TRANSMITTAL TO: Frank S. Cooper

TRANSMITTAL TO: Frank S. Cooper
                  Haskins Laboratories
                  270 Crown Street
                  New Haven, Connecticut 06510

FROM: Marcia Keeney (NIC)
                  Station Agent   1

At your request, I am sending the NIC 15198 SUR Note 77.   1a

MLK/kk   1b

17356 Distribution
   Station Agent,

TRANSMITTAL TO: Frank S. Cooper

(J17356) 17-JUL-73 18:50;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Deborah Forman

TRANSMITTAL TO: Deborah Forman
                   Center for Advanced Computation
                   University of Illinois at Urbana-Champaign
                   Urbana, Illinois   61801

FROM: Marcia Keeney (NIC)
                   Station Agent   1

At your request, I am sending the following documents: 1a

    NIC 16522
        16521
        16520
        16517
        16515
        16469
        16468
        15597
        15573   1a1

MLK/kk   1b

17358 Distribution
    Station Agent,

TRANSMITTAL TO: Deborah Forman

(J17358)   17-JUL-73 18:53;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Terence E. Devine

TRANSMITTAL TO: Terence E. Devine
                   Rutgers University
                   Department of Computer Science
                   Hill Mathematics Center
                   University Heights Campus
                   New Brunswick, New Jersey 08903

FROM: Marcia Keeney (NIC)
                   Station Agent   1

Your name was entered today in the IDENTFILE of the Network
Information Center.   Enclosed is a copy of that entry.   It will
appear as such in the next update to the Network Directory (NIC
5150).   If anything in the entry is incorrect, please notify Marcia
Keeney at the NIC and she will correct it.   1a

17359 Distribution
     Station Agent,

1

TRANSMITTAL TO: Terence E. Devine

(J17359) 17-JUL-73 18:51;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Perry L. Miller

TRANSMITTAL TO: Perry L. Miller
                   M.I.T. Lincoln Lab - TX2 Group
                   244 Wood Street
                   Lexington, Massachusetts   02173

FROM: Jeanne North (JBN)
                   Network Information and Station Agent Coordinator   1

As we discussed, here are: 1a

    NIC 10937   Codes used in the Master Catalog
    NIC 10923   Codes Used in the Master Catalog, (Codes Manual)
    TNLS Quick Reference   1a1

In a few days we will have a novice primer for the content analyser
so I'll not be sending the L10 Programming Guide, but will send you
the primer material within a week.   1b

MLK/kk   1c

17360 Distribution
    Station Agent,

TRANSMITTAL TO: Perry L. Miller

(J17360) 17-JUL-73 18:54;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Keith Sandum

TRANSMITTAL TO: Keith Sandum
                   3704 Boelter Hall
                   405 Hilgard Ave.
                   UCLA
                   Los Angeles Ca.   90024

FROM: Marcia Keeney (NIC)
                   Station Agent   1

At your request, I am sending the Network Resources Notebook (NIC
6740).   1a

MLK/kk   1b

17361 Distribution
   Station Agent,

TRANSMITTAL TO: Keith Sandum

(J17361) 17-JUL-73 18:52;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Bruce Buchanan

TRANSMITTAL TO: Bruce Buchanan
                   Stanford University - Heuristic Programming
                   Department of Computer Science
                   Serra House
                   Stanford, California 94305

FROM: Marcia Keeney (NIC)
                   Station Agent   1

At your request, I am sending the following documents: 1a

     NIC 16523
         16522
         16516
         16515
         16469
         16468
         15597   1a1

MLK/kk   1b

1

17363 Distribution
    Station Agent,

TRANSMITTAL TO: Bruce Buchanan

(J17363) 17-JUL-73 18:57;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: David H. Crocker

TRANSMITTAL TO: David H. Crocker
                  UCLA - Network Measurement Center
                  Computer Science Department
                  3732 Boelter Hall
                  University of California at Los Angeles
                  Los Angeles, California 90024

FROM: Marcia Keeney (NIC)
                  Station Agent   1

At your request, I am sending L10 Documentation: 1a

    NIC 7052
    NIC 9246
    NIC 13136   1a1

MLK/kk   1b

17365 Distribution
Station Agent,

TRANSMITTAL TO: David H. Crocker

(J17365)   17-JUL-73 18:58;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA   ; Sub-Collections: NIC' ; Clerk: KIRK ;

TRANSMITTAL TO: Ted R. Strollo

TRANSMITTAL TO: Ted R. Strollo
                   Bolt Beranek and Newman Inc.
                   50 Moulton Street
                   Cambridge, Massachusetts 02138

FROM: Marcia Keeney (NIC)
                   Station Agent   1

At your request, I am sending NIC 16824, the Offquota Login document.   1a

MLK/kk   1b

17369 Distribution
    Station Agent,

TRANSMITTAL TO: Ted R. Strollo

(J17369) 17-JUL-73 19:00;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Network Liaisons and Station Agents

TRANSMITTAL TO: Network Liaisons and Station Agents
Stanford University — Heuristic Programming
Department of Computer Science
Serra House
Stanford, California 94305

FROM: Mike Kudlick (MDK@SRI-ARC)
Manager, ARPA Network Information Center   1

Enclosed are an Author Index and a Number Index to the NIC Journal.
These Indexes have been edited from the output produced by catalog
programs run on the contents of the online Journal since August 1971.
Test messages and nonsubstantive entries have been deleted from the
source files used for these indexes.   1a

NIC plans to issue these periodically, probably once a month. These
indexes are also available online, accessible through NIC Locator.
The online versions will often be more current than the hardcopy.   1b

A Titleword Index is online at this time, and will soon be issued in
hardcopy.   1c

MLK/kk   1d

17370 Distribution
    Station Agent,

1

TRANSMITTAL TO: Network Liaisons and Station Agents

(J17370) 17-JUL-73 18:55;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

TRANSMITTAL TO: Joseph B. Reid

TRANSMITTAL TO: Joseph B. Reid
                   Coordonnateur des programmes.
                   Siege social
                   Universite du Quebec
                   2875, boulevard Laurier,
                   Sainte-Foy, Quebec 10, Quebec
                   CANADA

FROM: Marcia Keeney (NIC)
                   Station Agent   1

At your request, I am sending NIC 16517.   1a

MLK/kk   1b

17371 Distribution
    Station Agent,

TRANSMITTAL TO: Joseph B. Reid

(J17371) 17-JUL-73 18:59;   Title: Author(s): Marcia Lynn Keeney/MLK
; Distribution: /SA ; Sub-Collections: NIC ; Clerk: KIRK ;

Transmittal to Station Agents -- 92   NIC 17372
Jeanne North   10 JUL 73   1

                                                                              1a

    Enclosed: 1b

        NIC 16156 *NWG/RFC #505 Two Solutions to a File Transfer
                Access Problem; M. A. Padlipsky (MIT-MULTICS).   1b1

        NIC 16157 *NWG/RFC #506 An FTP Command-Naming Problem;
                M. A. Padlipsky (MIT-MULTICS).   1b2

        NIC 17164 *NWG/RFC #526 AGENDA: Technical Meeting DIGITAL
                IMAGE PROCESSING SOFTWARE SYSTEMS.   1b3

        NIC 17164 *NWG/RFC #528 SOFTWARE CHECKSUMMING IN THE IMP AND
                NETWORK RELIABILITY; J. McQuillan (BBN-NET).   1b4

        NIC 17165 *NWG/RFC #529 A Note on Protocol Synch Sequences.   1b5

        NIC 17375 *NWG/RFC #530 A REPORT ON THE SURVEY PROJECT; Abhay
                Bushan (MIT-MAC).   1b6

        NIC 17498 *NWG/RFC #537 Announcement of NGG meeting-JULY
                16-17; Steve Bunch (ILL-ANTS).   1b7

    Available on request from UCSB: 1c

        NIC 17362 An interactive System for Signal Analysis: Design,
                Implementation, and Applications, David Lester Retz
                (UCSB).   1c1

    *sent to Liaisons   1d

    MLK/kk   1e

                                                                              2

17372 Distribution
    Station Agent, Michael D. Kadlick, James E. (Jim) White,

Transmittal to Station Agents -- 92

(J17372) 9-JUL-73 12:45;   Title: Author(s): Jeanne B. North/JBN ;
Distribution: /SA MDK JEW ; Sub-Collections: NIC ; Clerk: KIRK ;

memo

This is the first statement of the nls course.   Think I will continue
and see what happens.   1

So far so good.   Several things are happening today.   2

Now I am trying to add statement #3 into this text.   3

17373 Distribution
    Dirk H. Van Nouhuys, Linda C. Amsden,

memo

(J17373) 20-JUN-73 08:47; Title: Author(s): Gail M. Hedtler/GMH;
Distribution: /DVN LCA; Sub-Collections: NIC; Clerk: GMH;
Origin: <BBN-NET>MEMO.NLS;4, 20-JUN-73 08:00 GMH ;

hi

good morning ms. rousseau, welcome to the world of NLS.
now do something constructive like the proposal.   1

17374 Distribution
    Bertha A. Rousseau, Gary L. Bockweg,

hi

(J17374)   20-JUN-73 14:40;   Title: Author(s): Gary L. Bockweg/GLB;
Distribution: /BAR2 GLB; Sub-Collections: NIC; Clerk: GLB;

Jake,

    The information you requested may be found in <HELP>MITRE-TIP
which was constructed to your format - sorry about the lack of or too
many control i's adjacent to phone numbers. If you would like more
info. don't hesitate to ask. Will maintain <HELP>MITRE-TIP
periodically for your convenience.   Regards,   Jean   1

17376 Distribution
    Elizabeth J. (Jake) Feinler,

1

Jake, I just created USERS. Membership is SDC2 (steve), Jon Postel,
Bob Thomas of BBN, Bob Bressler (same) and Schelanka (or however he
spells it). Anyone else who wants to join? (I don't believe there
should be any restriction to joining USERS.

Also, Marcia just called about name for USING. Thanks for the
referral. I had just been wondering about how to make USERS' name
seem different from USING. Suggested USING be:

   ARPA Network Users Interest Working Group, while USERS be:

   ARPA Network Users Group.

"Steering Committee" seemed too formal.

Also, I've incorporated Nancy's comments into USINGNOTES.

Bye.   --dave   1

17377 Distribution
    Elizabeth J. (Jake) Feinler,

ONLINE delivery

If I want to get NETWORK delivery as well as ONLINE delivery, how do
i go about doing so.
I have looked at thE MODIFY command of the identification system and
know how to set DELIVEY to NETWORK, but I assume I have to somehow
indicate what my user-name at bbn-tenex is.
---Paul Johnson   1

17378 Distribution
    Dirk H. Van Nouhuys,

ONLINE delivery

(J17378)   20-JUN-73 20:43;   Title: Author(s): Paul R. Johnson/PRJ;
Distribution: /DVN; Sub-Collections: NIC; Clerk: PRJ;

elephant meeting

The watergate review meeting will probably be at 3:00 in the project
room.   1

A recursive redefinition plan should emerge.   2

17379 Distribution
   J. C. R. Licklider,

elephant meeting

(J17379) 20-JUN-73 08:45; Title: Author(s): J. C. R. Licklider/JCRL;
Distribution: /JCRL; Sub-Collections: NIC; Clerk: JCRL;
Origin: <MIT-DMCG>MEMO.NLS;1, 20-JUN-73 08:00 JCRL ;

Initial comments to Padlipsky's Draft of NETED specs.

The following comments are somewhat random, and offered as my initial reaction to Padlipsky's Draft of NETED (16890,):

Page 1: Reference to "runoff" probably should be changed to something like "printer-formated" since some people don't know about runoff.

Page 2: (first paragraph under Choices): please change "...and implementing the other is a fairly..." to read "...and implementing either is a fairly...".

Page 3: please change or explain "lOF TTY...". I did not understand what that was supposed to mean.

(So much for the trivial. Specifically about the commands:)

1. N m   should be more like + m.   Also, there should be a - m. This seems to me to be logical and necessary.

2. Locate is a more rare tern than Search. I therefore vote for Search.

5. and 6. "." should be i (for insert) and "i string" should be eliminated. IIn combination , the two are nice, but unecessary for an editor as simple as we are talking about.

7. should be l string (for list). Retype seems a bit too arcane and, again, list is a very common command.

There needs to be a Read command (equal and opposite to the Write command). I do not like the idea that if I don't specify the input file at the time of process-invocation, I am out of luck.

Lou Nelson puts in a vote (which I pass along for posterity) to have line numbers which are fixed, for the duration of the current session and are printed only when requested by the user (Postel just added his vote to this).

On the whole, I like the suggested editor. I think the suggested changes are necessary to make it more like ofther simple-minded editors. It is a shame that we have to have the intersection of capabilities.

Does anyone else agree with these suggested changes?   1

17380 Distribution

Leroy (Lee) C. Richardson, Frank G. Brignoli, Elizabeth J. (Jake)
Feinler, Michael D. Kudlick, James E. (Jim) White, Michael A.
Padlipsky, Kenneth L. Bowles, A. Wayne Hathaway, Jean Iseli, David H.
Crocker, Nancy J. Neigus, Stephen M. Wolfe, Ronald M. Stoughton, Jim
O. Calvin,

1

Initial comments to Padlipsky's Draft of NETED specs.

(J17380)   20-JUN-73 15:32;   Title: Author(s): David H. Crocker/DHC;
Distribution: /USING; Sub-Collections: NIC USING; Clerk: DHC;

TIPUG #4, Installment 2

The sendmessage I sent you came back to me so I thought Id send you a
journal message.   I would like a good copy of your hardcopy TIPUG #4
rather than Dave's "softcopy". Thanks   Marcia.   1

17381 Distribution
    Michael A. Padlipsky,

1

(J17381)   20-JUN-73 16:31;   Title: Author(s): Marcia Lynn Keeney/MLK;
Distribution: /MAP; Sub-Collections: SRI-ARC; Clerk: MLK;

Info about how to find documents and jwork files

This is in answer to your two journal messages sent yesterday.

Info about how to find documents and jwork files

Jwork Files   1

   Jwork files may be deleted at any time. However, whenever you do
   any work with the journal, another jwork file will automatically
   be created for you.   1a

Finding Documents Off-line   2

   One way to find documents is by looking in the catalog which is a
   functional document located in the ARPA office and maintained by
   Pam. It has indexes organized by number, author, and titleword,
   so if you know any of these things, you could look there.   2a

   I looked under "Initial" and found a document #7142, Initial
   Connection Protocol-Reviewed, #7103, Official TELNET-Logger
   Initial Connection Protocol, and #7101, Official Initial
   Connection Protocol.   2b

   Two of these have a notation that they are (In 7104) which is
   another of what is called a "functional document" (like the
   catalog). Pam maintains all functional documents and should be
   able to help you find them. She also has a partial collection of
   some other documents which are indexed in the catalog, and should
   be able to give you a copy of them. In order to tell if she
   should have the document the following criteria usually hold: 2c

      All RFC's should be part of her collection   2c1

      Any document which has a notation (In ####) is in a functional
      document and she should have a copy or a revision of the
      document.   2c2

      Any other document would have to be checked in the number
      listings. If it has a backarrow by the number then she should
      have a copy.   2c3

Finding Documents On-line   3

   In the directory nic and file locator, several links are given to
   documents including the catalog. If you take the link,
   (nic,locator,2g) and then print the branch you will see the
   headings for the various sections of the catalog. The one to look
   in for this case would be 2g4, A-O TITLEWORD INDEX. Statement 2g4
   has a link in it which will take you to that section of the
   catalog (SP .2g4 SP ↑ is the easiest way to address it).   3a

   Once there you need to do a content search, and I don't think we
   covered how to do one. Use the command Goto Programs Content
   analyzer type in? Yes. (What you type is in caps). Then you can

Info about how to find documents and jwork files

type in whatever content you want to find. I tried it once with
the word Initial and got much more than I needed, so Initial
Connection would probably be better. To type in the content, put
square brackets around the whole thing along with quotes, i.e.
["Initial Connection"]. The content analyzer is very case
dependent so be sure to use capitals where you want them. To see
the results use Print Branch or whatever with viewspec i on. Be
sure to change viewspecs back (using viewspec j) when you are
finished or strange things will happen   3b

To access a document on-line, you can do Load File and use the
number you have found in the catalog. If it is on-line you are
finished, if it is archived, or for some reason never put on-line,
you can either ask for it to be un-archived, or look in Pam's
collection of documents. If you are still unable to find it, call
Marcia Keeney, at the Network Information Center 415-329-0740 and
she will mail it to you.   3c

If you have any problems with any of this, let me know and I'll try
to help.   4

17382 Distribution
    Susan R. Lee, Gary L. Bockweg,

Info about how to find documents and jwork files

(J17382)   20-JUN-73 17:14;   Title: Author(s): Susan R. Lee/SRL;
Distribution: /SRL GLB; Sub-Collections: SRI-ARC; Clerk: SRL;
Origin: <LEE>JWORK.NLS;2, 20-JUN-73 11:12 SRL ;

Mike,

There is documentation on the datacomputer available; in fact, a new release of their documentation has just become available. If you like, and I would recommend it [to establish relationship], send a message through SNDMSG to Don Cantor at CCA, his directory name is <don> so when SNDMSG says User:, you type DON@CCA or if you prefer, DON@37. You are welcome to use my name as a reference, I have done Don a few favors — he is a nice guy. Also, Richard Winter, RAW@CCA, is a very nice person to whom you may also appeal. Ask them to put you on mailing list for future documentation. If you can tell them something about your network interests and work, and why you are interested in the Datacomputer, it might help appreciably since they are currently looking at possible application areas. Depending on you interests, you will probably find that they are very cooperative and open to suggestions of collaborative efforts.

Mike, do not know if I had informed you, you may also reach me at USC-ISI by SNDMSG: ISELI@USC-ISI, this sometimes speeds up my response to you.

Personal note: remember your telling me Mike Padlipsky was a friend; he may come to stay with me during the US National Bridge shindig here in Washington during latter part of July and early part of August.

Hope this is of help to you — if you have any difficulties, I would be most pleased to help. Regards,   Jean

Postscript: Mike, if there is any aspect of your work that you can tell the Network community, I would envite you to consider writting a brief article for the ARPANET News concerning your work and interests. It is generally true in our experience that the more the network knows about you, the more offers of help come your way. Also, if you have any thoughts as a user of the Net that you wish to submit, a new column FORUM has been established for this purpose to stimulate dialog on user issues between members of the Network community. Would very much appreciate your giving this your consideratio   1

17383 Distribution
M. R. Leavitt,

Change ident

Sorry I took so long to get back to you. I've been out of town.
Yes, I would like you to change my ident. Either EG of EGW is ok.
Will I still be able to get mail under EP then? Thanks.   1

17384 Distribution
  Marcia Lynn Keeney,

1

Change ident

(J17384)   20-JUN-73 19:04;   Title: Author(s): Erika Perez/EP;
Distribution: /MLK; Sub-Collections: NIC; Clerk: EP;

donde esta ?

   neither rain nor snow nor darkness of night shall ... but the
journal never seems to make it.   1

17386 Distribution
    Gary L. Bockweg, Bertha A. Rousseau,

donde esta ?

(J17386) 21-JUN-73 06:08;   Title: Author(s): Bertha A. Rousseau/BAR2;
Distribution: /GLB BAR2; Sub-Collections: NIC; Clerk: BAR2;
Origin: <ARPA>GBTEST.NLS;1, 21-JUN-73 06:05 BAR2 ;

H6000 Compatibility Study

<STONE>WWMCCS/OS.NLS;1, 7-JUN-73 13:25 DLS ;;

EFFECTIVENESS OF

WWMCCS OPERATING SYSTEM

on

H635

AND COMPATIBILITY STUDY

of

WWMCCS GCOS

vs

COMMERCIAL GCOS

on

H635

prepared for

AF/ACDC

31 MAY 1973

by

INFORMATION PROCESSING BRANCH (ISI)

INFORMATION SCIENCES DIVISION (IS)

ROME AIR DEVELOPMENT CENTER

GRIFFISS AFB, N. Y. 13440

TASK GROUP MEMBERS

   Raymond Liuzzi

   Joseph Cavano

   Robert Walker

H6000 Compatibility Study

John Kalynycz

Donald VanAlstine

Table of Contents

I.   EXECUTIVE SUMMARY

At the request of AF/ACDC, RADC has conducted a high priority
study addressing the problems associated with the compatibility of
the H600 and H6000 computer systems and the WWMCCS operating
system software.

This study was undertaken in response to a request to answer the
following questions:

   (1)   Determine the ability of the H635 computer to provide
   both hardware and software backup to H6000 series equipment
   (both even and odd-numbered).

   (2)   Determine the performance characteristics of the H635
   computer compared to H6000 series for the MAJOR COMMAND update
   program.

As a   result of this study:

   (1)   RADC has determined the feasibility of executing WWMCCS
   software on a H600 computer system.   This report includes the
   steps necessary for implementing WWMCCS software on the H600.

   (2)   RADC has loaded Version 3.0.1   of the WWMCCS operating
   system on its H635 computer.   Currently the batch version of
   WWMCCS is stabilized.

   (3)   The results of this study along with the results of a

2

previous RADC report entitled "EIS and Hardware Compatibility
Study for AF/ACDC" indicate the feasibility of utilizing the
H635 computer as a backup to H6000 series equipment in a batch
operation.

(4)   A number of tests were performed on the H635   WWMCCS
operatng system to determine various performance
characteristics.   Included in this report are the results of a
series of runs made with WWMCCS and commercial GCOS against the
JOVIAL, COBOL, and FORTRAN validators.   In addition, a number
of runs were performed with an IMCV tape containing a number of
jobs that was supplied by JTSA.

(5)   A complete analysis of WWMCCS time-sharing is not
included in this report.   Although time-sharing has been
exercised, problems with the DN-355 currently exist.

(6)   It should be pointed out that results of this report
apply only to release 3.0.1 of the WWMCCS operating system and
Version 5.3 of the commercial GCOS operating system.   Future
changes in operating system philosophy that may be made by
Honeywell may well affect the ability of the H635 to act as a
backup to the H6000.   All future changes planned by Honeywell
should be examined.

II.   INTRODUCTION

In response to a requirement of AF/ACDC,(see ref. 1,2,3), to
provide information and evaluate the support capabilities of the
H635 as backup for the H6000 WWMCCS systems,   RADC formed a
working group to gather information, run tests and prepare an
interim report.

The working group consisted of a team of highly qualified
personnel from the Information Sciences Division.   A cross-section
of people familiar with Honeywell hardware and software formed the
nucleus of the task force.

In order to accomplish this task the following requirements were
necessary:

   (1) RADC had to obtain a current release of the WWMCCS

   operating software executing on H6000 systems.

   (2) All documentation available pertaining to WWMCCS software

   was reviewed by RADC personnel.

   (3) Identification of major software differences between the

   WWMCCS operating software and the GCOS commercial software.

The task force viewed the   the task of executing the WWMCCS
software on the H635 computer as critical in determining the
feasibility of utilizing H600 machines as backup to H6000

4

machines.   Therefore the "bringing up" of WWMCCS software on the
H600 was crucial.

RADC currently has a H635 computer on site executing the current
SDL 5.3 VERSION of Honeywell's commercial version of the GCOS
operating system.   The presence of a H600 machine at RADC provided
a feasible machine to attempt implementation of WWMCCS software.
Prior to actually attempting implementation, RADC set out to
determine the feasibility of ever executing WWMCCS software on a
H600 machine.   RADC visited the Honeywell Phoenix Operation to
obtain information in a number of areas relating to WWMCCS.   The
overall objectives of this trip were met, including obtaining
additional information on Honeywell philosophy related to future
system requirements.   A primary result of this trip was that there
was no technical reason identified as of the date of the trip
which would make it impossible to execute WWMCCS software on a
H600 machine.   However a number of problem areas were discussed
that could potentially lead to operational failures.   These
essentially included possible software channges planned by
Honeywell that could affect the ability of WMMCCS to continue
operation on H600 machines.

RADC examined the major differences between WWMCCS and commercial
operating systems.   These areas proved to be mainly in the
security package area that was added to the WWMCCS software.
Also, hardware differences existed between the H6000 and the H600.

The H6000 is configured with an IOM input/output controller while the H600 is configured with an IOC. This essentially meant different software was required to utilize these peripherials.

After investigating these differences, examining code, and speaking with qualified personnel it was determined that Honeywell has developed a set of macros especially designed for a H600 or a H6000. These macros are called in conditionally when a given module is assemebled on either a H6000 or a H600. Therefore a conditional assembly of modules is obtained during assembly of GCOS source modules on a given system. These macros represent the mechanism for resolving the basic differences between the H600 and H6000 systems.

RADC with the assistance of AF/ACDC obtained a "copy" of the WWMCCS software from the Joint Technical Support Activity (JTSA) to permit RADC an attempt to operate WWMCCS software on its H635 computer for testing purposes. RADC visied JTSA and Honeywell in Mclean, Virginia to obtain the WWMCCS software and additional technical information on JTSA/WWMCCS operations. Copies of the H6000 version of WWMCCS software and pertinent documentation were brought to RADC to attempt implementation of WWMCCS on RADC's H635 computer.

III.   EFFORT

RADC viewed the task of implementing WWMCCS software on its H635
computer as three phases. The first phase would involve the
procedures necessary to permit the WWMCCS software to become
operational on the H600. The second phase would put special
emphasis on getting the batch version of the WWMCCS software
executing on the H600.   During this phase only batch programs
could execute (i. e. FORTRAN, COBOL, JOVIAL).   The Datanet 355
would not be configured and thus would eliminate any time-sharing,
transaction processing, or remote terminal users.   Phase three
would attempt configuring the DN355 and allow remote access
through time-sharing or transaction processor.   The effort to
implement the WWMCCS software on the RADC H635 computer has
resulted in a number of efforts.

As part of phase one regarding the implementation of WWMCCS
software on the H600 the following tasks have been
accomplished:

(1)   Version 3.0.1 of the WWMCCS operating system has been
obtained from the Joint Technical Support Activity (JTSA).
This is the version of software released to JTSA by Honeywell.
It is not necessarily the version that JTSA eventually releases
to its sites.

(2)   RADC has proceeded to recompile completely version 3.0.1

on its H635 computer. This recompiliation process has caused a
conditional assembly of various modules within the GCOS system.
these assemblies have caused differences in code generated for
the H600 when contrasted to the H6000. The following GCOS
modules have been designated because their assembly on the H600
differs from the H6000. This list does not preclude other
modules which may assemble differently. These modules listed
are those where patch differences existed in the first set of
patches supplied by JTSA.

    (a) .MIOS - GCOS input/output module

    (b) .MROUT

    (c) .MDNET - DATANET 355 module

    (d) .MSYOT - SYSOUT module

    (e) .MTIMS - Time-sharing module

    (f) .MIDSC

(3) In addition to receiving tapes of the WWMCCS software, a
number of patches to varios modules within the software were
also supplied by JTSA. These patches consist of a module name,
patch address, and patch instruction. However the patch
address and patch instruction apply to the WWMCCS version
assemblied on a H6000 computer. Therefore in order to apply

8

these patches to the H600 version of WWMCCS a long tedious

process must be followed. This consists of comparing each

module listing from the H6000 to its counterpart in the H600

for differences. If differences exist in the code generated

the patches must be modified to reflect differences in the

patch address and patch instruction. (appendix 1 contains a

list of patches that currently exist in RADC's version of

WWMCCS)

(4) The patches supplied by JTSA are in two forms

(a) a patch edited tape---- this set of patches resides on

the total system tape of GCOS as a special file.

(b) patch section of the startup deck -- this set of

patches is loaded when the startup deck is loaded in the

card reader.

(c) Appendix 1 in the back of this report contains a

complete set of patches that are currently being applied to

the WWMCCS software on the H600. The patches are designated

with a patch address, an OCTAL instruction, a patch log

number, and the appropriate module to be patched. As noted

above their are six modules where differences have been

identified. The following list contains those patches where

changes have taken place from the original patch supplied by

9

JTSA.   These changes are necessary for WWMCCS to operate on

a H6000.

SYSTEM	MODULE	LOG-#	ADDRESS		INSTRUCTION
H6000	.MROUT	r471	5254	OCTAL	001122554200
H600	.MROUT	r471	5254	OCTAL	001122011200
H6000	.MROUT	r471	4354	OCTAL	000640717200
H600	.MROUT	r471	4354	OCTAL	001122717253
H6000	.MROUT	r471	4355	OCTAL	001122011200
H600	.MROUT	r471	4355	OCTAL	001122011244
H6000	.MROUT	r471	4356	OCTAL	777146011235
H600	.MROUT	r471	4356	OCTAL	000660717200
H6000	.MSYOT	q922	2640	OCTAL	777167236015
H600	.MSYOT	q922	2637	OCTAL	777167236015
H6000	.MSYOT	q922	2641	OCTAL	777773710004
H600	.MSYOT	q922	2640	OCTAL	777773710004
H6000	.MSYOT	q922	2642	OCTAL	0000260010004
H600	.MSYOT	q922	2641	OCTAL	0000260010004
H6000	.MIOS	#021	5530	OCTAL	000000636210
H600	.MIOS	#021	5204	OCTAL	000000636210
H6000	.MIOS	#021	5531	OCTAL	001223717204
H600	.MIOS	#021	5205	OCTAL	001227717204

```
H6000    .MIOS    #021    6754     OCTAL    002110222212

H600     .MIOS    #021    6434     OCTAL    001701222212


H6000    .MIOS    #021    6755     OCTAL    000003600204

H600     .MIOS    #021    6435     OCTAL    000003600204


H6000    .MIDSC   p384    2714     OCTAL    646717200

H600     .MIDSC   p384    2714     OCTAL    000560717253


H6000    .MIDSC   p384    2715     OCTAL    560011200

H600     .MIDSC   p384    2715     OCTAL    000560011244


H6000    .MIDSC   p384    2716     OCTAL    777146011235

H600     .MIDSC   p384    2716     OCTAL    000660717200


H6000    .MDNET   q892    10500    OCTAL    4600204

H600     .MDNET   q892    10520    OCTAL    4600204


H6000    .MDNET   q892    10502    OCTAL    3576717204

H600     .MDNET   q892    10522    OCTAL    3576717204


H6000    .MDNET   q892    14300    OCTAL    2600204

H600     .MDNET   q892    14320    OCTAL    2600204


H6000    .MDNET   q892    14301    OCTAL    035454101203

H600     .MDNET   q892    14321    OCTAL    035454101203


H6000    .MDNET   q920    13026    OCTAL    000253225200

H600     .MDNET   q920    13046    OCTAL    000253225200
```

H6000	.MDNET	q920	10052	OCTAL	000000011203
H600	.MDNET	q920	10072	OCTAL	000000011203
H6000	.MDNET	r158	10424	OCTAL	000253710204
H600	.MDNET	r158	10444	OCTAL	000253710204
H6000	.MDNET	r168	11251	OCTAL	003031710204
H600	.MDNET	r168	11271	OCTAL	003031710204
H6000	.MDNET	r168	14302	OCTAL	777654600204
H600	.MDNET	r168	14322	OCTAL	777654600204
H6000	.MDNET	r168	14303	OCTAL	000040220203
H600	.MDNET	r168	14323	OCTAL	000040220203
H6000	.MDNET	r168	14304	OCTAL	000004740212
H600	.MDNET	r168	14324	OCTAL	000004740212
H6000	.MDNET	r168	14305	OCTAL	070000236203
H600	.MDNET	r168	14325	OCTAL	070000236203
H6000	.MDNET	r168	14306	OCTAL	774672710204
H600	.MDNET	r168	14326	OCTAL	774672710204
H6000	.MDNET	r232	6321	OCTAL	001351710004
H600	.MDNET	r232	6341	OCTAL	001351710004
H6000	.MDNET	r232	7672	OCTAL	000005755013
H600	.MDNET	r232	7712	OCTAL	000005755013

H6000	.MDNET	r232	7673	OCTAL	000377235003
H600	.MDNET	r232	7713	OCTAL	000377235003
H6000	.MDNET	r232	7674	OCTAL	000007355013
H600	.MDNET	r232	7714	OCTAL	000007355013
H6000	.MDNET	r232	7675	OCTAL	000007255013
H600	.MDNET	r232	7715	OCTAL	000007255013
H6000	.MDNET	r232	7676	OCTAL	776424710004
H600	.MDNET	r232	7716	OCTAL	776424710004
H6000	.MDNET	r435	7437	OCTAL	000223710004
H600	.MDNET	r435	7457	OCTAL	000223710004
H6000	.MDNET	r435	7662	OCTAL	020003100003
H600	.MDNET	r435	7702	OCTAL	020003100003
H6000	.MDNET	r435	7663	OCTAL	000003601004
H600	.MDNET	r435	7703	OCTAL	000003601004
H6000	.MDNET	r435	7664	OCTAL	000000220003
H600	.MDNET	r435	7704	OCTAL	000000220003
H6000	.MDNET	r435	7665	OCTAL	000000740012
H600	.MDNET	r435	7705	OCTAL	000000740012
H6000	.MDNET	r435	7666	OCTAL	100000220003
H600	.MDNET	r435	7706	OCTAL	100000220003

H6000	.MDNET	r435	7667	OCTAL	777551710004
H600	.MDNET	r435	7707	OCTAL	777551710004
H6000	.MDNET	r435	11025	OCTAL	011203
H600	.MDNET	r435	11045	OCTAL	011203
H6000	.MDNET	r474	11026	OCTAL	000012221203
H600	.MDNET	r474	11046	OCTAL	000012221203
H6000	.MDNET	r474	11027	OCTAL	002172115204
H600	.MDNET	r474	11047	OCTAL	002172115204
H6000	.MDNET	r474	11030	OCTAL	000002600204
H600	.MDNET	r474	11050	OCTAL	000002600204
H6000	.MDNET	r474	11031	OCTAL	000011221203
H600	.MDNET	r474	11051	OCTAL	000011221203
H6000	.MDNET	q452	3565	OCTAL	004115717204
H600	.MDNET	q452	3565	OCTAL	004135717204
H6000	.MDNET	q452	7702	OCTAL	000223753204
H600	.MDNET	q452	7722	OCTAL	000223753204
H6000	.MDNET	q452	7703	OCTAL	000000227203
H600	.MDNET	q452	7723	OCTAL	000000227203
H6000	.MDNET	q453	3750	OCTAL	003734717204
H600	.MDNET	q453	3750	OCTAL	003754717204

H6000	.MDNET	q453	7704	OCTAL	000000622201
H600	.MDNET	q453	7724	OCTAL	000000622201
H6000	.MDNET	q453	7705	OCTAL	774000362203
H600	.MDNET	q453	7725	OCTAL	774000362203
H6000	.MDNET	r246	6366	OCTAL	010100221203
H600	.MDNET	r246	6406	OCTAL	010100221203
H6000	.MDNET	r246	6367	OCTAL	001311717204
H600	.MDNET	r246	6407	OCTAL	001311717204
H6000	.MDNET	r246	7700	OCTAL	000000241212
H600	.MDNET	r246	7720	OCTAL	000000241212
H6000	.MDNET	r246	7701	OCTAL	000000641212
H600	.MDNET	r246	7721	OCTAL	000000641212
H6000	.MDNET	r481	6051	OCTAL	000010710204
H600	.MDNET	r481	6071	OCTAL	000010710204
H6000	.MDNET	r481	6060	OCTAL	000002236213
H600	.MDNET	r481	6100	OCTAL	000002236213
H6000	.MDNET	r481	6142	OCTAL	000000011203
H600	.MDNET	r481	6162	OCTAL	000000011203
H6000	.MDNET	r481	6161	OCTAL	777677710204
H600	.MDNET	r481	6201	OCTAL	777677710204

H6000	.MDNET	r245	3763	OCTAL	003705717204
H600	.MDNET	r245	3775	OCTAL	003713717204
H6000	.MDNET	r245	7670	OCTAL	000671450200
H600	.MDNET	r245	7710	OCTAL	000671450200
H6000	.MDNET	r245	7671	OCTAL	775240701204
H600	.MDNET	r245	7711	OCTAL	775226701204
H6000	.MTIMS	r237	31675	OCTAL	000024235204
H600	.MTIMS	r237	31675	OCTAL	000021235204
H6000	.MTIMS	r237	31704	OCTAL	001122554200
H600	.MTIMS	r237	31704	OCTAL	001122011244

RADC INFORMATION PROCESSING DIVISION

The tasks described above were necessary to estabish the WWMCCS

system on the H600. RADC then proceeded to phase two to establish

and evaluate the batch version of WWMCCS. The batch system was

thoroughly tested with the executions of a series of programs. These

programs consisted of:

      (1) COBOL validator

      (2) FORTRAN validator

      (3) JOVIAL validator

      (4) WWMCCS IMCV test programs

      (5) IDS data base test programs

Each of the programs from the above system were run on RADC's WWMCCS

system and commercial system. The complete set of processor times

and i/o times for each of these programs is contained in this report.

These programs were run for two reasons:

      (1) To establish that the WWMCCS batch version was

operational.

      (2) To evaluate the effectiveness of utilizing the WWMCCS

software as backup to H6000 systems.

The results of these tests indicate that the batch version of WWMCCS

as exercised by these programs performs adequately.

RADC proceeded to phase three which included configuring the datanet

18

355. Currently the DN355 when booted with only 128k of core

configured on the system will cause a system failure. However the

system will initialize when booting with 256k of core.

The third phase of testing resulted in bringing up the time-sharing

system. Currently time-sharing will service multiple users

simultaneously. However when a foreign or invalid user attempts

acces to time sharing a system failure results. This problem

currently lies in the interface between the DN355 and GCOS..

IV   CONSIDERATIONS

(1)   In order to successfully operate WWMCCS on a H600 with compatibility to current versions of the WWMCCS system being periodically released by JTSA the procedures described above for patching will have to be performed each time a new version of the WWMCCS operating system is released.   The basic problem of keeping current is the tedious work involved in comparing modules between the WWMCCS system on a H6000 and on a H600.   Each time a new version is released the patch tape and patch deck will have to be updated.   This could cause serious maintenance problems.   However, RADC has already identified a series of modules that are prime candidates for changes.   The other modules being patched without changes indicate a good probability that these modules have compiled on the H600 as they have on the H6000.   If it could be established that these modules would not differ in future WWMCCS releases the maintenance problem could be reduced. This is however a big "if" and must be carefully considered before any decisions are made.

(2)   The current system now operational on RADC's H635 computer has been carefully tested in the batch mode of operation.   However the basic problems affecting the timesharing system have not been reconciled.   The system will only support multiple timesharing users in limited instances.   The problem is being carefully examined currently in a number of areas.   The communications

20

processor DN355 appears to be the primary area of investigation because of its interfaces to various GCOS modules.

(3) If the WWMCCS sites decide on EIS processors for all of its operations the H600 will not be able to execute EIS code. However the same program that executes In EIS on the H6000 can be recompiled on the H600 and executed with non-EIS code. This procedure has already been demonstrated by RADC (see "EIS AND HARDWARE COMPATIBILITY STUDY FOR AF/ACDC" ref 4). This will result in an additional maintenance task for those H600 sites attempting to remain compatible with the WWMCCS sites.

(4) Another potential problem area is keeping current with all WWMCCS documentation and system releases. If a site is not designated as WWMCCS a procedure will have to be established with JTSA to coordinate all system releases and current documentation.

V   FUTURE PLANS

(1) RADC is planning to obtain releases of future WWMCCS systems.
Release 3.1 is currently the system JTSA is planning to release to
its WWMCCS sites. RADC plans to obtain copies of this system to
maintain compatibility with other WWMCCS sites.   In addition it is
understood that this release is essential to exercising the WWDMS
system..

RADC INFORMATION PROCESSING DIVISION

APPENDIX ONE

The following listings constitute the patch edit tape and patch deck
listings of all patches currently applied to RADC's WWMCCS operating
system.

In addition the configuration of the boot load deck is included as
part of this section. The system currently configured at RADC is a
two DSU180 disc system.

RADC INFORMATION PROCESSING DIVISION

APPENDIX TWO

The following data constitutes a series of runs made on RADC's H635
computer with the WWMCCS operating system and the commercial
operating system.

The first section compares processor times and i/o times for the same
series of programs that constitute the JOVIAL validator run under
both systems. In this section it appears that the JOVIAL programs
execute and compile faster under the WWMCCS system when compared to
the commercial system.

Section two contains the same comparative times for a series of
programs that constitute the COBOL validator. Although the complete
set of comparative data is not included it appears that the programs
execute longer under the WWMCCS system.

Section three contains data on programs that constitute the FORTRAN
validator. The comparative times indicate that execute times are
very close under the two systems for the same programs. However on
the average it is a little longer under the WWMCCS operating system.

Section four contains a series of runs made from an imcv tape

supplied by JTSA. Some of the programs executed were obtained from the COBOL, JOVIAL and FORTRAN validators. However the complete set of programs constituted an exhaustive test of the cababilites of the WWMCCS system on a H600 machine. The comparative times for the two system indicates that execution is slower on the WWMCCS system. A complete report on the execution of these programs under WWMCCS and further results is forthcoming in a supplemental report.

H6000 Compatibility Study

(J17387) 21-JUN-73 06:39;   Title: Author(s): Ray A. Liuczi/RAL;
Distribution: /RFI JLM; Sub-Collections: RADC; Clerk: DLS;

Mike,

Sent you a message yesterday but since did not see it returned
to initial file, thought i would send you another. Datacomputer
documentation can be obtained from either Don Cantor or Richard
Winter at Computer Corporation of America (CCA). To initiate request,
do a SNDMSG at the EXEC level to either DON@CCA, DON@37, RAW@CCA, or
RAW@37. Both are fine gentlemen and will respond to you. CCA is
currently looking for other possible applications of the datacomputer
and would probably be responsive to collaborative/cooperative
ventures if this is of interest to you; in the latter case, DON is
the person to contact. Mike, if you can tell them anything of your
own interest and work, it would probably be of help.

If you could, I would appreciate your writting a small article
on the work you are doing and your interestes for the ARPANET
Newsletter. Also, if as a User, you would like network awareness on
any issue or requirement, I would invite you to consider its
expression for the FORUM column in the ARPANET Newsletter. Would very
much appreciate your giving this your most serious consideration.

Regards,

            Jean   1

17388 Distribution
   M. R. Leavitt, Jeanne B. North, Don Cantor, Susan S. Poh,

Joining FTPIG

I would like to join the FTP Interest Group.
My NIC ident is PRJ.
Thanks.
---Paul R. Johnson,   BBN-TENEX

1

17389 Distribution
    Abhay K. Bhushan,

1

Joining TU

I would like to join the TNLS Users Group.
My NIC ident is PRJ.
Thanks.
--Paul Johnson   1

17390 Distribution
    Dirk H. Van Nouhuys,

Some Information for Output Processor System Programmers

(loading)   1

   To do a load of the output processor, use the runfile
   <xporgen>opload.txt;. This runfile will always put out a map, but
   I think this is better than having the two separate files as
   existed in the past.   1a

      The save file created will reside in SUBSYS.   1a1

      We should have our files in NETSYS rather than SUBSYS. If we
      do this we should change the code (in cod(?)) to look in NETSYS
      for the files.   1a2

(sysgd)   2

   To create a SYSGD from the Output processor save file you may
   follow the same procedure used to create a SYSGD for the NLS
   system with the following additional steps: 2a

      The Output processor save file does not have a page 0 saved
      with it. The symbol table pointer is in location 400000 rather
      than the normal 116. The cros reference program requires this
      information to be in 116. This may be accomplished by doing
      the following: 2a1

         Get a copy of the Output processor save file.   2a1a

         Go into DDT.   2a1b

         Issue the following commands: 2a1c

            MOVE 400000$X [$ signifies "Alt Mode"]   2a1c1

            MOVEM 116$X   2a1c2

         Leave DDT. Do an SSave to a new file; in the process, save
         page 0 and pages 400 through 554. (Previously, the upper
         limit was 477; this caused part of the symbol table to be
         omitted)   2a1d

         Run the SYSGD processes as for NLS using the save file you
         have just created to provide symbols.   2a1e

(debugging)   3

   To debug the output processor using DDT you must do the following
   because the Output Processor is not loaded with NLS (it is mapped
   in), and because symbols for the output processor are not pointed
   to in the usual fashion.   3a

In DDT set a breakpoint in the NLS code in the procedure (nls, seqfil, processor) just after a "get" is done on the the output processor. (Set the breakpoint after the JSYS get.)   3a1

Issue an Output device command.   3a2

When the breakpoint is reached, do the following in DDT: 3a3

   MOVE 400000$X [$ signifies Alt Mode]   3a3a

   MOVEM $I-1$X   3a3b

   Set the breakpoints you want in the Output Processor (or experimental Output processor) code.   3a3c

   $P [To continue processing]   3a3d

After the output processor terminates, you will want to reset breakpoints because NLS will map back in the usual high seqment code and breakpoints will be set to locations you otherwise wouldn't be interested in. (It won't hurt to leave the breakpoints set.)   3a4

(loader)   4

```
CONN XPORGEN                                                               4a
TENLDR                                                                     4b
/M                                                                         4c
/4000100                                                                   4d
OPDATA                                                                     4e
DVAL                                                                       4f
INPUT                                                                      4g
MLIBE                                                                      4h
DLIBE                                                                      4i
THINGS                                                                     4j
DRECEX                                                                     4k
DOCFMT                                                                     4l
STFMT                                                                      4m
LSGCOL                                                                     4n
PSTPRC                                                                     4o
HDRFMT                                                                     4p
PGNATE                                                                     4q
OPUTIL                                                                     4r
NUMBER                                                                     4s
OPEXEC                                                                     4t
FASTOP                                                                     4u
[DDT                                                                       4v
MOVE 116[XMOVEM 400000[XINITLL+1[GDVAL                                     4w
SS 400 554 <XPORGEN>XOUTPRC.[                                              4x
```

```
    CONN SUBSYS PDP10                                                    4y
    REN <XPORGEN>XOUTPRC.[  <SUBSYS>XOUTPRC
                                                                         4z
```

17391 Distribution
   Elizabeth K. Michael, N. Dean Meyer, Charles H. Irby, Richard W.
   Watson,

Please do a 'type <mit-multics>resp' from exec level
(I tried to journalfy my response to Dave's thing, but
as usual forgot the control-v after a dozen lines so I had to FTP
from Multics   1

17392 Distribution
    Leroy (Lee) C. Richardson, Frank G. Brignoli, Elizabeth J. (Jake)
    Feinler, Michael D. Kudlick, James E. (Jim) White, Michael A.
    Padlipsky, Kenneth L. Bowles, A. Wayne Hathaway, Jean Iseli, David H.
    Crocker, Nancy J. Neigus, Stephen M. Wolfe, Ronald M. Stoughton, Jim
    O. Calvin,

lack of response to 17090

i am assuming that the lack of response to (17090,) (nls and other
subsystems) implies approval of the document. If i receive no
response in the next few days, i will submit te document to the
review team.   1

17393 Distribution
    Elizabeth K. Michael, James E. (Jim) White, Charles H. Irby,

1

Outline of a Personal Information Management System.

(J17394) 21-JUN-73 11:36;   Title: Author(s): Paul Rech/PR;
Distribution: /RWW JCN JBN JAKE MDK DCE SRL CHI; Sub-Collections:
SRI-ARC; Clerk: PR;
Origin: <RECH>FILEMANA.NLS;9, 21-JUN-73 11:30 PR ;

Outline of a Personal Information Management System.

TOWARDS THE DESIGN OF AN INFORMATION MANAGEMENT SYSTEM   1

NOTE   2

The following is a first rough outline of some of my thoughts
about personal information management. I would like to take
advantage of NLS for that purpose, in particular, of the proposed
set feature for files.   2a

This outline is incomplete and tentative. I am sharing it with
you to get your first reactions about the general approach and to
invite you to participate in its further elaboration. I find this
topic fascinating and I would love to get something started in
that area. Please send me your criticisms and comments.   2b

THE PROBLEM   3

An information management system does manage all on-line files.
Not only the files in the journal system, but all files, personal
ones as well as public and confidential ones. It keeps track of
both their creation statistics and of their reading statistics and
determines their relative priority ratings. These statistics will
provide the basis for a file management system.   3a

Up to now, once a document was written, it was very difficult to
know what happened to it, thus, making file management strictly a
subjective function depending on the author of the file and,
perhaps, librarians and abstract writers. Therefore, file
management was difficult, and more or less restricted to the
conventional indexing and abstracting methods.   3b

Several aspects of a file management system should be considered,
namely,   3c

   - it should keep track of what happens to the various files in
   the system and make decisions about their on-line management,
   and   3c1

   - it should provide a personal reference management system
   which provides the capability for dynamic management of
   personal references.   3c2

GROUP FILE MANAGEMENT SYSTEM   4

A group file management system is needed to manage all on-line
files. Each file has a finite usefull life and its relative value
to the user population has to be constantly reevaluated in order
to be able to manage its on-line position with method.   4a

Outline of a Personal Information Management System.

Usually, indexing and abstracting is being done by either the author or librarian. The problem is to capture what the user thinks and wishes to do about the files under consideration. We suggest to get at this information through the personal reference management systems and to obtain dynamically a composite picture of the relative values the various on-line files have for the user population in general.   4b

The following information could be captured about every file. It can be done by obtaining a composite reading of all personal reference management files (see discussion below).   4c

The usual information about the creation of the file.   4c1

Privacy information. Primary distribution list. Secondary distribution list.   4c2

Indexing information which would collect all information contained under the controlled group indexes in the personal files.   4c3

When was the file read for the last time.   4c4

On how many personal reference files is this file.   4c5

How many times was this file read.   4c6

Priority status.   4c7

Linking status, i.e., how many files refer to this file and what is their status (on-line or off-line, and their priority status)   4c8

How would it work?   4d

If a given file is on no ones' personal reference file then it does not have to remain on-line.   4d1

If some files have to be deleted, although they may be on some personal reference files, those with the lowest priority rating will be eliminated first.   4d2

PERSONAL REFERENCE MANAGEMENT SYSTEM   5

What is it?   5a

The problem we are all facing is how to manage our personal files. To begin with how do we manage our initial files? Let us consider that problem first.   5a1

We are getting mail in the form of the citations we find in the journal. For each message we have to decide what to do about it. The several options open to us are: 5a2

- Delete the item; no interest in it.   5a2a

- Read the item and then decide whether or not.   5a2b

  to delete it, or   5a2b1

  to classify it as an action file, or   5a2b2

  to file it for more thorough reading later on, or   5a2b3

  to index it for future reference and retrieval.   5a2b4

- File the item for later reading.   5a2c

- File the item in a personal referencing system.   5a2d

Thus, there are several states in the handling process of the mail. The main ones seem to be: 5a3

  - New mail
  - Reading material
  - Delete
  - Action item
  - Indexing   5a3a

We ought to be able to do that very easily, within the framework of a personal file management system.   5a4

Main Features of such a system.   5b

It should be a closed system, because an open ended one is both unwieldy and unnecessary. In a knowledge workshop nobody needs an infinite amount of space to keep track of the basic and working references needed to carry out confortably his work. Limited space will create value and this value will be the basis for on-line management.   5b1

For the sake of discussion let us categorize our needs as follows (200 total).   5b2

  40 short term references (30 days)   5b2a

  60 medium term references (6 months)   5b2b

  60 long term references (2 years)   5b2c

3

Outline of a Personal Information Management System.

40 permanent references (no time limit)   5b2d

In order to be able to retrieve these references easily they
must be indexed in a meaningful fashion.   5b3

These references should be managed as follows: 5b4

The system should keep track of the reading traces by noting
how many times a given file was accessed and when it was
accessed for the last time.   5b4a

All the references should be automatically reordered
according to their reading history; a given document's place
on-line and its priority will depend on the composite value
of all these orderings.   5b4b

Towards the Design of such a System.   5c

Example (For Medium Term References)   5c1

(Controlled Indexes) (Personal Indexes)

	I1	I2	. . . .	In	J1	J2	. . . .	Jk	N	Date	Priority	
n+1	x	x			x				2	4/20	2	
n		x		x		x		x	4	4/10	2	
n-1	x	x						x	3	3/17	2	
n-2				x		x			1	2/12	1	
n-3		x			x			x	5	2/05	1	5c2

where   5c2a

x means that the paper is indexed under the index Ix of the
xth column   5c2b

Ij is the jth index   5c2c

N is the number of times that reference has been accessed   5c2d

Date gives the date this reference was accessed the last
time.   5c2e

The references are ordered in sequence according their latest
access date.   5c3

The indexes would be limited in numbers (say a maximum of 50)
and would be divided into two groups, namely fixed group
indexes and changeable personal indexes.   5c4

The group indices would be common indexes for a whole group

Outline of a Personal Information Management System.

such as SRI-ARC for instance.   It could serve as basis for a
general title index.   5c4a

The personal indexes would be for strictly personal use and
would be changeable at will.   5c4b

17394 Distribution
   Richard W. Watson, James C. Norton, Jeanne B. North, Elizabeth J.
   (Jake) Feinler, Michael D. Kudlick, Douglas C. Engelbart, Susan R.
   Lee, Charles H. Irby,

How To Make a SYSGD: Revised

This is a new improved version to replace the last. The most current
version will exist as (meyer,sysgdform,1) from here on.

How To Make a SYSGD: Revised

How to make a sysgd: 1

　　1)　In the exec, go into the subsystem UNTRACE   1a

　　2)　X[ref] CR   1b

　　3)　[symbol file:] FILENAME CR (ALT gives default of running
　　system)   1c

　　4)　C[reate] S[ys-guide] CR CR   1d

　　5)　[output file:] FILENAME CR   1e

　　　　it takes about 30 seconds of CPU time   1e1

　　6)　Q[uit] CR   1f

　　7)　Q[uit] CR   1g

　　　　you should now be back in the exec   1g1

　　8)　You now have a sequential file. Go into NLS and create a null
　　file. Then do Input Sequential. That will take about 2 minutes
　　of CPU time.   1h

　　9)　Then, run this program. It takes a long time (i.e. 30 min CPU
　　time, 3 hrs. real time at night) It will fill in those names
　　having more than six characters and insert formal parameters and
　　comments as substatements.   1i

　　　　If it runs into a bad file, it will bomb out. You may have to
　　　　look up a few by hand. Then delete the "PROCEDURE LINK"
　　　　statement (,1) at the head of the plex. Insert a statement
　　　　beginning with "HALT" at the end af the plex and move all the
　　　　statements done so far to after the HALT. The program will
　　　　stop when it encounters HALT at the beginning of a statement.
　　　　Then start the program again.   1i1

　　10)　Finally, Sort plex 1. This takes about 30 seconds of CPU
　　time.

                                                                   1j

FILE sysgdform % L10 <meyer>sysgdform %   2

　　% This program takes the sysgd produced after fillname is run and
　　adds the formal parameters and a peice of the comment if it can.
　　It takes 2 buffer pages, and a hell of a long time to run.
　　Control S will stop it at any point. %   2a

```
    DECLARE filnum ;                                                    2b

    DECLARE STRING sname[40], file[30], last[30] ;                      2c

    (sysgdform) PROCEDURE ;                                             2d

        % declarations %                                               2d1

            LOCAL da, comfg, parfg, char, addflg ;                     2d1a

            LOCAL TEXT POINTER sf, se, n1, n2, n3, n4, f1, f2, ad1, ad2
            ;                                                          2d1b

            LOCAL STRING st[70], params[300], comment[2000] ;         2d1c

            REF da ;                                                   2d1d

            last.L . comment.L . filnum . 0 ;                         2d1e

        % initial feedback %                                           2d2

        IF nlmode=typewriter THEN                                      2d2a

            BEGIN                                                     2d2a1

            crlf();                                                   2d2a2

            typeas ($"SYSGD formatter -- start at ");                 2d2a3

            tbug ($sf) ;                                              2d2a4

            crlf();                                                   2d2a5

            typeas ($"SYSGD formatter -- running");                  2d2a6

            crlf();                                                   2d2a7

            typeas ($"↑S to stop ");                                 2d2a8

            END                                                      2d2a9

        ELSE %display%                                                2d2b

            BEGIN                                                    2d2b1

            dn ($"");                                                2d2b2

            af();                                                    2d2b3
```

```
        DSP (< SYSGD formatter start at);                    2d2b4

        INPUT STID sf CA ;                                    2d2b5

        DSP (< SYSGD formatter running);                     2d2b6

        dn ($"⬆S to stop");                                  2d2b7

        END;                                                 2d2b8

    % get to first statement %                               2d3

      sf[1] ← 1 ;                                             2d3a

      UNTIL getlev(sf) = 1 DO sf ← getnxt(sf) ;              2d3b

    % for each next statement in sysgd file %                2d4

      inpstp ← 0 ; %zero control S register%                 2d4a

      UNTIL sf.stpsid = origin DO                            2d4b

        BEGIN                                                2d4b1

        IF inpstp THEN %have control S%                      2d4b2

          BEGIN                                              2d4b2a

          *sname* ← "Stopped after ", *sname* ;             2d4b2b

          dismes (1, $sname) ;                               2d4b2c

          EXIT LOOP; -                                       2d4b2d

          END;                                               2d4b2e

        IF FIND sf > '( ⬆n1 $LD ⬆n2 [ '( ] ⬆f1 $LD ⬆f2 ', ⬆n3 $LD
        ⬆n4 CH ⬆se THEN                                      2d4b3

          BEGIN                                              2d4b3a

          *sname* ← n1 n2 ;                                  2d4b3b

          % open file if necessary %                         2d4b3c

            *file* ← "<NLS>", f1 f2, ".NLS" ;                2d4b3c1

            IF *file* # *last* THEN %new file%               2d4b3c2
```

3

```
              BEGIN                                    2d4b3c2a

              %close old file%                         2d4b3c2b

                close(filnum);                         2d4b3c2b1

              %open new file%                          2d4b3c2c

              ON SIGNAL                                2d4b3c2c1

                  =errsig:                             2d4b3c2c1a

                  BEGIN                                2d4b3c2c1a1

                  filnum ← 0;                          2d4b3c2c1a2

                  *last* ← NULL;                       2d4b3c2c1a3

                  ST se se ← "  **Couldn't open ",
                  *file*, "**" ;                       2d4b3c2c1a4

                  sf ← getsuc (sf) ;                   2d4b3c2c1a5

                  REPEAT LOOP;                         2d4b3c2c1a6

                  END;                                 2d4b3c2c1a7

                ELSE;                                  2d4b3c2c1b

              filnum ← open(0, $file) ;                2d4b3c2c2

              ON SIGNAL ELSE                           2d4b3c2c3

                  BEGIN                                2d4b3c2c3a

                  *sname* ← "Failed at ", *sname* ;    2d4b3c2c3b

                  disnes (1, $sname) ;                 2d4b3c2c3c

                  EXIT LOOP ;                          2d4b3c2c3d

                  END;                                 2d4b3c2c3e

                  *last* ← *file* ;                    2d4b3c2c4

              END;                                     2d4b3c2d

          % go to origin of file %                     2d4b3d
```

```
        n1 ← 0 ;                                            2d4b3d1

        n1.stpsid ← origin ;                                2d4b3d2

        n1.stfile ← filnum ;                                2d4b3d3

        n1[i] ← 1 ;                                         2d4b3d4

    % jump to named statement %                             2d4b3e

        addflg ← FALSE ;                                    2d4b3e1

        *st* ← *sname* ; %lookup changes string%            2d4b3e2

        IF lookup($ni, $st, name) = endfil THEN             2d4b3e3

        BEGIN                                               2d4b3e3a

        IF sname.L=6 THEN                                   2d4b3e3b

            BEGIN                                           2d4b3e3b1

            % set pointer to origin %                       2d4b3e3b2

                n1 ← 0;                                     2d4b3e3b2a

                n1.stpsid ← origin ;                        2d4b3e3b2b

                n1.stfile ← filnum ;                        2d4b3e3b2c

                n1[i] ← 1 ;                                 2d4b3e3b2d

            % look for name with those first six chars %
                                                            2d4b3e3b3
            UNTIL ( n1 ← getnxt(n1) ) = endfil DO           2d4b3e3b3a

                IF getnmf(n1) AND ( FIND SF(n1) '(
                *sname* †ad1 $LD †ad2 ' ) ) THEN            2d4b3e3b3a1

                    BEGIN                                   2d4b3e3b3a1a

                    addflg ← TRUE;                          2d4b3e3b3a1b

                    EXIT LOOP;                              2d4b3e3b3a1c

                    END;                                    2d4b3e3b3a1d

            END;                                            2d4b3e3b4
```

```
                    IF n1 = endfil THEN                            2d4b3e3c

                        BEGIN                                     2d4b3e3c1

                        ST n3 n4 ← NULL ;                        2d4b3e3c2

                        ST f1 f1 ← "nls," ;                     2d4b3e3c3

                        cis [sf, $"data declaration", down);    2d4b3e3c4

                        sf ← getsuc [sf) ;                      2d4b3e3c5

                        REPEAT LOOP;                             2d4b3e3c6

                        END;                                     2d4b3e3c7

                    END;                                          2d4b3e3d

            % get st num, replace name in link, add rest of name % 2d4b3f

                comment.L ← 0 ;                                  2d4b3f1

                fechno (n1, $comment) ;                          2d4b3f2

                ST se se ← "  ",   *comment* ;                  2d4b3f3

                IF addflg THEN ST n4 n4 ← ad1 ad2 ;            2d4b3f4

                ST f1 f1 ← "nls," ;                            2d4b3f5

                IF addflg THEN ST n2 n2 ← ad1 ad2 ;            2d4b3f6

            % find parameters, comments, if any %                2d4b3g

                params.L ← comment.L ← 0 ;                     2d4b3g1

                comfg ← parfg ← 0;                             2d4b3g2

                FIND SF(n1) [')] SNP ;                           2d4b3g3

                CASE READC OF                                    2d4b3g4

                    ='%:                                         2d4b3g4a

                        BEGIN                                    2d4b3g4a1

                        IF comfg THEN %have comment, so just skip% 2d4b3g4a2

                            IF NOT FIND ['%] THEN                2d4b3g4a2a
```

```
            BEGIN                                   2d4b3g4a2a1

            n1 ← getnxt(n1);                        2d4b3g4a2a2

            CCPOS SF(n1) ;                          2d4b3g4a2a3

            REPEAT CASE('%) ;                       2d4b3g4a2a4

            END                                     2d4b3g4a2a5

        ELSE REPEAT CASE;                           2d4b3g4a2b

    UNTIL comment.L = comment.M DO                  2d4b3g4a3

        CASE char←READC OF                          2d4b3g4a3a

            ='%, =ENDCHR: EXIT LOOP;                2d4b3g4a3a1

            ENDCASE                                 2d4b3g4a3a2

                BEGIN                               2d4b3g4a3a2a

                *comment* ← *comment*, char ;       2d4b3g4a3a2b

                END;                                2d4b3g4a3a2c

    comfg ← TRUE;                                   2d4b3g4a4

    IF NOT parfg THEN                               2d4b3g4a5

        IF char # '% THEN REPEAT CASE ('%)          2d4b3g4a5a

        ELSE REPEAT CASE;                           2d4b3g4a5b

    END;                                            2d4b3g4a6

='(:                                                2d4b3g4b

    BEGIN                                           2d4b3g4b1

    *params* ← '( ;                                 2d4b3g4b2

    CASE char←READC OF                              2d4b3g4b3

        = '% :                                      2d4b3g4b3a

            BEGIN                                   2d4b3g4b3a1

            LOOP                                    2d4b3g4b3a2
```

```
                              BEGIN                           2d4b3g4b3a2a

                              IF FIND ['%] THEN EXIT LOOP;    2d4b3g4b3a2b

                              n1 ← getnxt(n1) ;               2d4b3g4b3a2c

                              CCPOS SF(n1) ;                  2d4b3g4b3a2d

                              END;                            2d4b3g4b3a2e

                          REPEAT CASE;                        2d4b3g4b3a3

                          END;                                2d4b3g4b3a4

                      = ') :                                  2d4b3g4b3b

                          *params* ← *params*, ') ;           2d4b3g4b3b1

                      = ENDCHR:                               2d4b3g4b3c

                          BEGIN                               2d4b3g4b3c1

                          n1 ← getnxt(n1) ;                   2d4b3g4b3c2

                          CCPOS SF(n1) ;                      2d4b3g4b3c3

                          REPEAT CASE;                        2d4b3g4b3c4

                          END;                                2d4b3g4b3c5

                      = NP:   REPEAT CASE;                    2d4b3g4b3d

                      ENDCASE                                 2d4b3g4b3e

                          BEGIN                               2d4b3g4b3e1

                          *params* ← *params*, char ;         2d4b3g4b3e2

                          REPEAT CASE;                        2d4b3g4b3e3

                          END;                                2d4b3g4b3e4

                  parfg ← TRUE;                               2d4b3g4b4

                  IF NOT comfg THEN REPEAT CASE ;             2d4b3g4b5

                  END;                                        2d4b3g4b6

              = ';;                                           2d4b3g4c
```

```
                        BEGIN                                          2d4b3g4c1

                        parfg ← TRUE ;                                 2d4b3g4c2

                        IF NOT comfg THEN REPEAT CASE ;                2d4b3g4c3

                        END;                                          2d4b3g4c4

                    = ENDCHR:                                         2d4b3g4d

                        BEGIN                                          2d4b3g4d1

                        IF (nl←getnxt(n1)) = endfil THEN EXIT CASE;
                                                                      2d4b3g4d2
                        CCPOS SF(n1) ;                                2d4b3g4d3

                        REPEAT CASE;                                  2d4b3g4d4

                        END;                                          2d4b3g4d5

                    ='P:                                              2d4b3g4e

                        IF FIND "ROC" $UL THEN REPEAT CASE ;          2d4b3g4e1

                    = NP:   REPEAT CASE;                              2d4b3g4f

                    ENDCASE;                                          2d4b3g4g

                % format sysgd statement %                            2d4b3h

                    IF comment.L >0 THEN cis (sf, $comment, down) ;   2d4b3h1

                    IF params.L > 0 THEN cis (sf, $params, down) ;    2d4b3h2

                END                                                   2d4b3i

            ELSE IF FIND sf "HALT" THEN EXIT LOOP;                    2d4b4

            sf ← getsuc(sf) ;                                         2d4b5

            END;                                                      2d4b6

        % recreate display %                                          2d5

            ON SIGNAL ELSE;                                           2d5a

            inpstp ← 0 ; %zero control S register%                    2d5b

            IF nlmode=fulldisplay THEN alldsp() ELSE crlf() ;         2d5c
```

RETURN;   2d6

END.   2d7

FINISH sysgdform   2d8

How To Make a SYSGD: Revised

(J17395) 21-JUN-73 11:46; Title: Author(s): N. Dean Meyer/NDM;
Distribution: /NPG; Sub-Collections: SRI-ARC NPG; Clerk: NDM;
Origin: <MEYER>SYSGDFORM.NLS;7, 21-JUN-73 11:06 NDM ;

TIP REMOTE BATCH

IT IS NOT POSSIBLE TO DIAL INTO A TIP FROM A 2000 BAUD REMOTE BATCH
TERMINAL.   IN THE FUTURE IT SHOULD BE POSSIBLE; THAT IS, WE ARE
WORKING ON A SPECIAL TIP TO HANDLE REMOTE JOB ENTRY AND OTHER STRANGE
OR HIGH POWERED TERMINALS.   THE PROJECTED MARKET DATE FOR THIS IS
OCTOBER OR NOVEMBER.   HAVE YE PATIENCE.
IF THIS DOES NOT ANSWER YOUR QUESTION, PLEASE LET ME KNOW.   1

17396 Distribution
   M. R. Leavitt,

THANKS

Jake, just thought i drop you a line to say that you did a superb job
on the using notes. Saved me quite a bit of work on a trip report.
Regards. Frank Brignoli NSRDC   1

17397 Distribution
    Elizabeth J. (Jake) Feinler,

Note Re NLS Course

Greetings from bbn.   1

    This is the second afternoon of the NLS course.   1a

    I have been enjoying it greatly and learning rather more than i
usually learn in comparable time.   1b

This note is to be sent to you via the journal.   2

    Sorry to clutter up you file for all eternity.   2a

    I'll make this short to limit the amount of disk pollution.   2b

    But shortly I'll send you a more serious and hopefully worthwhile
note about the NLS, the NIC, and the NET.   2c

Mike Kudlick and Dirk VanNuyhuys have been excellent teachers.   3

Thank you very much for letting me have this opportunity.   4

    Yours   4a

      Lick   4a1

17399 Distribution
    Douglas C. Engelbart, J. C. R. Licklider,

Whereabouts of laura gould

laura gould can be reached at bbn-tenex under user name gould, or by
phone at bbn: (617) 491-1850 x320   or at home:(617) 527-5176.   1

17402 Distribution
    Michael D. Kudlick,

Dear Jim,

I have just skimmed RFC#524 (Proposed Mail Protocol); I don't claim to have read it all, or even to understand all of what I read. For that reason, I have only two comments at the moment:

1) Is it a good idea to have the same command to leave a "Mail Subfunction" as is used to leave the "Mail Subsystem" (see, for example, branches 6b18 and 6b19 of RFC#524). It seems to me that this makes it easier than necessary for a user to do something he didn't mean to do.

2) I think it is a definite mistake to use the "TELNET Go Ahead character" for any purpose other than its intended one of remotely controlling the line turn-around required by a truely halfduplex terminal (see definition of CA2 - statement 9a1). For one thing, I doubt that any Hosts other than 360/370's and MULTICS (if them) can really generate GA's in all the correct, and only the correct, places, and therefore will attempt to negotiate the "Suppress Go Ahead" option as quickly as possible. (As an alternate, although somewhat clumsy, alternative, how about the EOL . EOL used by the current FTP mail command?)

Regards,

Alex

1

17404 Distribution
   James E. (Jim) White,

Change of Ident

I changed your ident today from ep to eg.   Mail sent to ep will
still get to you -- ep is synonomous with eg although ep will no
longer appear in the Network Directory.   Marcia keeney.   1

17405 Distribution
    Erika Graf-Webster,

Which ones, such as personnel evaluation ones, could use data
retrieved from previous ones to guide the person filling them
out?   1e10

What changes in people's thought processes are likely to occur
given serial entry blank from a terminal rather than seeing the
whole form.   1e11

How do you handle overflow information that won't fit in the
space provided?   1e12

How do you integrate forms cleanly with the calculator?   1e13

What are RADC's plans for placing their 645 on the network?   1e14

What data management systems do they use now?   1e15

Are any of the present forms transferred to a computer system
now? How?   1e16

Should the total system have an optical scanner so that paper
forms can also be part of the system?   1e17

Where will people filling out different classes of forms have
to go to get to a terminal or a hardcopy printer?   1e18

In summary, I see the forms problem as a beginning of a general
information handling system of some complexity and would be
reluctant to build anything without a system analysis of the using
environment. I have seen (the baseline management system is an
example) to many failures in such areas, most of which could be
traced to not having performed such an analysis. The programs
usually work fine, but some how thhe whole system (program
procedures etc) fails to recognize some need or user
characteristic, for example unwillingness to walk down the hall to
perform some function etc. Further users need to feel some
involvement and review of the design rather than having a system
dropped on them.   1f

This is a problem where ARC's development and analysis functions
have an opportunity to work with the client architect to design a
system analysis. Such an exercise is a valuable exercise in its
own right.   1g

Some Thoughts on a Forms System   1

Duane Stone at RADC has correctly recognized that handling data
forms is an area which can stand augmentation and that there is
much time spent in their environment dealing with forms. The RADC
environment is typical of many other environments and that
anything developed for them can and should be applicable more
generally.   1a

The trick will be to implement something for a first phase which
is really going to be useful and not a toy, integrates nicely into
NLS, is not very expensive, and will easily expand in function as
evolution proceeds.   1b

My view of the forms problem is that it is primarily a data
management problem with a significant set of graphical
input/output representative problems. Assuming we can get the
data for a form in and the data output properly formatted, one set
of tough questions is associated with what do you do with the data
once you get it in the machine?   1c

There are other, probably even tougher, questions associated with
all the procedures and methodology surrounding the data entry,
proofing, utilization of forms information, etc.   1d

Before we launch into even a first phase system, I feel strongly
that a thorough system analysis is needed of the RADC forms
environment performed jointly by RADC and ourselves to answer
questions (off the top of my head-some discussed in <17206,>) such
as: 1e

    How many different kinds of forms?   1e1

    What frequency of use of them?   1e2

    Which ones are modified (edited) and how often, by whom?   1e3

    Who fills them out?   1e4

    Which ones are worked on by multiple people?   1e5

    What approval chains do they go through?   1e6

    Where do they go after completion?   1e7

    What use is made of the data contained on them?   1e8

    Which ones could reuse data placed on others?   1e9

17406 Distribution
    Elizabeth K. Michael, Harvey G. Lehtman, Paul Rech, Dirk H. Van
Nouhuys, James C. Norton, Duane L. Stone,