.9	47	17	49	11.6
60	63	132	59	10.3	61	132	58	11.2	74	0	74	0.0
61	1	1343	1	65.8	1	1286	1	68.1	16	57	14	39.1
62	44	335	41	22.9	42	333	39	24.8	69	2	69	1.4
63	14	653	12	39.0	11	636	11	40.9	46	17	41	17.4
64	46	299	40	23.3	48	256	42	23.0	23	43	28	26.1
65	6	817	7	43.3	6	719	8	42.3	5	98	10	55.1
66	32	471	16	37.4	33	423	17	37.8	20	48	21	33.3
67	25	534	23	32.2	27	457	28	30.4	12	77	11	53.6
68	33	468	37	24.4	29	452	38	25.1	49	16	42	17.4
69	55	241	53	18.0	53	231	51	18.9	55	10	61	7.2
70	38	379	29	29.1	40	343	34	28.3	27	36	18	37.7
71	37	388	33	27.8	37	381	29	29.6	65	7	62	7.2
72	41	357	55	16.2	41	335	54	16.1	41	22	40	17.4
73	30	490	24	32.2	25	484	20	34.3	64	6	59	8.7
74	12	691	6	44.6	16	590	7	42.9	6	101	3	63.8
75	80	271	82	19.6	81	240	82	19.4	30	31	28	38.4

TOTAL RESULTS (CONT)

ITEM	TOTALS VOTES	TOTALS BALLOT	TOTALS AVERAGE	RSX-11M CLASS VOTES	RSX-11M CLASS BALLOT	RSX-11M CLASS AVERAGE	IAS CLASS VOTES	IAS CLASS BALLOT	IAS CLASS AVERAGE
1	394	190	2.074	393	189	2.079	1	1	1.000
2	246	86	2.860	225	75	3.000	21	11	1.909
3	532	259	2.054	494	241	2.050	38	18	2.111
4	183	88	2.080	183	88	2.080	0	0	0.000
5	343	222	1.545	332	215	1.544	11	7	1.571
6	356	188	1.894	333	181	1.840	23	7	3.286
7	260	187	1.390	228	168	1.357	32	19	1.684
8	920	429	2.145	867	405	2.141	53	24	2.208
9	696	353	1.972	580	305	1.902	116	48	2.417
10	133	103	1.291	125	95	1.316	8	8	1.000
11	506	297	1.704	417	258	1.616	89	39	2.282
12	257	180	1.428	247	170	1.453	10	10	1.000
13	296	182	1.626	288	179	1.609	8	3	2.667
14	704	335	2.101	675	322	2.096	29	13	2.231
15	191	82	2.329	69	44	1.568	122	38	3.211
16	739	366	2.019	643	327	1.966	96	39	2.462
17	496	266	1.865	459	245	1.873	37	21	1.762
18	597	370	1.614	582	357	1.630	15	13	1.154
19	573	327	1.752	455	278	1.637	118	49	2.408
20	511	234	2.184	414	201	2.060	97	33	2.939
21	203	142	1.430	160	116	1.379	43	26	1.654
22	323	181	1.785	311	170	1.829	12	11	1.091
23	283	168	1.685	239	145	1.648	44	23	1.913
24	556	241	2.307	547	234	2.338	9	7	1.286
25	53	37	1.432	34	26	1.308	19	11	1.727
26	563	257	2.191	546	251	2.175	17	6	2.833
27	370	176	2.102	344	163	2.110	26	13	2.000
28	467	248	1.883	449	233	1.927	18	15	1.200
29	269	171	1.573	263	165	1.594	6	6	1.000
30	627	239	2.623	603	226	2.668	24	13	1.846
31	275	197	1.396	246	178	1.382	29	19	1.526
32	610	321	1.900	569	306	1.859	41	15	2.733
33	703	387	1.817	652	357	1.826	51	30	1.700
34	606	289	2.097	518	264	2.038	68	25	2.720
35	62	30	2.067	57	29	1.966	5	1	5.000
36	643	292	2.202	613	276	2.221	30	16	1.875

ITEM	TOTALS VOTES	BALLOT	AVERAGE	RSX-11M CLASS VOTES	BALLOT	AVERAGE	IAS CLASS VOTES	BALLOT	AVERAGE
37	81	38	2.132	29	21	1.381	52	17	3.059
38	39	17	2.294	14	5	2.800	25	12	2.083
39	4	4	1.000	1	1	1.000	3	3	1.000
40	29	15	1.933	1	1	1.000	28	14	2.000
41	48	30	1.600	23	21	1.095	25	9	2.778
42	95	43	2.209	88	39	2.256	7	4	1.750
43	7	6	1.167	6	5	1.200	1	1	1.000
44	881	414	2.128	804	375	2.144	77	39	1.974
45	974	335	2.907	914	313	2.920	60	22	2.727
46	783	368	2.128	693	327	2.119	90	41	2.195
47	868	399	2.175	777	356	2.183	91	43	2.116
48	90	64	1.406	81	58	1.397	9	6	1.500
49	563	269	2.093	542	263	2.061	21	6	3.500
50	171	95	1.800	164	93	1.763	7	2	3.500
51	373	211	1.768	362	204	1.775	11	7	1.571
52	32	19	1.684	30	18	1.667	2	1	2.000
53	18	8	2.250	17	7	2.429	1	1	1.000
54	173	79	2.190	164	71	2.310	9	8	1.125
55	164	89	1.843	159	84	1.893	5	5	1.000
56	669	283	2.364	599	259	2.313	70	24	2.917
57	456	203	2.246	433	192	2.255	23	11	2.091
58	472	250	1.888	438	226	1.938	34	24	1.417
59	635	309	2.055	618	301	2.053	17	8	2.125
60	132	89	1.483	132	89	1.483	0	0	0.000
61	1343	568	2.364	1286	541	2.377	57	27	2.111
62	335	198	1.692	333	197	1.690	2	1	2.000
63	653	337	1.938	636	325	1.957	17	12	1.417
64	299	201	1.488	256	183	1.399	43	18	2.389
65	817	374	2.184	719	336	2.140	98	38	2.579
66	471	323	1.458	423	300	1.410	48	23	2.087
67	534	278	1.921	457	241	1.896	77	37	2.081
68	468	211	2.218	452	199	2.271	16	12	1.333
69	241	155	1.555	231	150	1.540	10	5	2.000
70	379	251	1.510	343	225	1.524	36	26	1.385
71	388	240	1.617	381	235	1.621	7	5	1.400
72	357	140	2.550	335	128	2.617	22	12	1.833
73	490	278	1.763	484	272	1.779	6	6	1.000
74	691	385	1.795	590	341	1.730	101	44	2.295
75	271	167	1.623	240	166	1.446	31	21	1.476

RANKED BY TOTAL VOTES

ITEM	TOTALS RANK	TOTALS VOTES	TOTALS RANK	TOTALS FREQ.	RSX-11M CLASS RANK	RSX-11M CLASS VOTES	RSX-11M CLASS RANK	RSX-11M CLASS FREQ.	IAS CLASS RANK	IAS CLASS VOTES	IAS CLASS RANK	IAS CLASS FREQ.
61	1	1343	1	65.8	1	1286	1	68.1	16	57	14	39.1
45	2	974	13	38.8	2	914	13	39.4	15	60	23	31.9
8	3	920	2	49.7	3	867	2	51.0	17	53	19	34.8
44	4	881	3	48.0	4	804	3	47.2	11	77	8	56.5
47	5	868	4	46.2	5	777	6	44.8	8	91	4	62.3
65	6	817	7	43.3	6	719	8	42.3	5	98	10	55.1
46	7	783	9	42.6	7	693	9	41.2	9	90	5	59.4
16	8	739	10	42.4	10	643	10	41.2	7	96	6	56.5
14	9	704	14	38.8	8	675	12	40.6	33	29	35	18.8
33	10	703	5	44.8	9	652	4	45.0	19	51	13	43.5
9	11	696	11	40.9	18	580	15	38.4	3	116	2	69.6
74	12	691	6	44.6	16	590	7	42.9	4	101	3	63.8
56	13	669	22	32.8	15	599	23	32.6	13	70	18	34.8
63	14	653	12	39.0	11	636	11	40.9	46	17	41	17.4
36	15	643	20	33.8	13	613	19	34.8	31	30	31	23.2
59	16	635	18	35.8	12	618	16	37.9	47	17	49	11.6
30	17	627	34	27.7	14	603	32	28.5	38	24	37	18.8
32	18	610	17	37.2	19	569	14	38.5	24	41	32	21.7
34	19	606	21	33.5	23	538	21	33.2	14	68	17	36.2
18	20	597	8	42.9	17	582	5	45.0	50	15	38	18.8
19	21	573	15	37.9	28	455	18	35.0	2	118	1	71.0
49	22	563	25	31.2	22	542	22	33.1	43	21	56	8.7
26	23	563	28	29.8	21	546	25	31.6	48	17	57	8.7
24	24	556	32	27.9	20	547	30	29.5	57	9	55	10.1
67	25	534	23	32.2	27	457	28	30.4	12	77	11	53.6
3	26	532	27	30.0	24	494	27	30.4	25	38	29	26.1
20	27	511	35	27.1	35	414	37	25.3	6	97	12	47.8
11	28	506	19	34.4	34	417	24	32.5	10	89	7	56.5
17	29	496	26	30.8	26	459	26	30.9	26	37	24	30.4
73	30	490	24	32.2	25	484	20	34.3	64	6	59	8.7
58	31	472	30	29.0	31	438	33	28.5	28	34	20	34.8
66	32	471	16	37.4	33	423	17	37.8	20	48	21	33.3
68	33	468	37	24.4	29	452	38	25.1	49	16	42	17.4
28	34	467	31	28.7	30	449	31	29.3	45	18	33	21.7
57	35	456	39	23.8	32	433	40	24.2	39	23	43	15.9
1	36	394	43	22.0	36	393	41	23.8	71	1	71	1.4
71	37	388	33	27.8	37	381	29	29.6	61	7	62	7.2

	TOTALS				RSX-11M CLASS				IAS CLASS			
ITEM	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.
70	38	378	29	29.4	40	345	34	28.3	27	36	16	37.7
51	39	373	38	24.4	38	362	36	25.7	52	11	53	10.1
27	40	370	49	20.4	39	344	50	20.5	35	26	36	18.8
72	41	357	55	16.2	41	335	54	16.1	41	22	40	17.4
6	42	356	44	21.8	43	333	43	22.8	40	23	52	10.1
5	43	343	36	25.7	44	332	35	27.1	52	11	53	10.1
62	44	335	41	22.9	42	333	39	24.8	69	2	69	1.4
22	45	323	47	21.0	45	311	46	21.4	51	12	46	15.9
64	46	299	40	23.3	48	256	42	23.0	23	43	28	26.1
13	47	296	46	21.1	46	288	44	22.5	60	8	65	4.3
23	48	283	51	19.5	52	239	53	18.3	21	44	22	33.3
31	49	275	42	22.8	50	246	45	22.4	32	29	27	27.5
75	50	271	52	19.4	51	240	52	18.4	30	31	25	30.4
29	51	269	50	19.8	47	263	49	20.8	64	6	59	8.7
7	52	260	45	21.7	54	228	48	21.2	29	32	26	27.5
12	53	257	48	20.9	49	247	47	21.4	54	10	47	14.5
2	54	246	61	10.0	55	225	61	9.4	42	21	44	15.9
69	55	241	53	18.0	53	231	51	18.9	55	10	61	7.2
21	56	203	54	16.5	59	160	55	14.6	22	43	15	37.7
15	57	191	62	9.5	65	69	64	5.5	1	122	9	55.1
4	58	183	60	10.2	56	183	59	11.1	74	0	74	0.0
54	59	173	63	9.2	58	164	62	8.9	56	9	50	11.6
50	60	171	57	11.0	57	164	57	11.7	63	7	67	2.9
55	61	164	58	10.3	60	159	60	10.6	66	5	63	7.2
10	62	133	56	11.9	62	125	56	12.0	59	8	51	11.6
60	63	132	59	10.3	61	132	58	11.2	74	0	74	0.0
42	64	95	65	5.0	63	88	65	4.9	62	7	64	5.8
48	65	90	64	7.4	64	81	63	7.3	58	9	58	8.7
37	66	81	66	4.4	69	29	68	2.6	18	52	30	24.6
35	67	62	68	3.5	66	57	66	3.7	67	5	68	1.4
25	68	53	67	4.3	67	34	67	3.3	44	19	45	15.9
41	69	48	69	3.5	70	23	69	2.6	37	25	48	13.0
38	70	39	71	2.0	72	14	72	0.6	36	25	39	17.4
52	71	32	70	2.2	68	30	70	2.3	69	2	69	1.4
40	72	29	72	1.7	74	1	74	0.1	34	28	34	20.3
53	73	18	73	0.9	71	17	71	0.9	71	1	71	1.4
43	74	7	74	0.7	73	6	73	0.6	71	1	71	1.4
39	75	4	75	0.5	74	1	74	0.1	68	3	66	4.3

RANKED BY RSX-11M VOTES

ITEM	TOTALS RANK	VOTES	RANK	FREQ.	RSX-11M CLASS RANK	VOTES	RANK	FREQ.	IAS CLASS RANK	VOTES	RANK	FREQ.
61	1	134	1	65.8	1	1286	1	68.1	16	57	14	39.1
45	2	974	13	38.8	2	914	13	39.4	15	60	23	31.9
8	3	920	2	49.7	3	867	2	51.0	17	53	19	34.8
44	4	881	3	48.0	4	804	3	47.2	11	77	8	56.5
47	5	868	4	46.2	5	777	6	44.8	8	91	4	62.3
65	6	817	7	43.3	6	719	8	42.3	5	98	10	55.1
46	7	783	9	42.6	7	693	9	41.2	9	90	5	59.4
14	9	704	14	38.8	8	675	12	40.6	33	29	35	18.8
33	10	703	5	44.8	9	652	4	45.0	19	51	13	43.5
16	8	739	10	42.4	10	643	10	41.2	7	96	6	56.5
63	14	653	12	39.0	11	636	11	40.9	46	17	41	17.4
59	16	635	18	35.8	12	618	16	37.9	47	17	49	11.6
36	15	643	20	33.8	13	613	19	34.8	31	30	31	23.2
30	17	627	34	27.7	14	603	32	28.5	38	24	37	18.8
56	13	669	22	32.8	15	599	23	32.6	13	70	18	34.8
74	12	691	6	44.6	16	590	7	42.9	4	101	3	63.8
18	20	597	8	42.9	17	582	5	45.0	50	15	38	18.8
9	11	696	11	40.9	18	580	15	38.4	3	116	2	69.6
32	18	610	17	37.2	19	569	14	38.5	24	41	32	21.7
24	24	556	32	27.9	20	547	30	29.5	57	9	55	10.1
26	23	563	28	29.8	21	546	25	31.6	48	17	57	8.7
49	22	563	25	31.2	22	542	22	33.1	43	21	56	8.7
34	19	606	21	33.5	23	538	21	33.2	14	68	17	36.2
3	26	532	27	30.0	24	494	27	30.4	25	38	29	26.1
73	30	490	24	32.2	25	484	20	34.3	64	6	59	8.7
17	29	496	26	30.8	26	459	26	30.9	26	37	24	30.4
67	25	534	23	32.2	27	457	28	30.4	12	77	11	53.6
19	21	573	15	37.9	28	455	18	35.0	2	118	1	71.0
68	33	468	37	24.4	29	452	38	25.1	49	16	42	17.4
28	34	467	31	28.7	30	449	31	29.3	45	18	33	21.7
58	31	472	30	29.0	31	438	33	28.5	28	34	20	34.8
57	35	456	39	23.5	32	433	40	24.2	39	23	43	15.9
66	32	471	16	37.4	33	423	17	37.8	20	48	21	33.3
11	28	506	19	34.4	34	417	24	32.5	10	89	7	56.5
20	27	511	35	27.1	35	414	37	25.3	6	97	12	47.8
1	36	394	43	22.0	36	393	41	23.8	71	1	71	1.4
71	37	388	33	27.8	37	381	29	29.6	61	7	62	7.2

ITEM	TOTALS RANK	TOTALS VOTES	TOTALS RANK	TOTALS FREQ.	RSX-11M CLASS RANK	RSX-11M CLASS VOTES	RSX-11M CLASS RANK	RSX-11M CLASS FREQ.	IAS CLASS RANK	IAS CLASS VOTES	IAS CLASS RANK	IAS CLASS FREQ.
51	38	373	38	24.4	38	362	36	25.7	52	11	53	10.1
27	40	370	49	20.4	39	344	50	20.5	35	26	36	18.8
70	38	379	29	2 .1	40	343	34	28.3	27	36	16	37.7
72	41	357	55	16.2	41	335	54	16.1	41	22	40	17.4
62	44	335	41	22.9	42	333	39	24.8	69	2	69	1.4
6	42	356	44	21.8	43	333	43	22.8	40	23	52	10.1
5	43	343	36	25.7	44	332	35	27.1	52	11	53	10.1
22	45	323	47	21.0	45	311	46	21.4	51	12	46	15.9
13	47	296	46	21.1	46	288	44	22.5	60	8	65	4.3
29	51	269	50	19.8	47	263	49	20.8	64	6	59	8.7
64	46	299	40	23.3	48	256	42	23.0	23	43	28	26.1
12	53	257	48	20.9	49	247	47	21.4	54	10	47	14.5
31	49	275	42	22.8	50	246	45	22.4	32	29	27	27.5
75	50	271	52	19.4	51	240	52	18.4	30	31	25	30.4
23	48	283	51	19.5	52	239	53	18.3	21	44	22	33.3
69	55	241	53	18.0	53	231	51	18.9	55	10	61	7.2
7	52	260	45	21.7	54	228	48	21.2	29	32	26	27.5
2	54	246	61	10.0	55	225	61	9.4	42	21	44	15.9
4	58	183	60	10.2	56	183	59	11.1	74	0	74	0.0
50	60	171	57	11.0	57	164	57	11.7	63	7	67	2.9
54	59	173	63	9.2	58	164	62	8.9	56	9	50	11.6
21	56	203	54	16.5	59	160	55	14.6	22	43	15	37.7
55	61	164	58	10.3	60	159	60	10.6	66	5	63	7.2
60	63	132	59	10.3	61	132	58	11.2	74	0	74	0.0
10	62	133	56	11.9	62	125	56	12.0	39	8	51	11.6
42	64	95	65	5.0	63	88	65	4.9	62	7	64	5.8
48	65	90	64	7.4	64	81	63	7.3	58	9	58	8.7
15	57	191	62	9.5	65	69	64	5.5	1	122	9	55.1
35	67	62	68	3.5	66	57	66	3.7	67	5	68	1.4
25	68	53	67	4.3	67	34	67	3.3	44	19	45	15.9
52	71	32	70	2.2	68	30	70	2.3	69	2	69	1.4
37	66	81	66	4.4	69	29	68	2.6	18	52	30	24.6
41	69	48	69	3.5	70	23	69	2.6	37	25	48	13.0
53	73	18	73	0.9	71	17	71	0.9	71	1	71	1.4
38	70	39	71	2.0	72	14	72	0.6	36	25	39	17.4
43	74	7	74	0.7	73	6	73	0.6	71	1	71	1.4
39	75	4	75	0.5	74	1	74	0.1	68	3	66	4.3
40	72	29	72	1.7	74	1	74	0.1	34	28	34	20.3

RANKED BY IAS VOTES

ITEM	TOTALS RANK	TOTALS VOTES	TOTALS RANK	TOTALS FREQ.	RSX-11M CLASS RANK	RSX-11M CLASS VOTES	RSX-11M CLASS RANK	RSX-11M CLASS FREQ.	IAS CLASS RANK	IAS CLASS VOTES	IAS CLASS RANK	IAS CLASS FREQ.
15	57	191	62	9.5	65	69	64	5.5	1	122	9	55.1
19	21	573	15	37.9	28	455	18	35.0	2	118	1	71.0
9	11	696	11	40.9	18	580	15	38.4	3	116	2	69.6
74	12	691	6	44.6	16	590	7	42.9	4	101	3	63.8
65	6	817	7	43.3	6	719	8	42.3	5	98	10	55.1
20	27	511	35	27.1	35	414	37	25.3	6	97	12	47.8
16	8	739	10	42.4	10	643	10	41.2	7	96	6	56.5
47	5	868	4	46.2	5	777	6	44.8	8	91	4	62.3
46	7	783	9	42.6	7	693	9	41.2	9	90	5	59.4
11	28	506	19	34.4	34	417	24	32.5	10	89	7	56.5
44	4	881	3	48.0	4	804	3	47.2	11	77	8	56.5
67	25	534	23	32.2	27	457	28	30.4	12	77	11	53.6
56	13	669	22	32.8	15	599	23	32.6	13	70	18	34.8
34	19	606	21	33.5	23	538	21	33.2	14	68	17	36.2
45	2	974	13	38.8	2	914	13	39.4	15	60	23	31.9
61	1	1343	1	65.8	1	1286	1	68.1	16	57	14	39.1
8	3	920	2	49.7	3	867	2	51.0	17	53	19	34.8
37	66	81	66	4.4	69	29	68	2.6	18	52	30	24.6
33	10	703	5	44.8	9	652	4	45.0	19	51	13	43.5
66	32	471	16	37.4	33	423	17	37.8	20	48	21	33.3
23	48	283	51	19.5	52	239	53	18.3	21	44	22	33.3
21	56	203	54	16.5	59	160	55	14.6	22	43	15	37.7
64	46	299	40	23.3	48	256	42	23.0	23	43	28	26.1
32	18	610	17	37.2	19	569	14	38.5	24	41	32	21.7
3	26	532	27	30.0	24	494	27	30.4	25	38	29	26.1
17	29	496	26	30.8	26	459	26	30.9	26	37	24	30.4
70	38	379	29	29.1	40	343	34	28.3	27	36	16	37.7
58	31	472	30	29.0	31	438	33	28.5	28	34	20	34.8
7	52	260	45	21.7	54	228	48	21.2	29	32	26	27.5
75	50	271	52	19.4	51	240	52	18.4	30	31	25	30.4
36	15	643	20	33.8	13	613	19	34.8	31	30	31	23.2
31	49	275	42	22.8	50	246	45	22.4	32	29	27	27.5
14	9	704	14	38.8	8	675	12	40.6	33	29	35	18.8
40	72	29	72	1.7	74	1	74	0.1	34	28	34	20.3
27	40	370	49	20.4	39	344	50	20.5	35	26	36	18.8
38	70	39	71	2.0	72	14	72	0.6	36	25	39	17.4
41	69	48	69	3.5	70	23	69	2.6	37	25	48	13.0

	TOTALS				RSX-11M CLASS				IAS CLASS			
ITEM	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.	RANK	VOTES	RANK	FREQ.
30	17	627	34	27.7	14	603	32	28.5	38	24	37	18.8
57	35	456	39	23.5	32	433	40	24.2	39	23	43	15.9
6	42	356	44	21.8	43	333	41	22.8	40	23	52	10.1
72	41	357	55	16.2	41	335	54	16.1	41	22	40	17.4
2	54	246	61	10.0	55	225	61	9.4	42	21	44	15.9
49	22	563	25	31.2	22	542	22	33.1	43	21	56	8.7
25	68	53	67	4.3	67	34	67	3.3	44	19	45	15.9
28	34	467	31	28.7	30	449	31	29.3	45	18	33	21.7
63	14	653	12	39.0	11	636	11	40.9	46	17	41	17.4
59	16	635	18	35.8	12	618	16	37.9	47	17	49	11.6
26	23	563	28	29.8	21	546	25	31.6	48	17	57	8.7
68	33	468	37	24.4	29	452	38	25.1	49	16	42	17.4
18	20	597	8	42.9	17	582	5	45.0	50	15	38	18.8
22	45	323	47	21.0	45	311	46	21.4	51	12	46	15.9
5	43	343	36	25.7	44	332	35	27.1	52	11	53	10.1
51	39	373	38	24.4	38	362	36	25.7	52	11	53	10.1
12	53	257	48	20.9	49	247	47	21.4	54	10	47	14.5
69	55	241	53	18.0	53	231	51	18.9	55	10	61	7.2
54	59	173	63	9.2	58	164	62	8.9	56	9	50	11.6
24	24	556	32	27.9	20	547	30	29.5	57	9	55	10.1
48	65	90	64	7.4	64	81	63	7.3	58	9	58	8.7
10	62	133	56	11.9	62	125	56	12.0	59	8	51	11.6
13	47	296	46	21.1	46	288	44	22.5	60	8	65	4.3
71	37	388	33	27.8	37	381	29	29.6	61	7	62	7.2
42	64	95	65	5.0	63	88	65	4.9	62	7	64	5.8
50	60	171	57	11.0	57	164	57	11.7	63	7	67	2.9
29	51	269	50	19.8	47	263	49	20.8	64	6	59	8.7
73	30	490	24	32.2	25	484	20	34.3	64	6	59	8.7
55	61	164	58	10.3	60	159	60	10.6	66	5	63	7.2
35	67	62	68	3.5	66	57	66	3.7	67	5	68	1.4
39	75	4	75	0.5	74	1	74	0.1	68	3	66	4.3
52	71	32	70	2.2	68	30	70	2.3	69	2	69	1.4
62	44	335	41	22.9	42	333	39	24.8	69	2	69	1.4
1	36	394	43	22.0	36	393	41	23.8	71	1	71	1.4
43	74	7	74	0.7	73	6	73	0.6	71	1	71	1.4
53	73	18	73	0.9	71	17	71	0.9	71	1	71	1.4
4	58	183	60	10.2	56	183	59	11.1	74	0	74	0.0
60	63	132	59	10.3	61	132	58	11.2	74	0	74	0.0

CPU TOTALS

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
03	3	0.3	3	0.4	0	3	0	0	0.0	0	0
04	1	0.1	1	0.1	1	0	0	0	0.0	0	0
05	1	0.1	1	0.1	1	0	0	0	0.0	0	0
10	0	0.0	0	0.0	0	0	0	0	0.0	0	0
15	0	0.0	0	0.0	0	0	0	0	0.0	0	0
20	0	0.0	0	0.0	0	0	0	0	0.0	0	0
23	85	9.8	85	10.7	75	10	0	0	0.0	0	0
34	350	40.6	336	42.3	321	15	0	14	20.3	14	0
35	14	1.6	9	1.1	9	0	0	5	7.2	0	5
40	29	3.4	27	3.4	27	0	0	2	2.9	2	0
44	116	13.4	114	14.4	100	0	14	2	2.9	2	0
45	39	4.5	28	3.5	27	1	0	11	15.9	6	5
50	8	0.9	1	0.1	1	0	0	7	10.1	6	1
55	19	2.2	19	2.4	17	2	0	0	0.0	0	0
60	53	6.1	53	6.7	53	0	0	0	0.0	0	0
70	141	16.3	113	14.2	78	0	35	28	40.6	28	0
24	1	0.1	1	0.1	1	0	0	0	0.0	0	0
??	3	0.3	3	0.4	3	0	0	0	0.0	0	0

DISK TOTALS

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
RK05	127	14.7	116	14.6	114	2	0	11	15.9	2	9
RK06	35	4.1	33	4.2	33	0	0	2	2.9	2	0
RK07	62	7.2	62	7.8	52	0	10	0	0.0	0	0
RP02	13	1.5	0	0.0	0	0	0	13	18.8	13	0
RP03	10	1.2	7	0.9	7	0	0	3	4.3	2	1
RP04	31	3.6	22	2.8	19	0	3	9	13.0	8	1
RP05	7	0.8	5	0.6	5	0	0	2	2.9	2	0
RP06	71	8.2	50	6.3	40	0	10	21	30.4	21	0
RX01	1	0.1	1	0.1	0	1	0	0	0.0	0	0
RX02	27	3.1	27	3.4	25	2	0	0	0.0	0	0
RM02	51	5.9	50	6.3	48	0	2	1	1.4	1	0
RM03	66	7.6	63	7.9	46	0	17	3	4.3	3	0
RL01	164	19.0	163	20.5	161	2	0	1	1.4	1	0
RL02	131	15.2	129	16.2	129	0	0	2	2.9	2	0
RP07	0	0.0	0	0.0	0	0	0	0	0.0	0	0
RA80	0	0.0	0	0.0	0	0	0	0	0.0	0	0
RM05	2	0.2	2	0.3	0	0	2	0	0.0	0	0
TU55	0	0.0	0	0.0	0	0	0	0	0.0	0	0
TU58	2	0.2	2	0.3	0	2	0	0	0.0	0	0
NONE	20	2.3	20	2.5	0	20	0	0	0.0	0	0
????	43	5.0	42	5.3	35	2	5	1	1.4	1	0
????	0	0.0	0	0.0	0	0	0	0	0.0	0	0

DISK/CPU

DISK	03	04	05	10	15	20	23	34	35	40	44	45	50	55	60	70	24	??
RK05	0	1	1	0	0	0	8	71	7	15	2	11	2	4	5	0	0	0
RK06	0	0	0	0	0	0	0	14	0	2	1	0	1	3	16	1	0	0
RK07	0	0	0	0	0	0	0	21	0	2	21	3	0	5	10	0	0	0
RP02	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0
RP03	0	0	0	0	0	0	0	1	0	2	0	4	1	0	0	2	0	0
RP04	0	0	0	0	0	0	0	4	0	1	2	6	0	0	0	18	0	0
RP05	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	4	0	0
RP06	0	0	0	0	0	0	0	8	0	0	3	2	3	1	0	54	0	0
RX01	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RX02	0	0	0	0	0	0	10	17	0	0	0	0	0	0	0	0	0	0
RM02	0	0	0	0	0	0	1	18	4	0	19	3	0	2	3	1	0	0
RM03	0	0	0	0	0	0	0	11	0	0	2	2	1	0	3	47	0	0
RL01	0	0	0	0	0	0	37	106	2	2	3	2	0	1	11	0	0	0
RL02	0	0	0	0	0	0	14	48	0	2	62	2	0	1	0	1	1	0
RP07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RA80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RM05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
TU55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TU58	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
NONE	1	0	0	0	0	0	4	13	0	0	0	0	0	2	0	0	0	0
????	1	0	0	0	0	0	9	3	1	2	1	4	0	3	5	11	0	3
????	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPLICATION (FIRST CHOICE)

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
DATA A/D	154	17.8	149	18.8	141	8	0	5	7.2	4	1
DATA OTHER	140	16.2	137	17.3	112	12	13	3	4.3	2	1
PROCESS C.	115	13.3	114	14.4	106	7	1	1	1.4	1	0
PROG. DEV.	187	21.7	178	22.4	167	2	9	9	13.0	9	0
GRAPHICS	40	4.6	36	4.5	30	1	5	4	5.8	3	1
ANALYSIS	86	10.0	69	8.7	64	0	5	17	24.6	12	5
COMM.	20	2.3	16	2.0	13	1	2	4	5.8	2	2
TEXT PROC.	10	1.2	8	1.0	7	0	1	2	2.9	2	0
COMMERCIAL	57	6.6	38	4.8	30	0	8	19	27.5	18	1
DATA MANG.	19	2.2	15	1.9	12	0	3	4	5.8	4	0
OTHER	20	2.3	19	2.4	19	0	0	1	1.4	1	0
NONE	15	1.7	15	1.9	13	0	2	0	0.0	0	0

APPLICATION (ALL CHOICES)

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
DATA A/D	257	29.8	245	30.9	231	8	6	12	17.4	11	1
DATA OTHER	298	34.5	269	33.9	234	15	20	29	42.0	22	7
PROCESS C.	259	30.0	257	32.4	229	23	5	2	2.9	2	0
PROG. DEV.	593	68.7	531	66.9	486	18	27	62	89.9	53	9
GRAPHICS	274	31.7	245	30.9	230	2	13	29	42.0	28	1
ANALYSIS	363	42.1	322	40.6	294	14	14	41	59.4	35	6
COMM.	256	29.4	223	28.1	210	5	8	31	44.9	23	8
TEXT PROC.	192	22.2	166	20.9	153	1	12	26	37.7	23	3
COMMERCIAL	136	15.8	115	14.5	100	0	15	21	30.4	20	1
DATA MANG.	168	19.5	140	17.6	111	13	16	28	40.6	21	7
OTHER	39	4.5	37	4.7	36	1	0	2	2.9	2	0
NONE	15	1.7	15	1.9	13	0	2	0	0.0	0	0

PRODUCT LINES (FIRST CHOICE)

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
COMM. OEM	126	14.6	126	15.9	116	1	9	0	0.0	0	0
COMM. SER.	91	10.5	73	9.2	68	2	3	18	26.1	18	0
EDUCATION	16	1.9	14	1.8	14	0	0	2	2.9	2	0
ENG. SYS.	90	10.4	86	10.8	83	0	3	4	5.8	4	0
GOV. SYS.	69	8.0	58	7.3	53	1	4	11	15.9	10	1
GRAPH. ART	8	0.9	5	0.6	3	0	2	3	4.3	2	1
LAB. SYS.	175	20.3	165	20.8	140	22	3	10	14.5	8	2
MANUFACT.	94	10.9	92	11.6	74	4	14	2	2.9	2	0
MED. SYS.	10	1.2	10	1.3	10	0	0	0	0.0	0	0
TECH. OEM	79	9.2	74	9.3	69	1	4	5	7.2	0	5
TELEPHONE	10	1.2	10	1.3	9	0	1	0	0.0	0	0
WORD PROC.	2	0.2	2	0.3	2	0	0	0	0.0	0	0
OTHER	4	0.5	3	0.4	2	0	1	1	1.4	0	1
NONE	89	10.3	76	9.6	71	0	5	13	18.8	12	1

PRODUCT LINES (ALL CHOICES)

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
COMM. OEM	173	20.0	171	21.5	158	1	12	2	2.9	2	0
COMM. SER.	102	11.8	82	10.3	76	2	4	20	29.0	20	0
EDUCATION	86	10.0	71	8.9	68	2	1	15	21.7	15	0
ENG. SYS.	138	16.0	132	16.6	124	3	5	6	8.7	6	0
GOV. SYS.	130	15.1	116	14.6	95	13	8	14	20.3	13	1
GRAPH. ART	18	2.1	15	1.9	13	0	2	3	4.3	2	1
LAB. SYS.	263	30.5	248	31.2	219	25	4	15	21.7	13	2
MANUFACT.	133	15.4	130	16.4	110	5	15	3	4.3	3	0
MED. SYS.	14	1.6	14	1.8	14	0	0	0	0.0	0	0
TECH. OEM	110	12.7	102	12.8	95	1	6	8	11.6	3	5
TELEPHONE	39	4.5	39	4.9	37	0	2	0	0.0	0	0
WORD PROC.	39	4.5	38	4.8	32	0	6	1	1.4	1	0
OTHER	20	2.3	19	2.4	12	4	3	1	1.4	0	1
NONE	89	10.3	76	9.6	71	0	5	13	18.8	12	1

LAYERED PRODUCTS (ALL CHOICES)

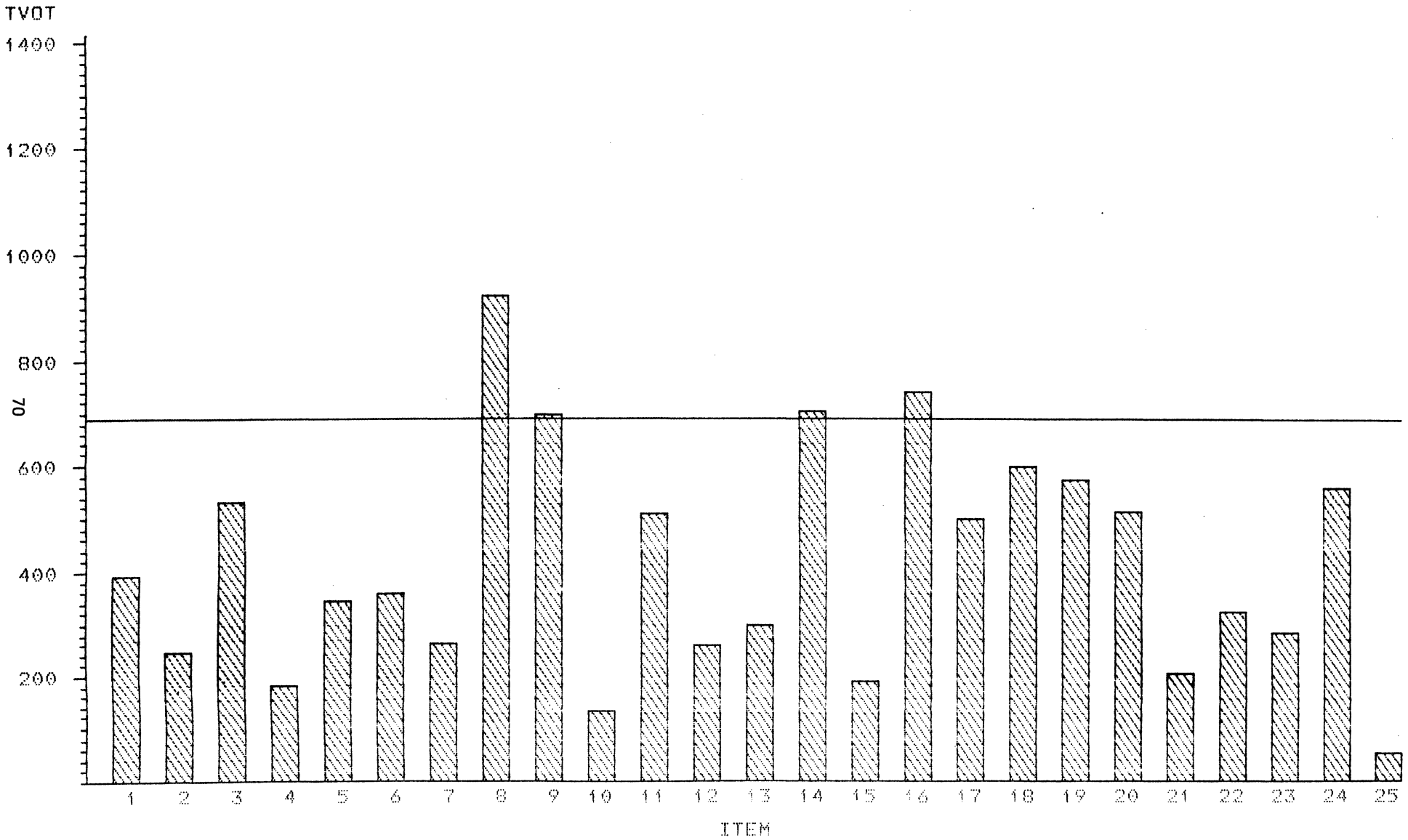
ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
BASIC-11	184	21.3	168	21.2	143	3	22	16	23.2	16	0
BASIC +2	134	15.5	127	16.0	98	2	27	7	10.1	7	0
COBOL-11	78	9.0	74	9.3	52	1	21	4	5.8	3	1
CORAL 66	8	0.9	8	1.0	8	0	0	0	0.0	0	0
FORTRAN 4	346	40.1	315	39.7	283	6	26	31	44.9	24	7
FORTRAN 4+	495	57.4	454	57.2	399	13	42	41	59.4	38	3
RPG II	2	0.2	2	0.3	2	0	0	0	0.0	0	0
PASCAL	109	12.6	104	13.1	100	1	3	5	7.2	4	1
"C"	89	10.3	88	11.1	86	0	2	1	1.4	1	0
EDI	267	30.9	208	26.2	195	6	7	59	85.5	49	10
EDT	264	30.6	261	32.9	242	7	12	3	4.3	3	0
TECO	86	10.0	84	10.6	77	0	7	2	2.9	1	1
DECNET	286	33.1	258	32.5	217	12	29	28	40.6	27	1
DBMS-11	12	1.4	10	1.3	9	0	1	2	2.9	2	0
RMS-11K	227	26.3	208	26.2	171	1	36	19	27.5	19	0
DATATRIEVE	177	20.5	168	21.2	134	1	33	9	13.0	9	0
SORT-11	198	22.9	168	21.2	127	1	40	30	43.5	28	2
2780	48	5.6	43	5.4	38	0	5	5	7.2	5	0
FMS-11	70	8.1	70	8.8	50	1	19	0	0.0	0	0
KED	135	15.6	134	16.9	114	1	19	1	1.4	1	0
	0	0.0	0	0.0	0	0	0	0	0.0	0	0
	0	0.0	0	0.0	0	0	0	0	0.0	0	0
	0	0.0	0	0.0	0	0	0	0	0.0	0	0
	0	0.0	0	0.0	0	0	0	0	0.0	0	0
OTHER	105	12.2	89	11.2	71	1	17	16	23.2	16	0
OTHER ED.	61	7.1	57	7.2	55	0	2	4	5.8	4	0
NONE.	30	3.8	30	3.8	15	13	2	0	0.0	0	0

LOCATIONS VOTING

ITEM	TOTALS TOTAL	%	RSX-11M CLASS TOTAL	%	11M	11S	M+	IAS CLASS TOTAL	%	IAS	11D
USA	863	100.0	794	100.0	714	31	49	69	100.0	58	11
EUR	0	0.0	0	0.0	0	0	0	0	0.0	0	0
CAN	0	0.0	0	0.0	0	0	0	0	0.0	0	0
AUS	0	0.0	0	0.0	0	0	0	0	0.0	0	0
SAM	0	0.0	0	0.0	0	0	0	0	0.0	0	0
ASI	0	0.0	0	0.0	0	0	0	0	0.0	0	0

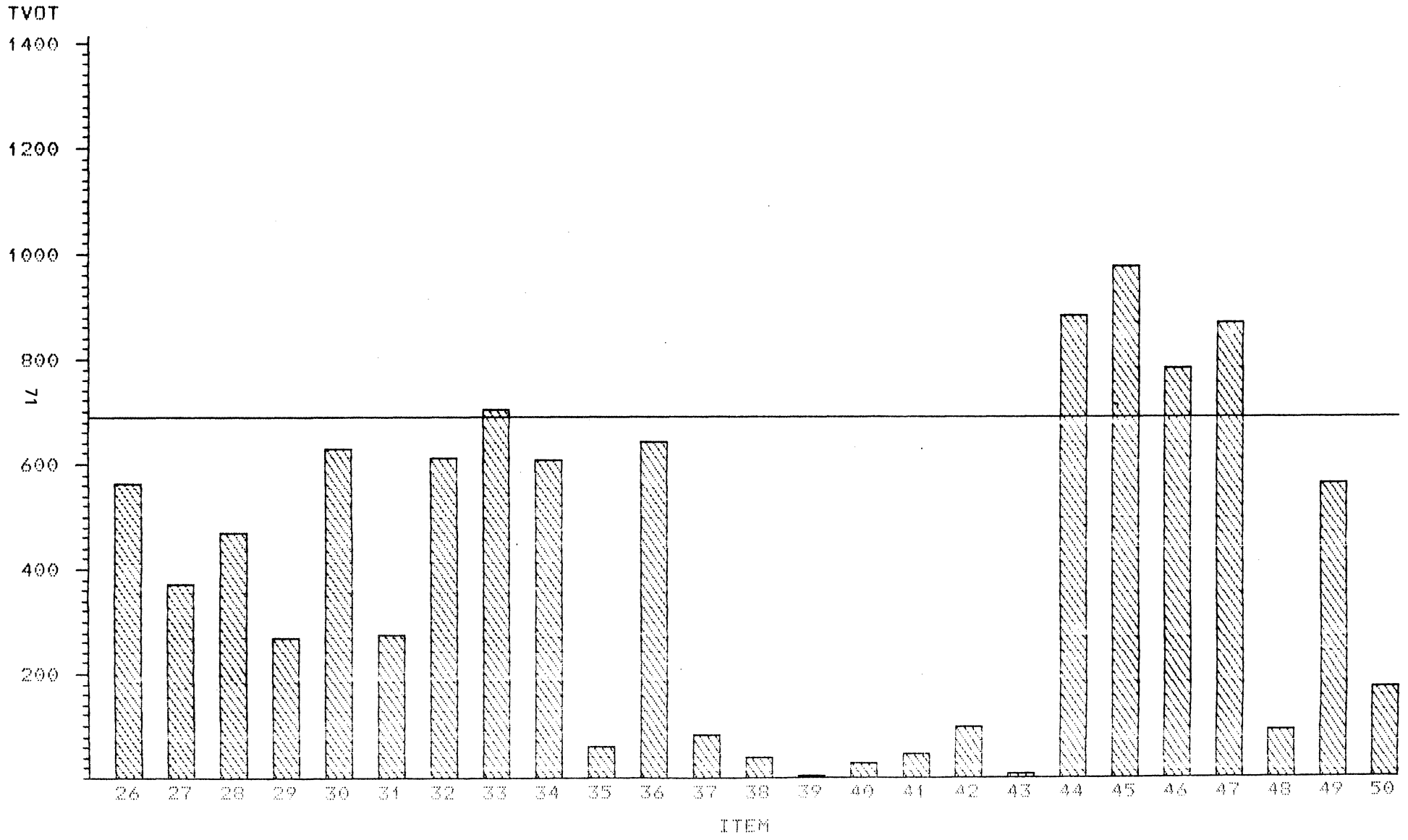
RSX-11M / IAS 1981 MENU VOTE
TOTAL VOTE BY MENU ITEM NUMBER

GROUP=ITEMS 01-25



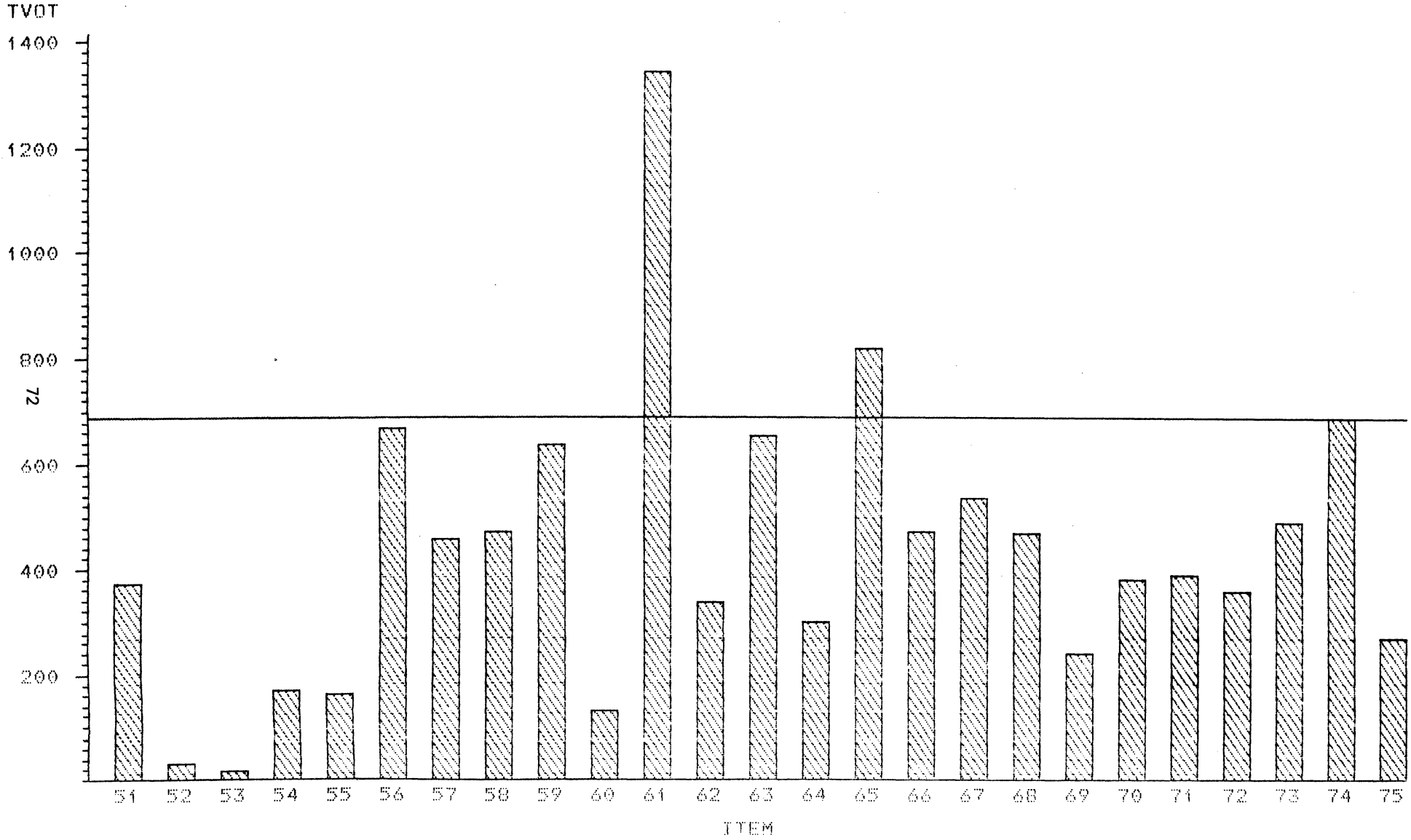
RSX-11M / IAS 1981 MENU VOTE
TOTAL VOTE BY MENU ITEM NUMBER

GROUP=ITEMS 26-50



RSX-11M / IAS 1981 MENU VOTE
TOTAL VOTE BY MENU ITEM NUMBER

GROUP=ITEMS 51-75



Forms, Forms, Forms

Ralph Stamerjohn
Multi-Tasker Editor

Following this article are blank forms for various DECUS and RSX/IAS SIG purposes. Please save these forms and make however many copies you need. The forms will be a once-a-year feature of the Multi-Tasker and will be repeated the last issue of each volume. Volume numbers change every July, the start of the DECUS fiscal year.

In this issue are blank forms for DECUS membership, changing current membership enrollment, DeVIAS membership, DECUS library submissions, RSX/IAS SIG menu input, ordering DECUS library catalogs, and back issues of the Multi-Tasker. If you use a form, please return it to the specified address and not to the Multi-Tasker editor.

The DECUS membership form is for new members. Please use this to enroll others at your site or yourself if you do not get the Multi-Tasker directly and must depend on a circulation list. If you are a current member and wish to join other SIG's, please use the second form. Note, almost all of the other SIG's publish newsletters. If you have an interest in another area, you will find their newsletters and activities very useful to you.

DeVIAS is a world-wide Local User's Group. It is for IAS sites only. While meetings are held in the Philadelphia area, DeVIAS publishes a very good newsletter for IAS specific topics.

The DECUS library submission form is for submitting your software to the DECUS library so others can use it. One unfortunate aspect of the success of the RSX/IAS SIG tape copy is the submissions from our users to the DECUS library have fell off. This is regretable because the library provides a valuable service, especially because well-written catalogs are provide so you do not have to hunt through hundreds of feet of magtape to find one item.

The RSX/IAS SIG has a very active project under the direction of Legare Coleman to gather user input for new features in Digital's products and prioritize this input. The process is called the Menu and a form for submitting your input is included in this section.

Finally, are simple order forms to get the new DECUS library catalog and/or back issues of the Multi-Tasker.

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3 ☐	SYSTEMS ANALYSIS	103 ☐	TECHNICAL ASSISTANT
4 ☐	APPLICATIONS PROGRAMMING	104 ☐	SERVICES COORDINATOR
5 ☐	SYSTEMS ANALYSIS/PROGRAMMING	105 ☐	MANAGER
6 ☐	OPERATING SYSTEM PROGRAMMING	106 ☐	ANALYST
7 ☐	DATA BASE ADMINISTRATION	107 ☐	PROGRAMMER
8 ☐	DATA COMMUNICATIONS/TELECOMMUNICATIONS	108 ☐	DATA BASE MANAGER
9 ☐	COMPUTER OPERATIONS	109 ☐	DATA BASE ADMINISTRATOR
10 ☐	PRODUCTION CONTROL	110 ☐	MANAGER OF DP OPERATIONS

TYPE OF DIGITAL HARDWARE USED: Please check those applicable to you.

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83 ☐ DECSYSTEM-20	14 ☐ PDP-12	55 ☐ VAX-11/780
52 ☐ LSI-11	33 ☐ PDP-15	5 ☐ WPS-8
3 ☐ PDP-8 - Family	16 ☐ PDT	51 ☐ WPS-11

MAJOR OPERATING SYSTEMS/LANGUAGES USED: Please check those applicable to you.

2 ☐ ALGOL	28 ☐ COS	48 ☐ FORTRAN	81 ☐ RSTS/E	107 ☐ WPS-8
5 ☐ APL	31 ☐ CPL	51 ☐ GAMMA	83 ☐ RSX	106 ☐ WPS-11
6 ☐ ASSIST-11	34 ☐ DATATRIEVE	110 ☐ IAS	91 ☐ RMS	72 ☐ PL-11
7 ☐ BASIC	35 ☐ DBMS	53 ☐ IQL	109 ☐ RT-11	19 ☐ C
17 ☐ BLISS	38 ☐ DECnet	58 ☐ MACRO	97 ☐ TECO	1 ☐ ADA
20 ☐ CAPS-11	43 ☐ DIBOL	65 ☐ MUMPS(DSM-11)	70 ☐ TOPS-10	66 ☐ MODULA
22 ☐ COBOL	45 ☐ DOS-11	67 ☐ OS/8	71 ☐ TOPS-20	92 ☐ RPG
26 ☐ CORAL-66	47 ☐ FOCAL	68 ☐ PASCAL	104 ☐ VMS	OTHER: _____

SPECIAL INTEREST GROUP (SIGs) ENROLLMENT

I wish to participate in the following DECUS U.S. Chapter Special Interest Groups. (See descriptions on pages 6 and 7.)

33 ☐ APL SIG
1 ☐ 12-Bit SIG
2 ☐ BASIC SIG
4 ☐ COBOL SIG
6 ☐ DATA MGMT. SYS. SIG
5 ☐ DATATRIEVE SIG
7 ☐ DIBOL Business SIG
8 ☐ EDUSIG
10 ☐ Graphics Applications SIG
11 ☐ HMS - Hardware Mgmt. SIG
31 ☐ LABS SIG
27 ☐ LARGE SYSTEMS SIG
13 ☐ LSI-11 SIG
14 ☐ MUMPS SIG
15 ☐ NETWORKS SIG
18 ☐ RSTS/E SIG
17 ☐ RSX-11/IAS SIG
19 ☐ RT-11 SIG
32 ☐ SITE MANAGEMENT AND TRAINING SIG
21 ☐ Special Software and Operating Systems SIG
16 ☐ Structured Languages SIG
26 ☐ VAX SYSTEMS SIG

☐ OTHER _____

TYPE OF BUSINESS (ENVIRONMENT) - Please check those which best describe your business.

21 ☐ ACCOUNTANCY
7 ☐ BANK
11 ☐ CONSUMER ELECTRONICS
18 ☐ CONSULTANT
13 ☐ DATA PROCESSING SERVICES
17 ☐ DIGITAL EMPLOYEE-ENGINEERING GROUP
15 ☐ DIGITAL EMPLOYEE-MARKETING GROUP
16 ☐ DIGITAL EMPLOYEE-SERVICE GROUP
1 ☐ EDUCATION/PRIMARY
2 ☐ EDUCATION/SECONDARY
3 ☐ EDUCATION/UNIVERSITY
5 ☐ GOVERNMENT AGENCY
4 ☐ HOSPITAL
14 ☐ LIBRARY
9 ☐ MANUFACTURER
6 ☐ MILITARY INSTALLATION
8 ☐ OEM-COMMERCIAL
22 ☐ OEM-TECHNICAL
20 ☐ RESEARCH/DEVELOPMENT
10 ☐ RETAIL
19 ☐ TELEPHONE/UTILITIES
12 ☐ TRANSPORTATION SERVICES

☐ OTHER _____

COMPUTER APPLICATIONS - Please check those which are applicable to you.

14 ☐ BUSINESS/COMMERCIAL
24 ☐ BUSINESS/INFORMATION SYSTEMS
7 ☐ CHEMISTRY
4 ☐ CLINICAL LABORATORY
13 ☐ COMPUTATION
22 ☐ DATA ACQUISITION
2 ☐ DATA COMMUNICATIONS
21 ☐ DATA REDUCTION
10 ☐ EDUCATIONAL ADMINISTRATION
11 ☐ EDUCATION-TECHNOLOGY
17 ☐ ENGINEERING
15 ☐ FINANCE/ACCOUNTING
27 ☐ GOVERNMENT
25 ☐ GRAPHICS
12 ☐ INDUSTRIAL
5 ☐ LABORATORY/SCIENTIFIC
8 ☐ LIFE SCIENCES
20 ☐ MANUFACTURING
9 ☐ MEDICAL RESEARCH
23 ☐ NUMERICAL CONTROL
18 ☐ OEM-COMMERCIAL
28 ☐ OEM-TECHNICAL
6 ☐ PHYSICAL SCIENCES
19 ☐ RESEARCH
26 ☐ SOFTWARE DEVELOPMENT
3 ☐ TELECOMMUNICATIONS
1 ☐ TIMESHARING
16 ☐ TYPESETTING/PUBLICATIONS

☐ OTHER _____

DO YOU WISH TO BE INCLUDED IN MAILINGS CONDUCTED BY DIGITAL (for Marketing purposes etc.?) ☐ Yes ☐ No

HOW DID YOU LEARN ABOUT DECUS?

1 ☐ ANOTHER DECUS MEMBER
2 ☐ SYMPOSIA
8 ☐ DECUS CHAPTER OFFICE
10 ☐ DIGITAL STORE
4 ☐ DIGITAL SALES
5 ☐ HARDWARE PACKAGE
6 ☐ SOFTWARE PACKAGE
12 ☐ ADVERTISING
13 ☐ LUG
14 ☐ SPECIAL INTEREST GROUP
7 ☐ SOFTWARE DISPATCH (DIGITAL Newsletter)

☐ OTHER _____

Associate Membership Applicant Signature: _____ Date: _____

Installation Delegate Membership Application Signature

The Bylaws of the Society entitle an Installation to appoint one delegate per CPU. My immediate concern with the use of this CPU constitutes my installation appointing me as their delegate representing this CPU to DECUS.

I understand my delegate appointment as qualification to receive all official communications and to participate in voting on U.S. Chapter policies and elections.

Signature: _____ Date: _____

Forward to: DECUS U.S. Chapter, Membership Processing Group
One Iron Way, MR2-3/E55
Marlboro, MA 01752 U.S.A.

April 1982

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY

LIBRARY SUBMITTAL FORM

TO BE COMPLETED BY DECUS

DECUS No. _____

Ref. No. _____

This form is to be used when submitting new or revised programs or documentation to the DECUS Library. PLEASE TYPE ALL INFORMATION. If this form is not complete, processing of your submission will be delayed.

GENERAL INFORMATION

1. Object Computer (on which this program runs):

   ☐PDP-8 ☐PDP-12 ☐DECsystem-10 ☐VAX

   ☐PDP-11 ☐PDP-15 ☐DECSYSTEM-20 ☐Other _____

2. Submission Name: _____

   _____ Version/Date: _____ ☐New or ☐Revised

3. Keywords for Index: _____

4. Current Author: _____ Phone: _____

   Author's Affiliation: _____

   Address: _____

   State/Country _____ ZIP/Postal Code _____

5. Submitter (if different) _____ Phone: _____

   Submitter's Affiliation: _____

   Address: _____

   State/Country _____ ZIP/Postal Code _____

6. Which of the above information (items 4 and 5) should be published?

   ☐Name ☐Affiliation ☐Address

7. Is maintenance available for this submission? ☐Yes ☐No

   Person to Contact: _____ Phone: _____

8. Operating System(s): Check all that apply. ☐Operating System Independent (e.g., higher-level languages)

PDP-8/12	**PDP-11**	**DECsystem-10/20**
☐COS-310 version _____	☐DOS/BATCH version _____	☐TOPS-10 version _____
☐OS/8 version _____	☐GAMMA-11 version _____	☐TOPS-20 version _____
☐OS/12 version _____	☐IAS version _____	☐Other: _____
☐Paper Tape System	☐MUMPS-11 version _____	
☐Other: _____	☐RSTS/E version _____	**OTHER**
	☐RSX-11D version _____	☐ _____
PDP-15	☐RSX-11M version _____	
☐DOS-15 version _____	☐RSX-11S version _____	
☐RSX-15 version _____	☐RT-11 version _____	
☐Other: _____	☐Other: _____	

Is a particular operating system version required? ☐Yes or ☐No

If YES please explain: _____

Printed in U.S.A.

9. Source Language:

☐ALGOL	☐CORAL	☐GAMMA-11 FOCAL	☐PAL-8/PAL-III
☐APL	☐DIBOL	☐MACREL	☐PAL-11
☐BASIC	☐FOCAL	☐MACRO-10	☐PASCAL
☐BASIC-PLUS	☐FORTRAN II	☐MACRO-11	☐SIMULA
☐BLISS	☐FORTRAN IV	☐MUMPS-11	☐TECO
☐COBOL	☐FORTRAN IV-PLUS	☐MUMPS (Standard)	☐OTHER: _____

10. Memory Required: _____ *(Words or Bytes)* CPU: _____

11. Special Hardware Required: (Please list unique hardware requirements other than minimum requirements for operating system(s) specified in item 8.) _____

_____

12. Other Software Required: (Please list any software required to use this program other than compilers, assemblers, loaders, and operating systems as designated in items 8 and 9.) _____

_____

13. Are complete sources included with this submission? ☐Yes or ☐No

If NO is checked above, please explain: _____

_____

_____

14. Are any binary, object, or executable files included with this submission that do not have related source files? ☐Yes or ☐No

If YES please list and explain: _____

_____

_____

15. Restrictions, deficiencies, problems: _____

_____

_____

_____

16. Other documentation (if applicable): _____

_____

17. Is this a revision of an existing program? ☐Yes or ☐No

If YES please give the following information: PREVIOUS DECUS NUMBER: _____

Previous Name: _____ Version: _____

Previous Author: _____

Changes or Improvements: _____

_____

_____

Does this revision replace the previous version? ☐Yes or ☐No

MATERIAL SUBMITTED

18. Submit all documentation on machine readable media (preferred) or on U.S. standard size paper (8½ x 11). See "GUIDELINES FOR PAPER DOCUMENTATION".

    Is documentation included on machine-readable media? ☐Yes ☐No

19. Hard Copy Documentation

    ☐ Abstract: Required for all submissions. 75 to 150 word abstract is suggested, 250 word maximum. Abstract is for publication in the Library Catalog.

    ☐ Write-up ☐ Manual ☐ Listing

    Can listing be generated from source(s) included with this submission? ☐Yes or ☐No

20. Paper Tapes: Number of ASCII Source tapes: _____ Number of binary (or other) tapes: _____

    Please label and number each tape indicating format (ASCII, binary, or other), file name (if applicable), and any other required information.

21. Magnetic Media: All disks, floppy disks, DECtapes, and magtapes must have hard copy directory listings included with the submission. Tape labels, PPNs or UICs should be specified if applicable. Complete media reproduction instructions must be included if "OTHER" media format is specified below.

    A. Approximate number of blocks required for submission: _____

    B. Number of DECtapes submitted: _____ Format: ☐OS/8 ☐PDP-15 ☐DOS/BATCH or RSTS/E ☐DECsystem-10 ☐RT-11 ☐OTHER: _____

    C. Number of LINCtapes submitted: _____ Format: ☐OS/12 ☐OTHER: _____

    D. Number of cassettes submitted: _____ Format: ☐OS/8 ☐CAPS-11 ☐CAPS-8 ☐OTHER: _____

    E. Number of floppy disks submitted: _____ Format: ☐COS-310 ☐RT-11 ☐OS/8 ☐FILES-11 (RSX/IAS) ☐OTHER: _____
    ☐ *Single density (preferred)* ☐ *Double density*

    F. Number of magtapes submitted: _____ Format: ☐800 BPI ☐7-track ☐1600 BPI ☐9-track (preferred) ☐ANSI Standard ☐PDP-15 ☐DEC-10/20 BACKUP-INTERCHANGE ☐DOS/BATCH ☐DECsystem-10 BACKUP ☐OTHER: _____

    G. Number of RK05 disks submitted: _____ Format: ☐OS/8 ☐DOS/BATCH ☐FILES-11 ☐RT-11 ☐RSTS/E ☐Other: _____

    Pack Label(s): _____

ADDITIONAL INFORMATION

1. Material should be forwarded to the attention of the DECUS Library at one of the following addresses:

   AUSTRALIA and NEW ZEALAND: DECUS Australia, P.O. Box 384, Chatswood, NSW 2067, Australia

   CANADA: DECUS CANADA, P.O Box 13000, Kanata, Ontario K2K 2A6, Canada

   EUROPE and MIDDLE EAST: DECUS EUROPE, P.O. Box 510, 12 Av. des Morgines, CH-1213 Petit-Lancy 1/GE, Switzerland

   U.S. and OTHER: DECUS U.S., One Iron Way, Mail Stop: MR2/E55, Marlboro, MA 01752

2. If package is licensed, please contact DECUS before any material is sent.
3. Tapes MUST accompany all DECsystem-10/20 submissions. Programs with only documentation will NOT be accepted. (DECsystem-10/20 submitters: It is required that all documentation be in machine readable form.)
4. DECUS will send you a production copy of your submission for your verification and evaluation. We will assume it to be an accurate reproduction unless notified.
5. Any additional comments or instructions to DECUS should be attached to the submittal form. Additional comments or instructions that customers should be made aware of are to be contained in the abstract or write-up of the program.

GUIDELINES FOR PAPER DOCUMENTATION

In order to help us process your submission and make your program available to other users as quickly as possible, please stay within a 3/8-inch side margin and 1/2-inch top and bottom margin on 8½ x 11 inch (U.S. size) white paper. Overseas users or others who are unable to use U.S. size paper are kindly requested to leave additional margin at the bottom of each page such that the text to be reproduced does not exceed 7¾ x 10 inch or 19.5 x 25.5 cm. Use only black typewriter ribbon. Illustrative information must be black line drawings or screened photographs pasted down on the original. Glossy photographs will not be reproduced. DECUS Library documentation is normally photocopied.

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* Where the individual signing is acting on behalf of a company or institution.

DECUS RSX/IAS SIG
MENU ITEM SUBMISSION

MENU COMMITTEE USE ONLY
ACTION: SUBMIT___ DROP___ HOLD___
PRIORITY: HIGH___ MED___ LOW___
ID_____

AUTHOR:

NAME_____

INSTALLATION_____

ADDRESS_____

_____

PHONE__(___)_____

APPLICABLE SYSTEMS

RSX11M___ RSX11S___ IAS___

OTHER_____

TYPE OF REQUEST: SOFTWARE___ HARDWARE___

DOCUMENTATION___ SERVICE___

OTHER_____

STATEMENT OF MENU ITEM:

SUGGESTED SOLUTION (OPTIONAL):

STATEMENT OF BENEFITS:

DeVIAS

DECUS

MEMBERSHIP APPLICATION

Name _____

Address _____

_____

_____

_____

Phone _____

Hardware at your IAS site:

CPU(s) _____ Memory _____

Disk(s) _____

Tape _____

Whatever Else: _____

Software: IAS version _____

( )FORTRAN IV ( )FORTRAN IV PLUS ( )COBOL ( )CORAL

( )BASIC ( )BASIC PLUS ( )BASIC PLUS 2

( )RMS-11K ( )DATATRIEVE ( )DBMS-11 ( )TYPESET-11

Other DEC Software: _____

Non-DEC Software: _____

The principal Application at your site: _____

_____

I wish to be associated with the bunch called the DeVIAS LUG, within the limits of propriety:

_____
signed

Date: _____

_____
DECUS Membership Number *

*DECUS Membership is NOT required, but it is encouraged.

Please return Completed Form to: Robert F. Curley, Department of Radiation Therapy, University of Pennsylvania, 3400 Spruce Street, Philadelphia, Pennsylvania 19104.

Delaware Valley IAS Users Group

U.S. Members Only!

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☐ Hardcopy - (last 2 years, Vol. 11 #1 through Vol. 14 #6)

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DECUS U.S. CHAPTER
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ORDER YOUR COPY OF THE NEW 1982/1983 DECUS PROGRAM LIBRARY CATALOG NOW!

By mailing your order now, the new catalogs which you request will be mailed to you automatically, as soon as they become available in June, 1982. In addition to programs previously offered, the catalogs contain abstracts of new and revised programs that have been submitted to the DECUS Program Library since the 1981/1982 catalogs were published.

THE TWO NEW CATALOGS ARE:

- PDP-11/VAX SOFTWARE CATALOG - This catalog describes DECUS software for RSTS (and RSTS/E), RSX-11, IAS, RT-11, and VAX/VMS. The Library includes programs written in BASIC, BASIC-PLUS, FORTRAN, MACRO, PASCAL, as well as other programming languages.

- DECSYSTEM-10/20 SOFTWARE CATALOG - This catalog describes DECUS software for the 36-bit family of DIGITAL computers. The current DECsystem-10 Library totals more that 200,000 blocks of programs, documentation, and related data. Many important application packages and system programs are available.

The PDP-8 Catalog has NOT been revised. An addendum is available at no charge to update your 1981/1982 copy.

- PDP-8 SOFTWARE CATALOG - This catalog describes DECUS software for OS/8, OS/78, and paper-tape systems, including many programs written in BASIC, FOCAL, FORTRAN, and PAL (or PAL-8).

Please indicate the catalog(s) requested:

Payment must accompany this order.

MICROFICHE (no charge)
Limit: One each of the following:

[ ]PDP-11/VAX
[ ]DECsystem-10/20
[ ]PDP-8 (81/82)
[ ]PDP-8 Addendum

HARDCOPY at $ 3.00 each

[ ]PDP-11/VAX
[ ]DEC-10/20
[ ]PDP-8 (81/82)
[ ]TOTAL $ _____ enclosed
[ ]PDP-8 Addendum (free)

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