

## Recent MPL/MPS changes

## Some recent (since 1-26) changes

(1) hash index for module name is now stored in word 3 of the code block of the object file.

1

1a

The entry for initialization code is now word 4.

1a1

The hash index can be used to find the semantic entry (findctx(hash,pdctx)) which is the root of the tree.

1a2

(2) outref xproc and literal string semantic entries are now in the tree of semantic entries as the first sons of the module name.

1b

(3) hash numbers for the dirlink field of xproc and module semantic entries are now being fixed up properly on output.

1c

(4) structural information is now put out in a separate block (type=5) in the object module rather than in XCT instructions.

1d

Format of the table entries is XWD 1c,,bytes.

1d1

The interpretation of the bytes is described in (MPS, docruntime, code).

1d2

(5) the CASE statement has been extended so that "OF" can be replaced by an operator.

1e

case ::=

1e1

'CASE sum ('OF caseof / 'IN casein / ropr caseop)

1e1a

'ENDCASE labeled;

1e1b

caseof ::= \$<','>(binrel / sum) ': labeled;

1e2

casein ::= \$<','>(interval / charclass) ': labeled;

1e3

caseop ::= \$<','>sum ': labeled;

1e4

ropr = relational operators and will include 'MATCHES for MPL-META.

1e5

(6) DIRECTORY links must have a directory name.

1f

A link (dir,file,junk) is converted to <dir>file.

1f1

Recent MPL/MPS changes

For INCLUDE's, <dir>file is then used with TXT as default extension to open the file to be included.

1f2

The dirlink field of the directory entry s.e. has the hash of <dir>file string.

1f3

WHP 28-JAN-72 10:28 8700

Recent MPL/MPS changes

(J8700) 28-JAN-72 10:28; Title: Author(s): William H. Paxton/WHP;  
Distribution: James G. Mitchell, L. Peter Deutsch, Harvey G. Lehtman/JGM  
LPD HGL; Sub-Collections: SRI-ARC; Clerk: WHP;

Keyboard Test

please fill my box with five dozen liquor jugs

1



Keyboard Test

(J8703) 28-JAN-72 10:43; Title: Author(s): Stephen W. Miller/SWM;  
Distribution: Richard W. Watson, Dirk H. van Nouhuys, Donald R. Cone,  
Stephen W. Miller/RWW DVN DRC SWM; Sub-Collections: SRI-ARC; Clerk: SWM;

ARC/XEROX interfaces

we need to discuss xerox proposal to ARPA and its impact on our  
work

1

ARC/XEROX interfaces

(J8704) 28-JAN-72 10:44; Title: Author(s): Michael D. Kudlick/MDK;  
Distribution: Richard W. Watson/RWW; Sub-Collections: SRI-ARC; Clerk:  
MDK;

SCB 28-JAN-72 11:17 8705

course test how to get rid of message numbers

impsys suggestion

course test how to get rid of message numbers

no need for message numbers

1

message numbers are necessary only if duplicates can arise

1a

the imp-to-imp transmission control assures that no duplicates arise with normal transmission on a channel

1b

a duplicate can occur only if a packet times out on a channel and it was successfully received but the ack never came back

1c

by requesting the imp who may have a copy of the packet to send his ack bits to you, the packet in question can be flushed or requeued for another line depending on whether he was acking or not

1d

if that request is not answered within a certain time either the receiving imp is down or the net is partitioned

1e

if the destination host is alive to you you can requeue the packet knowing that it is dead to the receiving imp

1f

otherwise the destination host is dead and the packet can be discarded with a incomplete transmission message being sent to the source host

1g

SCB 28-JAN-72 11:17 8705

course test how to get rid of message numbers

(J8705) 28-JAN-72 11:17; Title: Author(s): Stephen C.  
Butterfield/SCB; Distribution: Stephen C. Butterfield/SCB; Keywords:  
impsys; Sub-Collections: NIC; Clerk: SCB;

EHF Request for BBN 2184

Ernie - BBN rpt. 2184, MULTI-LINE-CONTROLLER, is being rewritten and will not be available for some time. When it is available, we will order two copies and loan one to you, or you may request your own. It is expected to be free. - Jeanne

1

JBN 28-JAN-72 11:23 8706

EHF Request for BBN 2184

(J8706) 28-JAN-72 11:23; Title: Author(s): Jeanne B. North/JBN;  
Distribution: Ernest H Forman, Alex A. McKenzie, Cindy Page, Jeanne B.  
North/EHF AAM OXP NICSTA; Sub-Collections: SRI-ARC NICSTA; Clerk: JBN;



## EMC Meeting Notes 17-JAN to 27-JAN

EMC meeting notes for 24-jan, 20-jan, and 17-jan.

1

Dec discussion status

1a

DEC's appraisal of our memory cable length problem is as follows:

1a1

We cannot add any more memory (MALO or MELO) with our current cables and drivers. DEC will, however, replace our cables and drivers with another type which will allow us to add more memory (supposedly up to 256K). They will do this at their own cost, and it will take about a man week and can be done piecemeal at off-hour times.

1a1a

Eight to nine week delivery if we want it. About \$2250/month for 32K. They are sending us this in writing.

1a1a1

DEC will maintain our pager for \$1000 initial charge, \$275/month thereafter, and training expenses for one man.

1a2

Briant discussion status

1b

Briant will not take our disk as a trade in on a new drum (or anything else, for that matter). A specialist is looking into our disk troubles to see if we really need an overhaul. His claim is that the new heads which have been added are not really compatible with the old sense amps. They want to replace the old sense amps also (2 or three days work). Photos are being taken of different signals and are being sent to the experts back east.

1b1

A second Briant drum will cost \$3000 a month for a two year lease, with 20 week delivery!! Who should maintain it?

1b2

Dump time, 0300-0800 operator

1c

EKV has a man, Ralph Prather, who will do the dump from 0300 to 0500 and do other things (like Journal hardcopy production, processing of DEX tapes, Baseline view production, Catalog production) from 0500 to 0800. He is also willing to work from 2400 to 0800 when the need exists. He will probably start on Tuesday, 1-FEB and will normally work tuesday through saturday.

1c1

Who will dump on Monday mornings when the system has

EMC Meeting Notes 17-JAN to 27-JAN

been up for general use on the previous Saturday night and Sunday?

1c1a

CIRAD

1d

A Los Angeles group called Corporation for Information Systems Research and Development, CIRAD, is pursuing the possibility of doing some experimentation using our system for a contract they have with Dr. Goodenough of the Electronic Systems Division, Air Force Systems Command, to do research in computer aided software maintenance (for their technical proposal, see XD00 8622). When they last visited, we warned them that we possibly would not have the resources to accomodate them at this time. DCE thinks highly of Dr. Goodenough and would like to support this type of research.

1d1

CIRAD basically wants to experiment on four subjects (probably programmers in their own staff), to test certain hypotheses they have about computer aids for software maintenance. They would probably wish us to train one of their people in the use of the system and then conduct the experiments in off hours (are there any left?), requiring about eight console hours per subject. It is not at all clear how much expertise they would need in the use of the system or how much their subjects would have to know about our file organization, etc. to perform a reasonable experiment.

1d1a

We would possibly learn what tricks, assumptions, common knowledge, etc. confuses new software people.

1d1b

Maybe we should do this ourselves with the new people we are hiring.

1d1b1

They would probably wish to do the experimentation sometime in the summer.

1d1c

The EMC does not feel that we can afford to take this on at this time. We propose, instead, that, at a time which is more convenient for us, we approach Goodenough ourselves to see if we could help him get this area of study off the ground. We could build on the work CIRAD had already done.

1d2

RADC proposal

1e

The RADC proposal has been sent and RADC has responded by phone. They said everything was fine except that they did

## EMC Meeting Notes 17-JAN to 27-JAN

not like being limited to four simultaneous users. JCN said that there was no reasonable alternative. They suggested that between 0500 and 0800 (our time) might be used to some advantage by them. JCN told them that we were planning that time for heavy background processes which must get done. He agreed that they might be allowed to have more than four users on at that time if we had extra capacity. However, if our background stuff was not getting done, they would have to go back to four users. They agreed.

1e1

They will be getting some execuports within the next few weeks and some (three or four) IMLAC's in about four months. They have encountered difficulty getting phone lines to the TIP in Washington, and will probably continue to dial in for a short while longer.

1ela

## Accounting system

1f

RWW wanted an estimate from JCN for how long it will be before we have a reasonable accounting scheme. JCN said that he and Paul Rech will be working on 1) trying to understand and get down in writing DCE's ideas about how we should be organized, 2) what they think ARC's functioning and organization is now and what they think it should be. I suggested

1f1

## SPACE

1g

Plans have been discussed with all ARC people by JCN. A proposed new layout has been posted for several days. We will put in structure change requests ASAP.

1g1

JCN attended a meeting with Bart Cox and representatives from the other labs to discuss the division's space problem. Bart was very attentive and enthusiastic about our needs for more space. Jim told them that within the next year we would probably have space requirements for about ten more professionals, maybe another PDP10, and maybe an FR-80.

1g2

## Journal Hardcopy

1h

Journal hardcopy formatting and printing is way behind. Probably some night and/or weekend time is going to have to be usurped to get caught up. JCN, WSD, FERG, and the new early morning operator (starting monday or tuesday) will work on this.

1h1

## EMC Meeting Notes 17-JAN to 27-JAN

## IDENT indices

11

Indices are currently being produced only for NIC IDENT's. We at ARC are in need of an ARC index. WLB's proposal (journal, 8680,) seems to meet this need. WSD should pursue this further.

111

## KEV schedule

1j

There was a unanimous feeling that Ken was doing well. It had been agreed earlier that Ken would start working three (8 to 10 hour) days per week (on the average) starting in JAN. This seemed fine to all EMC members. The situation will be re-evaluated in early summer.

1j1

## TENEX work during one week day per month

1k

The TENEX guys wanted one week day per month to do system work. The EMC felt that because we have external commitments to be up from 0500 to 1700 that this request could not be honored. Sundays and evenings are possible candidates, however.

1k1

There seemed really to be two issues at hand. One was a second class citizen issue and the other was the difficulty the system guys have bringing up new systems without test users and at hand software and hardware expertise.

1k1a

The second class citizen issue is a difficult one. Perhaps it can be discussed in general among the group and in POD meetings.

1k1a1

As far as bringing up new systems goes, We can (and plan to) build a canned set of user's for measurement and testing purposes. Also, The system can be taken at 1700 for a disk dump and several people can stay around (or come back) to try and help debug the new system. I personally feel that we all must realize the importance of making a new system solid as soon as we can. It pays in the end. A day or two of hassle followed by a month of solid service is far better than continual low frequency hassle for the better part of that month. We should all feel responsible to do whatever we can to help bring up new systems.

1k1a2

## WHP and CHI would like to have terminals at home

11

## EMC Meeting Notes 17-JAN to 27-JAN

The EMC and DCE feel that this would be cost effective.

111

## EMC-PODCOM relationship

1m

When should the EMC get involved in POD or PODCOM raised issues? It was felt that the public pod notes will and should be read by EMC members as they will by everyone else. Comments in those notes which are germane to current or EMC relevant issues should be discussed. Also when the PODCOM or DCE brings an issue to our attention, we should deal with it. We should not, however, openly discuss the proceedings of our POD meetings, or issues raised in those meetings but not made public. All EMC members can, of course be asked explicitly by anyone to bring any relevant topic before the EMC.

1m1

DCE should generate a more clear description of which topics and issues are reasonable for EMC consideration and action.

1m1a

## Jim Bear

1n

Since he has had virtually no time to work on hardware documentation design for EKV, we should cancel the half-time arrangement with him or make a really firm agreement with his supervisors so that he can give us half of his time.

1n1

## Beepers

1o

EKV will look into the cost of small beepers which on-call people can carry with them when they are on-call. This will allow them much more freedom -- they will not have to stay around here or near a known phone.

1o1

## Fans in the conference room

1p

KEV suggested that we need fans in the ceiling of our conference room. Bob Wing is going to be asked to get them installed for us.

1p1

## Work hour policy

1q

A discussion of ARC's individual working hours policy led to the decision not to announce such a policy. JCN, RWW, and DCE, however, felt that a policy of an average of 40 hours per week, 5 days a week at SRI unless otherwise negotiated is reasonable and has been in effect here all



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along. I felt that this did not represent the software people's working philosophy at all. Their concern is and always has been the amount and quality of work that gets done not how many hours or where each individual works.

lql

The major impetus for this discussion was ARC's defense of its working hours to the government and SRI auditors and concern for the potential development (if it does not already exist) of an unbalanced situation where some of the people work very hard while others take it easy.

lqla

I felt that to satisfy the auditors we indeed need an explanation of our working pattern (which JCN is constructing) but that the development of an unbalanced situation where some people are not pulling their weight was a matter of group morale, enthusiasm, and dedication -- not a matter of policy. I felt that the software teams approach would help keep the morale of the software group up and that peer pressure would assure that people worked hard.

lqlb

An important factor here is that a team's and a person's work should be made more visible so that subjective evaluations of how hard a person is working are not made.

lqlbl

DCE agreed but felt that the implementation of the Personal and Organizational Development (POD) scheme would meet the needs more directly and would incorporate the whole group.

lqlc

With DCE

lr

How is the writing of BC plans coming? What are you doing?

lrl

BC plans development is going quite slowly -- DCE has gathered misc notes together.

lrla

What about the hiring of senior guys? We need to know what you think they are going to do. We need a written plan in order to discuss the matter.

lrlb

DCE feels that we need the senior guys to help develop these plans. The acquisition of new senior people and the development of plans should go on in parallel. The new senior people will help us in the areas where we need help most -- formulation of plans and management.

lrlbl

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What have you told Mike Kudlick?

1r2

Software people should get to know him and be his main contact (he is/was a software person). Mike and Paul will work with EKV and JCN, respectively to develop a picture of our operations -- so called perations analysis

1r2a

what do we do

1r2a1

scheduling in TENEX, and of use of the system

1r2a2

how many programmers, clerical people, etc do we need

1r2a3

the whole spectrum of our activities.

1r2a4

management

1r2a4a

operating system

1r2a4b

NLS

1r2a4c

people operations

1r2a4d

and so forth

1r2a4e

Mike is now working with DIA in the analysis of our software/hardware situation and trying to help EKV with operating system problems.

1r2b

software meeting discussed

1s

see (Journal, 8571,) for a notes on the meeting.

1s1

RWW had never said he wanted to fire WLB, JDH, or MSC. I admit that, although he has expressed considerable concern about the working modes of these people, he has probably never said he would like to see them fired. My appology.

1s2

JCN was very concerned that the hours question was a proper statement of what it is that he feels has been the understanding all along.

1s3

That is, minimum average of 40 hours per week (note average), 5 days a week at SRI (note not 40 hours working but 40 hours working at SRI).

1s3a

JCN feels that I misinterpret many of the things he says,

## EMC Meeting Notes 17-JAN to 27-JAN

perhaps because I want him to be saying something other than what he is.

1s4

All EMC proceedings should be made public, even if they concern personnel matters.

1s5

Visitors (two or three at a time) are encouraged to attend EMC meetings. The following constraints should be placed on attendees.

1s6

They must come at beginning and stay to the end.

1s6a

They must be reasonably unobtrusive until near the end of the meeting when they can make comments and recommendations.

1s6b

videotape unit proposed

1t

CHI proposed that it would be worthwhile to invest in a videotape unit and editing facility to aid in training, documentation, presentations, demonstrations, and so forth.

1t1

It was thought that perhaps HGL could write specs or requirements so that someone else could pursue acquisition.

1t2

budget

1u

JCN reported that budgetary matters have been straightened out since the new laboratory reorganization. Things look fine from our standpoint.

1u1

Time-share facility management

1v

see (Journal, 8669, 1:w)

1v1

BBN net interface requisition

1w

EKV has written a first draft of a justification for getting BBN's IMP interface.

1w1

Discussion with DOE concerning the all-arc meeting held on tuesday, 25-JAN.

1x

DOE outlined what he was going to launch.

1x1

see (Journal, 8651,) for a description of the proposal.

1x2



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(J8707) 28-JAN-72 12:23; Title: Author(s): Richard W. Watson, Charles H. Irby, Ed K. Van De Riet, James C. Norton, Charles H. Irby/EMC CHI; Distribution: Paul Rech, Stephen W. Miller, Michael D. Kudlick, George J. Eilers, Donald R. Cone, Bonnar Cox, David R. Brown, Don Limuti, William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane, Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: NIC SRI-ARC; Clerk: CHI; Origin: <IRBY>EMC-MINUTES.NLS;13, 28-JAN-72 7:28 CHI ;

Dereliction of Duties Calls for a Purge

Well, BLP, where are our POD notes??????

1

HGL 28-JAN-72 14:14 8708

Dereliction of Duties Calls for a Purge

(J8708) 28-JAN-72 14:14; Title: Author(s): Harvey G. Lehtman/HGL;  
Distribution: Bruce L. Parsley/BLP; Sub-Collections: SRI-ARC; Clerk:  
HGL;

THANK YOU EMC-- KEEP IT UP!

I just read (8707,) the meeting notes to the most recent EMC meetings. CHI is to be complimented for such a complete set of notes. I feel that personnel discussed in EMC meetings should have the option of not having their cases documented in the meeting notes although I feel that open meeting notes are most useful. Perhaps some means of getting the EMC notes out through PSO should be explored because I expect that EMC members would prefer not to spend all that much time writing up the notes for insertion into the Journal. (How about taping a summary at the end of the meeting and having the notes transcribed?) Such completely open notes would lead to dispel much of the suspicion prevalent in recent weeks.

1

HGL 28-JAN-72 15:08 8709

THANK YOU EMC-- KEEP IT UP!

(J8709) 28-JAN-72 15:08; Title: Author(s): Harvey G. Lehtman/HGL;  
Distribution: Richard W. Watson, Charles H. Irby, Ed K. Van De Riet,  
James C. Norton/EMC; Sub-Collections: SRI-ARC EMC; Clerk: HGL;

terminal response time

terminal response problems may be partly due to method of  
handling terminal i/o in tenex

1

size of output buffers,

1a

dependence of size on terminal speed,

1a1

method of re-activating forks to refill them

1a2

allowance for "break" characters on input

1b

nls code organization in routines that analyze input strings

1c

number of pages occupied by re-entrant code and data  
buffers

1c1

"nearness" of routines that do related things

1c2

comments

1d

Do you have any feeling for whether terminal I/O  
methodology in TENEX could be partly responsible for poor  
response? Are any of the above items relevant to the  
response problem?

1d1

terminal response time

Here are some off-the-top-of-my-head thoughts on terminal response times that occurred to me while taking DVN's course on TNLS. Output, in particular, is "jerky" and this may be due to small output buffers, or to random file organization, or to the method of taking NLS-formatted text and making it sequential. Would appreciate your comments.

MDK 28-JAN-72 16:01 8710

terminal response time

(J8710) 28-JAN-72 16:01; Title: Author(s): Michael D. Kudlick/MDK;  
Distribution: Don I. Andrews, Richard W. Watson/DIA RWW;  
Sub-Collections: SRI-ARC; Clerk: MDK;



Mailing Address?

Dick,

I don't seem to be able to change my address although  
the NLS user guide says I should be able to. I keep  
getting:

?

Next id:

How do I change my mailing address?

Thanks,

Charley.

1

CSK 28-JAN-72 16:51 8711

Mailing Address?

(J8711) 28-JAN-72 16:51; Title: Author(s): Chuck S. Kline/CSK;  
Distribution: Richard W. Watson, Chuck S. Kline/RWW CSK;  
Sub-Collections: NIC; Clerk: CSK;

PANITA.TXT

Dick,

There is a file in UCLA-NMC directory called PANITA.TXT;1. However, I can't use copy, or type to find out what it is (get the message command not available for NIC use). How do I find out what it is (how did it get there)?

Thanks, CSK.

1

CSK 28-JAN-72 16:57 8712

PANITA.TXT

(J8712) 28-JAN-72 16:57; Title: Author(s): Chuck S. Kline/CSK;  
Distribution: Richard W. Watson/RWW; Sub-Collections: NIC; Clerk: CSK;

The ARC EMC met 3 Feb 72 with RWW CHI EKV and JCN present:

1

TOPICS DISCUSSED:

1a

PSO	1a1
Net interface	1a2
ARC funding vs personnel additions	1a3
32k memory addition	1a4
More tty channels under consideration	1a5
Pager maintenance agreement with DEC	1a6
Display console test results	1a7
Display terminal study	1a8
Telephone for our operator WRF at home	1a9
People / system utilization: POD meeting schedule overlaps	1a10
CIRAD	1a11
Terminal additions status	1a12
Longer range goal and planning efforts needed to start now	1a13

PSO

1b

Questions concerning the status and some apparent tensions in our PSO were raised and discussed.

1b1

Jim Norton feels that the PSO has now organized many of their functions in ways that really provide useful, reliable help to ARC people.

1b1a

Transcription, reproduction, identfile changes, baseline task entry, catalog document entry, acquisitions, and Journal entry forms and assistance are available and ready to be used.

1b1a1

Other services such as baseline view generation, journal and NIC catalog production are still being developed and will soon be more "routinely" operational. Work on procedure development and documentation and also some automation of these processes is progressing well.

1b1a2

The process of getting the PSO set up appears to have had many ill-effects, mainly on the feelings/attitudes of those on the PSST and its PSO members.

1b1b

Note that the PSSTeam was set up for the purpose of getting PSO organized and included several people who were to act in a more or less advisory role at the start. (see -- 7834,2h3). We think that the setting

up process affected these people in some good and bad ways too.

1b1b1

There was some discussion of whether the name People Service Operation is appropriate for the group - and whether it makes those involved feel like "second-class citizens".

1b1b2

We agreed that most, if not all of our ARC people provide "people service" to others (in various ways) and that PSO as a name for just one subset of ARC is not really appropriate.

1b1b2a

We feel that the idea that providing "service" or support to other people is FIRST-CLASS WORK and should be highly regarded as should the people performing those tasks

1b1b2a1

We would hope that all of us whether giving or getting service should recognize this. 1b1b2a1a

However, because of the involvement in "people service" by many others in ARC, we agreed that if the PSO group felt that they would like to be called something else, they should think of an alternate name.

1b1b2b

The long search for mag tape cassette equipment has slowed DEX use and the transcription process by PSO and has added to the tensions, being almost there but not quite for too long. Now, with the first units arriving and the terminal selection process hopefully resulting in an order of enough for PSO and others in ARC, another disturbing factor will be removed.

1b1c

The space problem appears resolved and will help too.

1b1d

The question of organization remains to be resolved.

1b1e

EMC feels that we must now help resolve the question of who will coordinate the group's overall activities and in what kind of role.

1b1e1

Don Cone has really helped support the group in many ways and the several month period over which he agreed to come and help us has now passed. We really appreciate this and owe it both to him and the other PSO people to make his future status and role clear.

1b1e2

#### NET INTERFACE

1c

We discussed the BBN network interface study and, although the BBN maintenance costs appear to be missing, concluded that we should recommend to DCE that we get the BBN equipment.

1c1

A major factor, since the two alternatives cost about the same the first year, was that getting the BBN interface would free much needed hardware and software people for other more pressing tasks.

1c2

Also, after the first year the BBN selection would be less costly.

1c3

#### ARC FUNDING VS PERSONNEL ADDITIONS

1d

Dick Watson asked whether we have enough funding to add the NIC operations man we have discussed for the past many months. Jim Norton gave a brief picture of the reasoning he and DCE used in early Fall to consider the whole question of ARC expansion.

1d1

Since that time the RADG and ONR funding have both been allocated to us and negotiations are impending. Those funds will make the process of expansion even more secure. Anyway, the basic plan has been to expand as we feel is appropriate for the integration of the new people and count on adding more funding at various times during the next two years. The present funding picture needs re-study again to be sure just where we stand, but Jim Norton thinks we are in a good place. He will make the study next week and present it to the EMC and DCE.

1d2

#### 32K MEMORY ADDITION

1e

DEC says that they are willing to add the charges for 32k more memory to our existing lease agreement. This means that about \$2500 (??) would be added to our facility cost per month. RADG funding will cover the cost of this addition for the first 5 or 6 months. after that a RADG project extension and or other sponsorship will cover.

1e1

The EMC will recommend to DCE that we add the 32k memory right away, with delivery in about three months.

1e2

The question of whether to get the offered ME-10 vs our present MA-10 memory was discussed. CHI felt that we should

stay with MA-10's if we can. EKV will check on this to see if there is any effect on the delivery schedule. Then the EMC will decide what to do.

1e3

#### MORE TTY CHANNELS UNDER CONSIDERATION

1f

The addition of more TTY channels may be necessary. We decided to ask PSO to help us determine the number of TTY stations we should provide for, as many of them will be used by the PSO group, and because we need help too. JCN will do this.

1f1

#### PAGER MAINTENANCE AGREEMENT WITH DEC

1g

We agreed that we should go ahead with the P.O. to have DEC maintain the BBN pager.

1g1

#### DISPLAY CONSOLE TEST RESULTS

1h

CHI reports that he tried 6 displays on one Tasker and 4 on the other yesterday am.

1h1

The set with 4 had 1 low-persistence vidicons and 3 high-persistence ones.

1h2

The low one had a little flicker, but blanked out fast which was judged to be very good for the user's feeling about responsiveness of the system.

1h3

The high ones had less flicker, but and still snappy (due to the limit to 4 displays on the Tasker) and the cursor had a little trail.

1h4

Since the tubes are written more often, they can be written with less intensity, thus reducing the apparent persistence -- a big factor for the user.

1h4a

We will now try 5 displays on the Tasker to see how that will work out. (--this has since been tried: no different than with 6 --)

1h5

Question: is it possible to keep the Taskers tuned up better than they were for the tests all the time? Can we find a way to let Jake know when they need tuning? Can Martin be of help in this? or the users themselves?

1h6



## DISPLAY TERMINAL STUDY

1i

With our adding more ARC people and the possibility of reducing to 8 active displays from Tasker to improve display quality, we discussed the need for a study of alternative display equipment available. We need an ARC coordinating interface person for this particular study. Perhaps Steve Miller would be willing to perform the study.

1i1

We agreed that Mike Kudlick would be a good person to perform this coordinating role - at least for now - but that in the longer run, we really need a "new hardware" man, together with such outside help as Steve's utilized when possible.

1i2

JCN will see if Mike and Steve are willing and at the same time look into the state of the present terminal study.

1i3

A baseline task with initial requirement for Steve's guidance should be set up (by Mike, with help from CHI JCN?).

1i4

## TELEPHONE FOR OUR OPERATOR WRF AT HOME

1j

We decided to put a telephone in WRF's home so that he can perform operator functions when needed at odd hours without tying up his phone, and so he can simultaneously talk to others he is working with on our problems.

1j1

## PEOPLE / SYSTEM UTILIZATION: POD MEETING SCHEDULE OVERLAPS

1k

Although the scheduling of POD meeting times is really the business of the PODs themselves, we discussed the idea that they should be spread out so as to keep the system utilization as effective as possible on meeting days. This seems more important than the inconvenience that some of us will feel when we need someone who is in a POD meeting. This seems reasonable since there are bound to be many times various people in ARC will need the help, etc of others who are working different hours, who are sick or on vacation, or just out to lunch. We have to learn to function with these conditions.

1k1

## CIRAD

1l

We discussed the CIRAD meeting and its results. These are reported in the notes by CHI. see (8793,)

1l1

TERMINAL ADDITIONS STATUS

1m

We discussed the terminal question and agreed that upon completion of the ongoing tests of the AJ terminal this week, we should place an order for 6 or 8 terminals of some type. It is more likely that we will get TI terminals at this point. The AJ ones are expensive, although they do have some good features.

1m1

LONGER RANGE GOAL AND PLANNING EFFORTS NEEDED TO START NOW

1n

We decided to have a separate EMC meeting to consider longer range goals and plans, not because we feel we are a committee set up for that purpose, but because we need to have a better idea of the goals and plans right now in order to keep ARC moving in the right direction. After we get some better ideas about this we plan to urge the creation of a more appropriate goal/planning team to help DCE.

1n1

&EMC JCN 7-FEB-72 12:16 8716  
EMC 3 FEB 72 Meeting Notes

(J8716) 7-FEB-72 12:16; Title: Author(s): Executive Management Committee (ARC), James C. Norton/&EMC JCN; Distribution: Diane S. Kaye, Paul Rech, Michael D. Kudlick, Donald R. Cone, Don Limuti, William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane, Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: JCN; Origin: <NORTON>EMCNOTES.NLS;17, 7-FEB-72 12:13 JCN ; HJournal=" EMC (JCN) 7 FEB 72 8716";

Communique from the Cedar 9 -- 26 Jan

Greetings!!

1

One of the things agreed on in the Cedar pod was that each week a "communique" would be sent from us to you other pods, discussing some of the things discussed by the Cedar-9. It is mainly done for the sake of communication -- perhaps you'll think that some of our topics are worth discussing in your pod, or maybe you'll even like some of the ideas.

2

We decided to rotate PODCom membership in terms of a month. The first delagate is BLP with it going alphabetically thereafter.

3

Xhere was a consensus on the suggestion that Doug be a member of pod and have the usual reponsibilities for attending. The pod to which he belonged would be rotated each month.

4

There was widespread dissatisfsaction with the lack of well defined roles, structure, and goals here at ARC. There were three suggestions for a remedy:

5

Doug do it

5a

Somebody get assigned the responsibility of doing it.

5b

or at least the goals and their priorities become greatly clarified so that each person would have a good basis for making decisions about what it is that he should be doing (do next) .

5c

Gripes were aired about time cards -- basically because they're meaningless. It was suggested that one person fill out all the cards each week.

6

There were objections and dissatisfactions expressed about how Doug performs his role.

7

There is an impression that Doug goes off in a corner and hatches ideas. People are uncomfortable with all the surprises. Also we are excluded from the formative stages of the idea hatching process.

7a

Doug does not allow enough control, goal setting, or participation for ARC in general.

7b

Doug doesn't do enough selling of his ideas to ARC people.

7c

EMC was critisized and explained and defended and empathasized with.

8

Communique from the Cedar 9 -- 26 Jan

The main critical feeling was that the EMC has the image of a secret body making decisions about our lives and we have no say in it and even not much knowledge about what's going on in there.

8a

It was generally felt that better communication would help this situation a lot.

8b

After it was understood that there is a real danger in the working hours thing (the government is threatening to cut SRI fees in half), every Cedar-9 agreed that he/she would be willing to sign in and out for a fixed length of time -- say 1 or two months. Nobody seemed to care much whether names were used or not. Also it was understood that the 8 to 5 business wasn't cared about much, but the 40 hours was the important thing.

9

There was some feeling that scheduling ought to be instituted to do something about bad response during the day.

10

There was a suggestion made that the TENEX and hardware people ought to get a day a month when they could work in the sunshine. There was disagreement and the meeting ended before discussion was complete.

11

Communique from the Cedar 9 -- 26 Jan

(J8717) 29-JAN-72 4:53; Title: Author(s): Bruce L. Parsley/BLP;  
Distribution: Paul Rech, Stephen W. Miller, Michael D. Kudlick, George J  
Eilers, Donald R. Cone, Bonnar Cox, David R. Brown, Don Limuti, William  
R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane, Marilyn  
F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall, Douglas  
C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper,  
Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne  
B. North, James C. Norton, Cindy Page, Bruce L. Parsley, William H.  
Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De  
Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W.  
Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: BLP;  
Origin: <PARSLEY>CEDAR26JAN.NLS;4, 29-JAN-72 4:50 BLP ;

KEV 30-JAN-72 18:00 8718

new handling of resident ddt

new handling of resident ddt

# OVERVIEW OF RECOMMENDED CHANGES

1

The following changes are recommended to change the handling of the resident version of DDT and its symbols

1a

Once again DDT will be flushed if DEBUGSW (and DCHKSW) is zero

1b

However, they will not be flushed until after the resident and swappable monitor is written on disk

1c

When the system is reloaded from disk they will be brought back in with the rest of the monitor and subsequently flushed if so desired

1d

Two routines are supplied to provide this service:

1e

MAKPGA - a general purpose routine to free up a given page and

1e1

DDTFSH - to specifically release DDT

1e2

The decision to breakpoint at BUGHLT and BUGCHK now hinges on both the setting of DEBUGSW (and DCHKSW) and the availability of a resident DDT

1f

Thus it is possible to switch from a setting of DEBUGSW=0 to a setting of DEBUGSW=2 safely

1g

The consequences of such a change are as follows:

1h

If a BUGHLT occurs without a resident DDT but with a setting of DEBUGSW .ne. 0 an automatic restart will occur

1h1

However, the next time a BUGHLT occurs the breakpoint will be taken

1h2

Also it is now possible to bring up the system with a resident DDT and at a future time to free up the core take up by DDT

1i

(this is accomplished by entering MDDT and calling DDTFSH)

1i1

We are working on the converse of these procedures, i.e., the ability to bring back DDT (thus not losing even one crash)

1j



3

new handling of resident ddt

MOVEI 4,10		2114
MOVEM 4,MAXLOK		2115
MOVE 4,TOTRC		2116
LSH 4,-3		2117
CAIL 4,NBP		2118
MOVEI 4,NBP-1		2119
MOVEM 4,MAXBP		2120
OKSKED		2121
POP P,4	;RESTORE REGISTERS	2122
POP P,3		2123
POP P,2		2124
RET		2125

new handling of resident ddt

ADD THE FOLLOWING ROUTINE TO A SWAPPABLE PART OF SWPMON.MAC:

;FLUSH DDT AND SYMBOL TABLE AND MAKE PAGES AVAILABLE FOR  
SWAPPING

EXTERN MAKPGA

DDTFSH:        PUSH P,2

;SAVE REGISTERS

PUSH P,1

MOVE 2,SWPCOR

;ALREADY FLUSHED ?

CAMN 2,MONCOR

JRST DDTFSR

;YES

SUB 2,MONCOR

MOVNS 2

HRLZ 2,2

HRR 2,MONCOR

HRRZM 2,SWPCOR

SETZM DEBUGSW

SETZM DEBUGSW

SETZM SWPSTP

MOVE 1,[HALT 100]

MOVEM 1,100

HRRZ 1,2

CALL MAKPGA

;FREE THE PAGE

AOBJN 2,-2

;LOOP TILL ALL FREE

DDTFSR:        POP P,1

;RESTORE REGISTERS

new handling of resident dat

POP P,2

3e1

RET

;RETURN

3e2

3f

new handling of resident ddt

ULKSML (PAGE 5 OF SWPMON.MAC) SHOULD NOW LOOK AS FOLLOWS:

4

ULKSML:           ANDCAM 6,MMAP(7)                   ;CLEAR ANY UNWANTED  
ACCESS

4a

MOVEI 1,0(7)

4a1

HRL 1,MMSPTN

4a2

CALL MULKPG

;UNLOCK THE PAGES

4a3

CAMGE 7,SWCEND

4a4

AOJA 7,ULKSML

4a5

OKSKED

4a6

POP P,NPMAK

;RESTORE NORMAL MAX SIZE

4a7

SKIPN GETSMF

;IF FRESH START FROM DTA

4a8

SKIPN DISKP

;AND DISK AVAILABLE

4a9

JRST ULKSM2

4a10

PUSH P,CAPENB

;SAVE CURRENT CAPS

4a11

MOVEI 1,WHEEL

;WE NEED WHEEL FOR THE FOLLOWING

4a12

IORM 1,CAPENB

4a13

CALL WRMON

;WRITE RES AND SWP MON ON DISK

4a14

CALL WRSWM

4a15

POP P,CAPENB

4a16

AOS GETSMF

;FLAG MON NOW ON DISK

4a17

ULKSM2:           MOVE 1,DBUGSW

;SHOULD WE FLUSH DDT ?

4b

ADD 1,DCHKSW

4b1

SKIPN 1

4b2

CALL DDTFSH

;YES

4b3

RET

4b4

new handling of resident ddt

THE DECLARATIONS IN PISRV.MAC SHOULD BE AS FOLLOWS:

CRSTD1=27	;CRASH TIME AND DATE SAVED WHILE RELOADING	5a
BUGHAD=26	;BUGHLT AND CHK ADDRESSES SAVED WHILE RELOADING	5b
DEBUGS1=25	;DEBUGSW AND DCHKSW SAVED WHILE RELOADING	5c
DEBUGSW==77	;0=UNATTENDED, 1=ATTENDED, 2=DEBUGGING	5d 5e
DCHKSW==76	;.NE. 0 => STOP ON BUGCHKS	5f
GETSMF==75	;MONITOR SAVED ON DSK IF NON-0	5g
CRSTAD==74	;TIME AND DATE SAVED ON LAST AUTO-RESTART	5h

new handling of resident ddt

THE INITIALIZATION CODE IN PISRV SHOULD BE AS FOLLOWS:

MOVE 1, [JRST BUGH9]	; SETUP JSR DISPATCHES	6
MOVEM 1, BUGHLT+1		6a
MOVE 1, [JRST BUGC9]		6b
MOVEM 1, BUGCHK+1		6c
MOVE 1, MONCOR		6d
CAME 1, SWPCOR	; DDT BEING FLUSHED?	6e
JRST .+4	; NO	6f
SETZM DEBUGSW	; YES, MUST BE NOT BREAKPOINTS	6g
SETZM DCHKSW		6h
SETZM 100	; AND NO MANUAL DDT START	6i
		6j

new handling of resident ddt

BUGHLT (IN PISRV.MAC) SHOULD BE AS FOLLOWS:

LS BUGHLT,2		7
LS BUGHRL,1		7a
		7b
BUGH9: SOS BUGHLT		7c
		7d
MOVEM 1,BUGHRL	;SAVE 1	7d1
MOVE 1,MONCOR	;FIND OUT IF WE HAVE DDT	7d2
XOR 1,SWPCOR		7d3
EXCH 1,BUGHRL	;RESTORE 1 AND SET SWITCH	7d4
SKIPN DEBUGSW	;DEBUGGING ?	7d5
BUGHO: JRST .+3	;NO.	7e
SKIPE BUGHRL	;HAVE DDT?	7e1
JRST 4,@BUGHLT	;YES	7e2
AOS JBOFLG	;GET IT REPORTED SOON	7e3



new handling of resident ddt

BUGCHK (IN PISRV.MAC) SHOULD BE AS FOLLOWS:

8

LS BUGCHK,2

8a

LS BUGCR1,1

8b

BUGC9:           MOVEM 1,BUGCR1                   ;SAVE 1

8c

8d

MOVE 1,MONCOR                   ;FIND OUT IF WE HAVE DDT

8d1

XOR 1,SWPCOR

8d2

EXCH 1,BUGCR1                   ;RESTORE 1 AND SET SWITCH

8d3

SKIPN DCHKSW                   ;DEBUGGING ?

8d4

JRST .+3                   ;NO

8d5

BUGC0:           SKIPE BUGCR1                   ;HAVE DDT ?

8e

JFCL                   ;YES

8e1

AOS JBOFLG                   ;GET IT REPORTED

8e2

JRST @BUGCHK                   ;CONTINUE

8e3

new handling of resident ddt

SYSGO (PAGE 4 OF PISRV.MAC) SHOULD LOOK AS FOLLOWS:

SYSGO:	PIOFF 610000	;RESET PI	9
			9a
CONO APR,200000		;RESET IO	9a1
MOVE 1,BUGHLT		;SAVE POSSIBLY INTERESTING CELLS	9a2
HRL 1,BUGCHK			9a3
MOVEM 1,BUGHAD			9a4
MOVE 1,DBUGSW			9a5
HRL 1,DCHKSW			9a6
MOVEM 1,DBUGS1			9a7
SKIPLE DISK		;IF NO DISK	9a8
SKIPG GETSMF		;OR NO SAVED MONITOR	9a9
JRST .+2		;DONT TRY TO RELOAD	9a10
JSP 7,RLRMON		;RELOAD MON FROM DISK, THEN START	9a11
MOVE 1,BUGHAD			9a12
HRRZM 1,BUGHLT			9a13
HLRZM 1,BUGCHK			9a14
MOVE 1,CRSTD1			9a15
MOVEM 1,CRSTAD			9a16
MOVE 1,DBUGS1			9a17
HRRZM 1,DBUGSW			9a18
HLRZM 1,DCHKSW			9a19

new handling of resident ddt

(J8718) 30-JAN-72 18:00; Title: Author(s): Kenneth E. Victor/KEV;  
Distribution: Bob Van Tyul, Jeanne B. North, Robert L. Dendy, John T.  
Melvin, Kenneth E. Victor, John W. McConnell, Peggy M. Karp, Dan L.  
Murphy, Rod M. Fredrickson, Peter H. Lipman, Don C. Wallace, Carl M.  
Ellison, Ted R. Strollo/TUG; Sub-Collections: SRI-ARC TUG; Clerk: KEV;  
Origin: <VICTOR>RESTART.PROCEDURES;3, 30-JAN-72 17:58 KEV ;

## Request for IMLAC Configuration Data

&lt;DEUTSCH&gt;IIGREQ.NLS;2, 30-JAN-72 22:39 LPD ;

1

Since the IMLAC program to interface with Display NLS is now running (albeit somewhat shakily) on the machine at Xerox PARC, and has even been tried through the AMES TIP, this seems like an appropriate time to take an inventory of IMLACs at the various network sites.

1a

For the moment, I will serve as secretary of the IIG (unless someone else wants the job) for the purpose of collecting information that might be of interest to all.

1a1

At some time in the next months I will want to take a similar inventory of IMLAC software: the Network Graphic Group meeting in April might be an appropriate place and time.

1a2

I would like to have the following information from all ARPA Network sites which currently have or are planning to have IMLACs.

1b

Core size;

1b1

Display characteristics: presence or absence of Long Vector hardware, vertical (standard) or horizontal tube;

1b2

Method of interfacing to Network: dialup to host; dialup to TIP; hardwire to host; hardwire to TIP; other.

1b3

Speed of connection to Network (input and output separately);

1b4

I/O devices: IMLAC-supplied, outside suppliers, home-grown;

1b5

Interrupt system characteristics: what devices cause interrupts;

1b6

Binary program loading method: from host, Network, cassette, paper tape, ...;

1b7

Any other comments on hardware configuration or expected mode of utilization (e.g. as terminal, to drive special equipment, as NLS terminal, ...).

1b8

It is anticipated that any IMLAC with at least 8K of core and an interrupt system which gives interrupts on input characters from the Network will be able to run as a Display NLS terminal. Experience has shown that 4K of core does not leave

## Request for IMLAC Configuration Data

enough room for data and that at speeds above about 1000 baud the program cannot keep up if it must sample the input.

1c

It is intended to maintain the software for IMLACs used for NLS at SRI-ARC. This implies that we must have a complete description of any IMLAC configuration intended for this use. The site inventory will be maintained on-line and you will receive a Journal message when it is ready.

1d

Request for IMLAC Configuration Data

(J8719) 30-JAN-72 22:41; Title: Author(s): L. Peter Deutsch/LPD;  
 Distribution: Jeanne B. North, L. Peter Deutsch, Ira W. Cotton, W. Jack  
 Bouknight, Steve D. Crocker, Charles H. Irby, Karl C. Kelley, J. C. R.  
 Licklider, John W. McConnell, Robert M. Metcalfe, Edwin W. Meyer, James  
 C. Michener, James A. Moorer, Jonathan B Postel, Ken Pogran, Ron M.  
 Stoughton/IIG; Sub-collections: NIC IIG; Clerk: LPD;

Notice of removal of hard copy for SRI-ARC members.

In an effort to decrease the amount of hard copy produced via the Journal System, all ARC members of the group SRI-ARC are being removed from the Hard Copy distribution list.

1

If you wish to be reinstated to the list, you should approach either JCN or myself (WSD) with an appropriate argument.

2

This should be effective when the new NLS comes up.

3

WSD 31-JAN-72 10:09 8721

Notice of removal of hard copy for SRI-ARC members.

(J8721) 31-JAN-72 10:09; Title: Author(s): William S. Duvall/WSD;  
Distribution: S.R.I. - Augmentation Research Center, James C.  
Norton/&SRI-ARC JCN; Sub-Collections: SRI-ARC; Clerk: WSD;



## Response to ID system changes proposal -- 8680

## Group Addresses

1

I think that the address field should be kept around because  
 (a) I think that it is potentially useful (To make a decision that it is not because we have not yet used it is invalid, I feel, for we have not in any way utilised the Ident system to its full potential...new uses will crop up in the future);  
 (b) It would make a special case of groups which I have tried to avoid, and shall continue to try to avoid.

1a

Perhaps WLB is not aware of the routine LGETADDR, which should retrieve for him the mailing address for an ident, whether it be group or individual.

1b

Using this routine, you should have no knowledge of the contents or redundancy of the mailing address field.

1c

## Clean-up...field terminators

2

Redundant semicolons are probably present as the result of programming bugs, and should be removed.

2a

The standard field terminator should be semi-colon rather than EOL, as some fields have EOLs imbedded in them.

2b

Again, no user should be aware of the internal format of the identfile if the proper get routines are available and used, and there are no bugs in them.

2c

## Directories

3

All right by me, except that I think that it will in the long run be more flexible (and save storage) if we keep lists of which group belongs in which directory, rather than which directories a group belongs to, e.g. given directories D1 and D2, and groups G1, G2, G3, G4:

3a

Option (a):

3a1

D1 = G1 G2 G4

3a1a

D2 = G2 G3

3a1b

is more compact, flexible and convenient and requires no more information than (b):

3a2

G1: Directories D1

3a2a

Response to ID system changes proposal -- 8680

G2: Directories D1 D2	3a2b
G3: Directories D1 D2	3a2c
G4: Directories D2.	3a2d

Consider further, the difficulty of deleting a directory in the two different organisations.	3b
--	----

A word on Get Routines	4
------------------------	---

It seems to me that part of the difficulty experienced by WLB has been caused by a lack of communication concerning the philosophy behind manipulation the ID file using get and set routines, the lack of certain get routines, and bugs in get routines.	4a
--	----

In general, Get routines should exist so that a program may ask for the LOGICAL (not physical) contents of a given field, and be returned this information. The appropriate get routine will take care of defaults, indirection, etc.	4b
---	----

In places where the appropriate routines do not exist, they should be designed and written.	4c
---	----

When the routines do not work, they should be fixed.	4d
--	----

WSD 31-JAN-72 14:35 8730

Response to ID system changes proposal -- 8680

(J8730) 31-JAN-72 14:35; Title: Author(s): William S. Duvall/WSD;  
Distribution: Walter L. Bass, Richard W. Watson, Charles H. Irby, Ed K.  
Van De Riet, James C. Norton, Mary S. Church/WLB EMC MSC;  
Sub-Collections: SRI-ARC EMC; Clerk: WSD;

Visit log: 31 Jan 72, Dr. Paul Craig, Advanced Technology  
Applications Group, RANN, National Science Foundation

He was on a get-acquainted-with-SRI visit, arranged through Kinderman.. The latter brought Bert Raphael and me in for lunch because Craig had volunteered a general interest in our areas. Bert discussed their production-automation interests, showed their arm and Shakey to him.

1

I had Craig and Kinderman at ARC for about half an hour after lunch: quick pass through the computer room, a glimpse at our work areas, and some introductory demonstration of DNLS in my office. Brief mention of dialogue, Journal, NIC, etc.

2

Craig has been with NSF for a little over a year. He has a background in physics (Brookhaven), and moved into their RANN project last summer. He expressed interest in finding a way for NSF to avail its staff of some time-sharing support so they could try using some information-management tools in house. I mentioned very briefly that we were consciously laying the groundwork for being able to help organizations do just that -- but that we picture it as a serious, long-term matter that would require constant systems help to the users, with plenty of direct experience behind the systems people. Not enough time, though, to give Craig much of a picture, so I didn't pursue it.

3

In Craig's discussion with Bert there were a few items of interest to us: RANN can give contracts (as contrasted to NSF's usual grant) that don't cost SRI so much to accept; they are interested in programs developed in conjunction with industries, where there is a good chance that the industrial people will carry on with the work if it reaches a reasonable state of development.

4

Also interesting to note that Kinderman was quick to consider promoting multi-sponsor industrial support teamed with NSF money; and apparently his group already has some NSF RANN support.

5

DCE 31-JAN-72 15:41 8733

Visit log: 31 Jan 72, Dr. Paul Craig, Advanced Technology  
Applications Group, RANN, National Science Foundation

(J8733) 31-JAN-72 15:41; Title: Author(s): Douglas C. Engelbart/DCE;  
Sub-Collections: SRI-ARC; Clerk: DCE;

28 January DEX-2 DESIGN MEETING NOTES

HGL 31-JAN-72 15:44 8734

Please offer suggestions!

## 28 January DEX-2 DESIGN MEETING NOTES

The third meeting of the DEX-2 software group was held on Friday 28 January. Present were HGL, WLB, and CHI. These notes summarize the content of the meeting and are recorded by HGL. None of the features discussed is presented in a final form in this document-- the discussion has just begun. This document modifies the discussion in the earlier DEX-2 design meeting files (8567,) and (8524,). It is divided into two primary parts-- those items corresponding to the user interaction and those items corresponding to a proposed implementation. At this point the user interaction design seems to be firing up fairly well and the implementation design, while still preliminary, seems to be in good shape. Problems and mental blocks seem to be dealt with by certain of the following proposals.

1

The next DEX-2 meeting is scheduled for Tuesday, 1 February 1972 at 9:30.

1a

(USER) Interaction design

2

Additions to location specification-- addressing capabilities-- NOTE: Delimiters and control characters should be chosen, watch for conflicts!!!!

2a

The Static file Address Expression (STAE)

2a1

TNLS address specification may be used in the following places:

2a1a

STAE is a Static File Address Expression (formerly called a location number-- LN). The STAE may include a file number in it (see the discussion of this question below). (Note that the STAE "staes" the same throughout a DEX session.)

2a1b

As opposed to a Dynamic file Address Expression (DAE) which changes interactively.

2a1b1

Certain TNLS-like address elements may be used in STAEs (With appropriate delimiters?????????) in order to get to particular structural elements in EXISTING(!!!!) files:

2a1c

Legal STAE- TNLS address elements

2a1c1

S P D U T H E N B L

2a1c1a

successor predecessor etc

2a1c1a1

## 28 January DEX-2 DESIGN MEETING NOTES

()	2alc1b
literal link	2alc1b1
statement name	2alc1c
statement number	2alc1d
with interpolation, repeat, and moved structure capabilities.	2alc1d1
[/] (only yields a structural location)	2alc1e
content search	2alc1e1
<> (only yields a structural location)	2alc1f
word search	2alc1f1
marker name (only yields a structural location)	2alc1g
questionable (an STAE should only yield a structural location -- not a textual location)	2alc2
;	2alc2a
content search within a statement	2alc2a1
'	2alc2b
single character search within a statement	2alc2b1
+	2alc2c
advance specified number of entity types	2alc2c1
-	2alc2d
back up specified number of entity types	2alc2d1
←	2alc2e
go to beginning of statement	2alc2e1
>	2alc2f
go to end of statement	2alc2f1



28 January DEX-2 DESIGN MEETING NOTES

the following DAE (Dynamic File Address Expression) elements do not make sense in an STAE

2alc3

/ \ ? SP r a fr fa

2alc3a

Legal elements should refer only to items which existed before the creation of the current DEX control file. Thus the TNLS like elements are valid only with reference to editing existing files. There are the (already detailed in earlier design notes) usual means of getting to DEX commands referring to new items.

2alc4

Addition of a "center-dot" capability for insertions to DEX address specifications

2a2

An effective "center-dot" continue facility was suggested; a possible implementation would use the letters "u", "d", and "s" for "up", "down", and "successor", respectively, rather than a statement number. This would be followed by a gap followed by text terminated in the usual DEX manner with a statement delimiter. (The first character in the gap will be omitted in the inserted text and serves as a separator.) The text will be inserted up from, down from, or after the statement immediately preceding it in the input stream.

2a2a

That is the syntax of the Insert statement command would be

2a2a1

STAE NP LIT STDELIM \$(('\$('s/'u/'d) NP LIT STDELIM) 2a2a1a

It would still be possible even for those who use this proposed facility to edit statements using "u", "d", or "s" in a locaton specification delimited by some character. For example, 2a'udd' would refer to a statement two levels down the statement up from 2a.

2a2a2

It should be obvious to the person who uses this possibility in DEX that there is a danger involved in selecting the wrong statement and that if later editing is anticipated the original DEX input method should be used. However, for draft input material, mistakes can just as easily be edited out at a later time using any of the system modes. You may pay for the ease in inputting with

## 28 January DEX-2 DESIGN MEETING NOTES

increased difficulty in immediate error  
correction.

2a2a2a

Referring to structural elements after they have been moved  
(Or transposed, etc.)

2a3

Old number in slashes after first in group for move  
group, for example 3c/lb/ would refer to statement lb  
which had been moved (copied, etc.) in a group (e.g., la  
to ld) to location 3c.

2a3a

Specifying existing files for editing--(See also (FILE)  
below.)

2a4

File specified by following sort of command:

2a4a

NUM CMNDELIM FILNAME STDELIM

2a4a1

where the number is the number to be enclosed in  
parentheses in STAES. Specifying a file in this manner  
causes it to be opened for editing (if possible for the  
user) and causes it to be updated unless the update  
suppress command is given. A "snapshot" command may be  
used to update a file. See explanations below.

2a4b

Assign number to file, existing statements prefaced  
by number in delimiters.

2a4b1

(1)la-- la in file 1.

2a4b1a

For example, if a user types 1:<lehtman>dexdes!, he may  
insert a statement after statement 1 by using the  
following (interpolative) command:

2a4c

(1)1.2 This is a test!

2a4c1

TNLS links may be used to do copies, etc.

2a4d

Commands in an expanded DEX

2b

New commands

2b1

Substitute will be used for text editing of statements

2b1a

syntax: STAE CMNDELIM 's ('s/'b/'p / 'g NP STAE) NP  
LIT STDELIM LIT STDELIM

2b1a1

It is easier to provide context and safer in a deferred mode

2b1a2

Substitutes will be allowed over any structural entity but all will be accumulated and processed at once; thus, for any given statement only one substitution will be performed.

2b1a3

all text to be replaced will refer to the original text of the statement.

2b1a3a

An Un-substitute command will be provided to allow the user to revoke a previously specified substitute command.

2b1a4

The previously specified command can be uniquely specified if the parameters of the un-substitute command are the same as the substitute command.

2b1a4a

Most NLS structural commands

2b1b

Some may be left out because of ambiguity in referring to statements later in the input file. The following seem to be safe:

2b1b1

Append

2b1b1a

syntax: STAE CMNDELIM 'a NP STAE STDELIM

2b1b1a1

semantics: appends the second statement to the first. The substructure is handled as in NLS.

2b1b1a2

Copy

2b1b1b

syntax: STAE CMNDELIM 'c (('s/'b/'p) NP STAE / 'g NP STAE NP STAE) STDELIM

2b1b1b1

semantics: The specified structure is copied in such a way that the first element of the new structure has the STAE specified at the beginning of the command.

2b1b1b2

Delete

2b1b1c

syntax: STAE CMNDELIM 'd (('s/'b/'p) / 'g NP STAE) STDELIM

2b1b1c1

semantics: The specified structure is deleted.

2b1b1c2

Insert statement 2b1b1d

syntax: STAE NP LIT STDELIM \$(\$('u/'d/'s) NP  
LIT STDELIM) 2b1b1d1

semantics: The literal input is made into  
statements in the specified locations. After  
one statement is input using a full STAE further  
statements may be input by specifying their  
structural relationship to the statement just  
inserted. 2b1b1d2

Move 2b1b1e

syntax: STAE CMNDELIM 'm (('s/'b/'p) NP STAE  
/ 'g NP STAE NP STAE) STDELIM 2b1b1e1

semantics: The specified structure is moved in  
such a way that the first element of the new  
structure has the STAE specified at the  
begining of the command. 2b1b1e2

Referring to structural elements after they  
have been moved 2b1b1e3

Old number in slashes after first in group  
for move group, for example 3c/lb/ would  
refer to statement lb which had been moved  
(copied,etc.) in a group (e.g., la to ld) to  
location 3c. 2b1b1e3a

Replace \*\*\*\*\* 2b1b1f

syntax: STAE CMNDELIM 'r (('s/'b/'p) (NP STAE /  
CMNDELIM LIT) / 'g NP STAE (NP STAE NP STAE /  
CMNDELIM LIT)) STDELIM 2b1b1f1

semantics: The specified structure at the  
location specified by the first STAE (in the  
case of group, starting at that location) is  
replaced by the statement specified by the  
final STAE or by the statement whose text  
appears after a second CMNDELIM. 2b1b1f2

Note that replace words and text within a  
statement is handled by substitute. 2b1b1f2a

Replace group by group 2b1b1f2b

Replace first by statement then do move  
or do move and then delete. How about  
two STAEs before first CMNDELIM? 2b1b1f2b1

Literal replacement rather than STAE? 2b1b1f2c

Transpose 2b1b1g

syntax: STAE CMNDELIM 't (('s/'b/'p) NP STAE /  
'g NP STAE NP STAE NP STAE) STDELIM 2b1b1g1

semantics: The specified structures are  
transposed. 2b1b1g2

(FILE) Load, update, output, "snapshot" 2b1c

[NUM/ ': filename STDELIM (load file, multi-window  
capability) 2b1c1

This serves as a load. NUM may thereafter be used  
as a modifier to a STAE 2b1c1a

If NUM = 0 then instead of dex creating a new file  
into which new statemets and error and warning  
messages are inserted the specified file will be  
used. That is, 0: is initialized by dex to be a  
new file in the users directory which has the same  
name as the command file and extension NLS. The  
use of 0: overrides that default. Whenever a  
location specification is not preceded by a NUM:,  
0: is assumed. 2b1c1b

Links may be used to access items in files  
which are not to be edited-- e. g., copies.  
Moves, however, require a definition. 2b1c1b1

make "snapshot" of file \*\*\*\*\* Name of command?????? 2b1c2

[NUM ':] "XXXXXX" STDELIM 2b1c2a

All commands up to this point will be executed and  
the file updated. However, further editing may be  
done and the command table preserved. Thus a  
snapshot of the "cleaned up" file will be made.  
The assumption is that the commands may be  
undeleted after this and other snapshots made  
before final update. Needless to say, an  
expensive feature, but probably worthwhile. 2b1c2b



## 28 January DEX-2 DESIGN MEETING NOTES

output file	2b1c3
[NUM !:] "of" filename CA	2b1c3a
Always done at end of session-- to be used to create new name. Default creation of raw file if necessary.	2b1c3b
No update file	2b1c4
[NUM !:] "nuf" CA	2b1c4a
Update is the default for all open files at the end of a DEX-2 session. If an update is not desired, i.e., if the user wishes to check the file before updating and leave the file locked, this command may be specified. All updates are to new versions.	2b1c4a1
if NUM: is not specified, the new or O: file will be updated.	2b1c4a2
All commands executed by this time.	2b1c4b
Order of execution, number of passes	2b2
After some consideration it was decided that the only precedence needed in commands would be the following:	2b2a
All "Un" commands done first on commands before them in the Command Table (CT)	2b2a1
All other commands (including Insertions) done in order specified	2b2a2
Upon specification of a "make snapshot" command, all commands in CT will be executed up to that point, but the CT left as it was to permit further editing in control file.	2b2b
As the control file is processed, the CT will be built in a form to be discussed below under (IMPLEMENTATION). Text strings will be placed in a workfile with no structure. Structure will be handled later using the STAE strings which will red in a string buffer.	2b2c
The CT will contain pointers into the buffer to relevant STAE strings which have been cleaned up	

## 28 January DEX-2 DESIGN MEETING NOTES

before they are stored in the buffer. We will use our own string compare routines-- faster than L10 stuff, to do table comparisons. 2b2c1

Upon execution of CT, strings copied out of workfile and dummies inserted into real files when necessary. 2b2c2

Error bits in the CT will facilitate creation of an error branch in the workfile (?) or in the real files when snapshots or updates are made. 2b2d

An end of file (↑Z) or special string(???) at the end of the control file terminates a DEX session. 2b2e

Back deletes to remain the same as in earlier designs (6965,) 2b3

Different initializations for different devices 2b4

Because of expanded character sets on different devices, some of the control characters will have different meaning. Must have way of specifying device on which command file created. 2b4a

Command file naming convention (esp for DEX sink directory) 2b5

filename.IDENT 2b5a

DEX could create new file in the proper users directory, lock files for the correct users, and mark changes statements with the proper IDENT. 2b5b

(IMPLEMENTATION) suggestions 3

Order of execution, number of passes 3a

After some consideration it was decided that the only precedence needed in commands would be the following: 3a1

All "Un" commands done first on commands before them in the Command Table (CT) 3a1a

All other commands (including Insertions) done in order specified 3a1b

It was reasoned that this would be most natural for the user. We could think of no problems in this scheme.. The semantics would be different in a precedence arrangements

## 28 January DEX-2 DESIGN MEETING NOTES

in which, e.g., deletes would be done before substitutions. However, the semantics under this design are most convenient.

3a2

If you can come up with counter-examples, please tell us.

3a2a

Upon specification of a "make snapshot" command, all commands in CT will be executed up to that point, but the CT left as it was to permit further editing in control file.

3a3

As the control file is processed, the CT will be built in a form to be discussed below. Text strings will be placed in a Workfile with no structure. Structure will be handled later using the STAE strings which will be stored in a string buffer.

3a4

The CT will contain pointers into the buffer to relevant STAE strings which have been cleaned up before they are stored in the buffer. We will use our own string compare routines-- faster than I/O stuff, to do table comparisons.

3a4a

Upon execution of CT, strings will be copied out of workfile and dummies inserted into real files when necessary.

3a4b

Error bits in the CT will facilitate creation of an error branch in the workfile (?) or in the real files when snapshots or updates are made.

3a5

An end of file (↑Z) or special string(???) at the end of the control file terminates a DEX session.

3a6

#### Format of Command Table (CT)

3b

CT arranged chronologically

3b1

Each CT entry will have the following form:

3b2

Command code (including "Un" bit)

3b2a

Error code bits

3b2b

Room for four pointers to strings in buffer for STAEs

3b2c

Including NULL pointers

3b2c1



28 January DEX-2 DESIGN MEETING NOTES

HGL 31-JAN-72 15:44 8734

Beginning and end count in buffer(?)

3b2c2

The stid of a statement in the workfile containing text  
for commands. This permits us to make use of NLS  
facilities for structure creation most flexibly.

3b2d

HGL 31-JAN-72 15:44 8734

28 January DEX-2 DESIGN MEETING NOTES

(J8734) 31-JAN-72 15:44; Title: Author(s): Harvey G. Lehtman/HGL;  
Distribution: Harvey G. Lehtman, Charles H. Irby, Walter L. Bass,  
William H. Paxton, Douglas C. Engelbart, Marilyn F. Auerbach, Charles H.  
Irby, Harvey G. Lehtman, Douglas C. Engelbart, Richard W. Watson, James  
C. Norton, Donald R. Cone/DEX2 DEXBUY; Sub-Collections: SRI-ARC DEX2  
DEXBUY; Clerk: HGL;  
Origin: <LEHTMAN>DEX-2.NLS;8, 31-JAN-72 13:50 HGL ;  
Origin: <IRBY>DEX-II.NLS;3, 19-JAN-72 12:49 CHI ;  
Origin: <LEHTMAN>JCOMENT.NLS;4, 17-JAN-72 16:57 HGL ;

The following is the "minutes" of the PODCom meeting of 28 January, 4PM. Attending were DCE, BLP, MFA, WRF, JDH, WLB.

1

It was agreed to suggest to the PODs that they each send two "delegates" to PODCom. However, it was noted that any POD should feel free to be represented in any manner.

2

The question of whether or no PODCOM is another POD whose members will relate as in PODs, is not yet resolved.

2a

It is not true that PODCom members will function as communication channels from Doug to the rest of ARC. Doug's experience with second parties communicating his ideas to third parties is that it doesn't work. There will be all-ARC meetings and Doug will visit individual PODs to fulfil this information need.

3

It was generally agreed that lots of communication between PODs was a good idea and that written "communiques" issued after each meeting was a fairly nice thing.

4

ARC salaries were discussed. The suggestion of the Fir POD that a salary data gathering committee be set up was discussed. Doug said he didn't think we had the resources support such a committee on company time. Doug talked about the problems of setting salaries -- its a real can of worms.

5

Doug also mentioned the possibility of having someone from SRI, a personnel/salary type expert, meet with interested ARC members.

5a

The suggestion of the CEDAR POD about signing in and out in order to solve the working hours thing (see 8717,) was discussed. It is suggested that the other PODs discuss this.

6

The problems concerning PSO (particular supervision) as discussed in the Redwood POD were discussed. Doug explained how that was another can of worms.

7

It's not going happen that if PODCom brings gripes, suggestions, calls for action, etc. to Doug's attention, that he will magically cure them. One of the big problems at ARC is the lack of managerial experience and expertise and a lack of a firm structure which would make the required decisions. It's not sure that we want a firm structure. A real possibility for a lot of problems is just to live with them because we haven't the resources or methodology for dealing with them.

8

It was agreed that at least as a start, Doug will meet with each POD for their full meeting every other week. PODCom will meet

each Thursday at 3PM. Redwood and Oak will be the PODs Doug will attend the first week.

9

What a lot of the meeting was about was discussing what PODCom should be and the modes of personal interaction (particularly Doug vis-a-vis the other members). The discussion was probably too complicated and fragmentary and etc. to be reasonably reported here (or anywhere). Also that is maybe the sort of thing that should not be reported out of POD meetings.

10

(J8735) 31-JAN-72 16:28; Title: .HED="PODCOM "MINUTES", 28 JAN 72";  
 Author(s): Bruce L. Parsley/BLP; Distribution: Paul Rech, Michael D.  
 Kudlick, Donald R. Cone, Don Limuti, William R. Ferguson, Priscilla  
 Lister, Robert L. Dendy, Linda L. Lane, Marilyn F. Auerbach, Walter L.  
 Bass, Mary S. Church, William S. Duvall, Douglas C. Engelbart,  
 Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby,  
 Mil E. Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North,  
 James C. Norton, Cindy Page, Bruce L. Parsley, William H. Paxton,  
 Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk  
 H. van Nouhuys, Kenneth E. Victor, Don C. Wallace, Richard W. Watson,  
 Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: BLP;  
 Origin: <PARSLEY>PODCOM28JAN.NLS;3, 31-JAN-72 16:18 BLP ;

JBP 31-JAN-72 16:53 8736

test

this is a test message to ari from jon sent on the afternoon of  
31 january 1972.

1

JBP 31-JAN-72 16:53 8736

test

(J8736) 31-JAN-72 16:53; Title: Author(s): Jonathan B Postel/JBP;  
Distribution: Ari O. J. Ollikainen/AOJO; Sub-Collections: NIC; Clerk:  
JBP;

system disc file allocation

1

On wednesday 2-feb-72 the following disc allocation/restriction facility (in TENEX) will be implimented and enforced.

2

Each directory will be assigned a maximum number of file pages.

2a

When this allocation has been exhausted, any attempt to open a file for write will encounter the "OPNX10" error return from the OPENF jsys.

2b

The desired effect of the allocation scheme is twofold

2c

1) to equitably distribute file pages to our user community

2c1

2) to cause users to "cleanup" there own directories (or the one they are working in) as they become overloaded. This is not meant to chafe the users but rather to remind them they are using disc space.

2c2

Disc space will be loosely allocated by the following scheme

2d

HS = Heavy system wide directories 1.5-2k pages

2d1

MS = Medium system wide directories 1k pages

2d2

LS = Light system wide directories 500 pages

2d3

HU = Heavy users 1k pages

2d4

MU = Medium users 500 pages

2d5

LU = Light users 100 pages

2d6

this allocation will not be rigid and it is hoped that users will suggest their own alloction limits to be rather "smallish" in order to provide a reminder to themselves to cleanup their world

2e

ken victor and smokey will be responsable for maintaining the allocation of specific directories but they are not responible for arbitrating bitches. operations should accept this role.

2e1



## system disc file allocation

The following is a 1st cut at system allocation. typical  
actual pages for each directory are in parens

2f

2g

2h

2i

2j

2k

2l

2m

2n

2o

2p

2q

2r

2s

2t

2u

2v

2w

2x

2y

2z

2a\*

2aa

dir (pages in use)	type	actual allocation (voluntered)
SUBSYS (1889)	HS	2k
NIC-NLS (1875)	HS	2k
NLS (1724)	HS	2k
JOURNAL (1544)	HS	
DOCUMENTATION (1360)	HS	
SYSTEM (1326)	HS	1.3k
IMLAC (1221)	HS	
MPS (1110)	HS	
DUVALL (1014)	HU	
EJOURNAL (918)	MS	
NIC (913)	MS	
BACKGROUND (909)	MS	
NORTON (864)	HU	
REL-NLS (853)	MS	
ENGELBART (825)	HU	
BJOURNAL (806)	MS	
MELVIN (781)	MU	
AJOURNAL (706)	MS	
CJOURNAL (701)	MS	
SRI-DLM (672)	MS	
BBN-ORG (670)	MS	1k

## system disc file allocation

CATALOG (641)	MS		2ab
DJOURNAL (623)	MS		2ac
PAXTON (508)	MU		2ad
VANNOUHUYS (436)	MU		2ae
AUERBACH (429)	MU		2af
KEV-SRI (423)	LS	500	2ag
XPORGEN (0)	LS	500	2ah
PORGEN (408)	LS	350	2ai
CHURCH (401)	MU		2aj
DOCMPS (369)	LS		2ak
LANE (359)	MU		2al
BSYS (357)	LS	500	2am
NET (344)	LS		2an
HARDEMAN (337)	MU		2ao
TOMLINSON (334)	MU		2ap
LAWRENCE (283)	MU		2aq
ANDREWS (279)	MU		2ar
NORTH (262)	MU		2as
IRBY (253)	MU		2at
PARSLEY (251)	MU		2au
FJOURNAL (249)	LS		2av
EXEC (248)	LS	300	2aw
JERNIGAN (241)	MU		2ax
SYSUTILITY (227)	LS	300	2ay

## system disc file allocation

HOPPER (225)	MU		2az
META (220)	LS		2b*
ROW (219)	MU		2ba
WALLACE (200)	LU	100	2bb
BBN-NET (200)	LS		2bc
RATLIFF (180)	LU		2bd
STONE 178)	MU		2be
DEUTSCH (168)	MU		2bf
BASS (154)	MU		2bg
MSR (152)	LS		2bh
BAIR (151)	MU		2bi
LISTER (137)	MU		2bj
MITRE-TIP (136)	MU		2bk
PAGE (131)	MU		2bl
LEHTMAN (129)	MU		2bm
HARDY (124)	MU		2bn
FERGUSON (117)	MU		2bo
ILLINOIS (117)	MU		2bp
MIT-DMCG (116)	MU		2bq
ACCOUNTS (108)	MS	1k	2br
UCLA-NMC (107)	MU		2bs
DENDY (104)	LU		2bt
VICTOR (95)	LU		2bu
WATSON (88)	LU		2bv

## system disc file allocation

GUEST (80)	LU		2bw
DIAGNOSTICS (80)	LS	200	2bx
GILBERT (59)	LU		2by
SOURCES (54)	HS	1.5k	2bz
NBS-TIP (54)	LU		2c*
AMES-ILLIAC (49)	LU		2ca
VANDERIET (43)	LU		2cb
MITCHELL (40)	LU		2cc
RAND (40)	LU		2cd
UTAH-10 (37)	LU		2ce
UCSB (34)	LU		2cf
BBN-TENEX (32)	LU		2cg
RADC (30)	LU		2ch
ARPA (30)	LU		2ci
SU-AI (23)	LU		2cj
UCLA-CCN (20)	LU		2ck
ETAC (20)	LU		2cl
KUDLICK (14)	LU		2cm
ENGLISH (9)	--	to be deleted	2cn
KAYE (7)	LU		2co
ARCHIVE (7)	HS	2k	2cp
MIT-MULTICS (5)	LU		2cq
BBN (5)	--	to be deleted	2cr
PMFDIRO (0)	--	drum only files allowed	2cs

## system disc file allocation

CMU-10 (O)	LU		2ct
LIMUTI (O)	LU		2cu
LAMPSON (O)	--	to be deleted	2cv
WILBER (O)	--	to be deleted	2cw
LIPMAN (O)	LU		2cx
MCCONNELL (O)	--	to be deleted	2cy
MANTIPLY (O)	--	to be deleted	2cz
HARSLEM (O)	--	to be deleted	2d*
LONG (O)	--	to be deleted	2da
RECH (O)	LU		2db
KRILANOVICH (O)	--	to be deleted	2dc
SU-HP (O)	LU		2dd
MCKENZIE (O)	LU		2de
PRINTER (O)	HS	2k	2df
IDENTFILE (O)	LS	500	2dg
MURPHY (O)	LU		2dh

DCW 31-JAN-72 18:33 8739

system disc file allocation

(J8739) 31-JAN-72 18:33; Title: Author(s): Don C. Wallace/DCW;  
Distribution: Paul Rech, Michael D. Kudlick, Donald R. Cone, Don Limuti,  
William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane,  
Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall,  
Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D.  
Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, John T.  
Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley,  
William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed  
K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace,  
Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC;  
Clerk: DCW;  
Origin: <WALLACE>ALLOCATION.NLS;2, 31-JAN-72 17:53 DCW ;

EHF 1-FEB-72 5:27 8740

RESERVATIONS FOR DATA MANAGEMENT MEETING

Reservations for the DATA MANAGEMENT MEETING to be held at MITRE on Feb. 23,24 1972 must be made by Feb. 16th. Reservations should be made by contacting Mrs. Madeline Cornell at MITRE, telephone 703-893-3500, ext. 2395.

1

EHF 1-FEB-72 5:27 8740

RESERVATIONS FOR DATA MANAGEMENT MEETING

(J8740) 1-FEB-72 5:27; Title: Author(s): Ernest H. Forman/EHF;  
Distribution: Jeanne B. North, Schuyler Stevenson, Charles Holland, Karl  
C. Kelley, Steve D. Crocker, Thomas F. Lawrence, John W. McConnell, John  
F. Heafner, Robert E. Long, Ari O. J. Ollikainen, James E. White, A.  
Wayne Hathaway, Dan L. Murphy, Patrick W. Foulk, Richard A. Winter,  
Harold R. Van Zoeren, Alex A. McKenzie, Robert L. Sundberg, Joel M.  
Winett, Abhay K. Bhushan, Peggy M. Karp, Thomas N. Pyke, Abe S.  
Landsberg, B. Michael Wilber, James A. Moorer, Edward A. Feigenbaum,  
Robert T. Braden, James M. Pepin, Barry D. Wessler, John T. Melvin, John  
C. LeGates, Art J. Bernstein, C. D. Shepard, Robert F. Hargraves/NWG;  
Sub-Collections: NIC NWG; Clerk: EHF;



EHF 1-FEB-72 5:42 8741

To Buzz, c/o Vernon

Buzz,

The NIC informed me that vernon already has a copy of their users guide .

1

EHF 1-FEB-72 5:42 8741

To Buzz, c/o Vernon

(J8741) 1-FEB-72 5:42; Title: Author(s): Ernest H. Forman/EHF;  
Distribution: V. R. Bruffey/VRB; Sub-Collections: NIC; Clerk: EHF;

RWW 1-FEB-72 9:18 8742

Reply to CSK on Changing Mailing Address in ID Sys

Charlie, I looked into the mailing address problem you mentioned and can't seem to find a problem. The way you do it is to enter id sys, modify IDENT, "ma"iling address, change address by using either an ident or a "/" and a literal, update and leave. Net users can't copy at this point, and I couldn't find the file in your directory so its a mystery.

1

RWW 1-FEB-72 9:18 8742

Reply to CSK on Changing Mailing Address in ID Sys

(J8742) 1-FEB-72 9:18; Title: Author(s): Richard W. Watson/RWW;  
Distribution: Chuck S. Kline/CSK; Sub-Collections: SRI-ARC; Clerk: RWW;

Graphics Group Members

Dear Al:

1

Jeanne North just gave me a list of people who should be in the Network Graphics Group, and she says you didn't know about Wactlar. I thought he was the one Shirley Watkins (from NBS) wanted in the Group; but that was Marshall Abrams. I can't find any record of where I was told to put him in. I just talked to Howard Wactlar, and he wants to be in the Graphics Group, so I'm going to leave him in.

1a

I do know, however, that Anita Coley (from UCLA) asked me to put Hamid Naficy in the Graphics Group.

1b

In the future, I will wait for a request from you or refer the individual to you to request membership. Okay?

1c

I think that everybody on the list Jeanne gave me is in the Graphics Group with the exception of Ron Baecker. I will put him in when I find out his phone number.

1d

Sincerely,

1e

Barbara E. Row  
Network Information Center

1f

BER 1-FEB-72 9:50 8743

Graphics Group Members

(J8743) 1-FEB-72 9:50; Title: Author(s): Barbara E. Row/BER;  
Distribution: Albert Vezza, Jeanne B. North, Steve D. Crocker/AV JBN  
SDC2; Sub-Collections: NIC; Clerk: BER;  
Origin: <ROW>VEZZA.NLS;1, 1-FEB-72 9:48 BER ;

## IMLAC ORDER FOR RADC

## IMLAC Order

1

I recieved a call from the IMLAC rep 31 Jan 72. He says that the company will be responsible for making sure that the units installed at RADC will operate in an asynchronous mode when directly hard wired to the TIP. IMLAC engineers are going to experiment with connecting to BBN's TIP via twisted pair, shielded twisted pair, and coax to determine and iron out any line termination problems prior to installation at RADC. They can also give us a 5% discount on the units which are the same. IMLAC will be forwarding a quote to SRI (J. Norton) for the following configuration.

1a

UNIT	PRICE	lb
PDS-1D	9970	lc
HRC-1	290	ld
LVH-1	2800	le
MEM-1	3450	lf
CBS-1	845	lg
GMI-1	2300	lh
TAB-2	95	li
Install	200	lj
	-----	lk
unit tot	19950	ll
	X3	lm
	-----	ln
	59850	lo
5% disc	-2992	lp
	-----	lq
	56858	lr
CON-1	1250	ls
	-----	lt
Total	58108	lu
		lv

The GMI-1 option includes the mouse and keyset.

IMLAG ORDER FOR RADG

DLS 1-FEB-72 10:09 8746

(J8746) 1-FEB-72 10:09; Title: Author(s): Duane L. Stone/DLS;  
Distribution: James C. Norton, Thomas F. Lawrence/JCN TFL;  
Sub-Collections: NIC; Clerk: DLS;  
Origin: <STONE>TELECON.NLS;1, 1-FEB-72 8:46 DLS ;



Old versions of NLS files.

In accord with our current austerity measures, we're considering decreasing the number of versions of a file NLS retains, in order to increase the number of pages the disk retains.

1

Right now, when you do an output or update file (or create a sequential file), NLS keeps the two files with the highest version number, and deletes all other files with the same name and extension. This feature provides some automatic backup, while conserving disk use.

2

We're considering keeping only the highest version of a file around after an output or update is done. To maintain a backup version of the file, you would have to undelete the file in the exec, or write a copy of the file to a new file with a new name.

3

We're not sure how many people really count on having an old version of a file for backup, so please let me know if you would object to having all versions of a file but the highest deleted each time you update or output. If people use the current NLS backup facility, we'll leave it as it is.

4

Old versions of NLS files.

(J8747) 1-FEB-72 10:29; Title: Author(s): Mary S. Church/MSC;  
Distribution: Paul Rech, Michael D. Kudlick, Donald R. Cone, Don Limuti,  
William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane,  
Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall,  
Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D.  
Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, John T.  
Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley,  
William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed  
K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace,  
Richard W. Watson, Don I. Andrews, L. Peter Deutsch, James G.  
Mitchell/SRI-ARC LPD JGM; Sub-Collections: NIC SRI-ARC; Clerk: MSC;

JBP 1-FEB-72 10:33 8748

reply to imlac info request

We sent all that information to Bill Plummer @ bbn.

1

JBP 1-FEB-72 10:33 8748

reply to imlac info request

(J8748) 1-FEB-72 10:33; Title: Author(s): Jonathan B Postel/JBP;  
Distribution: L. Peter Deutsch/LPD; Sub-Collections: NIC; Clerk: JBP;

CSK 1-FEB-72 10:35 8749

reply to your reply ...

Dick, the slash isn't mentioned in the TNLS user's guide that we have. Thanks, I will try that. Jon Postel deleted that file before you looked so now noone will know what it was.

Charley

1

CSK 1-FEB-72 10:35 8749

reply to your reply ...

(J8749) 1-FEB-72 10:35; Title: Author(s): Chuck S. Kline/CSK;  
Distribution: Richard W. Watson/RWW; Sub-Collections: NIC; Clerk: CSK;

Availability of File Folklore

Charlie, You are right the manual is a little off or out of date on some aspects of the ID Sys, but the file <documentation> folklore is kept up to date with stuff like this. You can get it directly or through <nic>locator.

i

RWW 1-FEB-72 13:13 8751

Availability of File Folklore

(J8751) 1-FEB-72 13:13; Title: Author(s): Richard W. Watson/RWW;  
Distribution: Chuck S. Kline/CSK; Sub-Collections: SRI-ARC; Clerk: RWW;



GEL 1-FEB-72 13:45 8752

TOSIG

HELLO SIG. ARE YOU COMING TO NBS THIS WEEK OR WHEN? RSVP TO  
ME VIA THE NIC. USE FILE "GEL". LUV. GEORGE

1

GEL 1-FEB-72 13:45 8752

TOSIG

(J8752) 1-FEB-72 13:45; Title: Author(s): George E. Lindamood/GEL;  
Distribution: Siegfried Treu/ST; Sub-Collections: NIC; Clerk: GEL;

Dolkas request for exchange of Facility Services Information

<ames-illiac>Jim Dolkas - The brochures you sent on rates and schedules for your facility are very useful, and we will enter them into the NIC Catalog. A further suggestion to you: a good deal of this kind of information from many of the sites is available in the NIC Resource Notebook. It would be useful if you would adapt your information to the form used in the Notebook and send to us for online entry and forwarding to Alex McKenzie to have included in the Notebook. Stan Golding has a copy of the Resource Notebook at the NIC Station.

1

JBN 1-FEB-72 16:33 8753

Dolkas request for exchange of Facility Services Information

(J8753) 1-FEB-72 16:33; Title: Author(s): Jeanne B. North/JBN;  
Distribution: Jim B. Dolkas, Richard W. Watson, Alex A. McKenzie, Jeanne  
B. North, Cindy Page, Barbara E. Row, Linda L. Lane/JBD RWW AAM NICSTA  
CXP BER LLL; Sub-Collections: SRI-ARC NICSTA; Clerk: JBN;

Jeanne B. North  
Augmentation Research Center  
Stanford Research Institute  
Menlo Park, California 94025

To:  
Access Copy

8755

TO: Palo Alto Answering Service  
FEB-1-72

FROM: Jeanne North  
ARPA Network Information Center  
Stanford Research Institute

1

This is a memo to indicate some slightly new procedures we will be following in the future.

2

1. During a work day (8:00am - 5:00pm). - we will tell you at 8:00am whether we are up or down for local and NETWORK users, and this information should be conveyed to any users who call. If a user calls, and indicates he is having problems, you should try to call either Bill Ferguson (326-6200 X-4234 or 4773) or Smokey Wallace (326-6200 X-4580). One of us will attempt to solve the problems.

3

2. During off-hours through the week (5:00pm - 8:00am) - we will leave a projected schedule for that evening with you at 5:00pm. This information should be conveyed to any users who call. In addition, we will leave the name of the system programmer on call for that evening. He should be notified if any problems occur. The following programmers may be on call:

4

- A. Smokey Wallace - 327-8375
- B. Ken Victor - 964-9870
- C. Bill Ferguson - 325-4292
- D. Ed van de Riet - 968-0660

4a

4b

4c

4d

3. During the week-end (5:00pm Fri. - 8:00am Mon.) - The same procedure will be followed as during work-day off-hours, i.e. a projected schedule for the week-end will be left with you on Friday afternoon. If any problems arise, the programmer(s) on call should be informed.

5

JBN 2-FEB-72 8:37 8755

(J8755) 2-FEB-72 8:37; Title: Author(s): Jeanne B. North/JBN;  
Distribution: Jeanne B. North, Ed K. Van De Riet, William R.  
Ferguson/NICSTA EKV WRF; Sub-Collections: SRI-ARC NICSTA; Clerk: LLL;  
Origin: <LANE>ANSWER-SER.NLS;13, 2-FEB-72 8:22 LLL ;

James C. Norton  
Augmentation Research Center  
Stanford Research Institute  
Menlo Park, California 94025

To:  
Access Copy

8756



ARC Imlac order for RADC - questions and status comments

Thanks for the Imlac message in (8746,). Do you still intend to submit your file (stone,imlac,) to the Journal with copies to LPD, WSD, and GHI for comments? Also, I guess it needs updating to reflect what you now consider to be the complete Imlac order.

1

Does the absence of the following items from (8746,) mean they are not to be ordered?

1a

CAB-1 8' cable to modem

1a1

CAB-2 8' cable for remote keyboard

1a2

IEI-1 mouse and keyset interface (Included in GMI-1?)

1a3

SII-1 interrupt flag set

1a4

CON-1 Programmers console - for one unit?

1a5

HCY-1 Hardcopy device not to be ordered at this time?  
(best to wait for better device?) Could this be added later if desired?

1a6

I will await the Imlac quote, then submit to RADC SRI's quote for the Imlacs and the Execuports. (In the meanwhile, I will start the paperwork here for both the quote and the order so as to be ready). Am I supposed to get an official RFQ from Paul D. at RADC with these new specs - and the Execuport 300's listed as 310's? - and the cassette recorders' specs left more open?

1b

We will probably quote on the Termicette cassette units similar to the ones we are now leasing., but want a little more experience with them first

1b1

The RFQ we now have is marked DRAFT.

1b2

JCN 2-FEB-72 8:52 8756

ARC Imlac order for RADC - questions and status comments

(J8756) 2-FEB-72 8:52; Title: Author(s): James C. Norton/JCN;  
Distribution: Duane L. Stone, William S. Duvall, Charles H. Irby, L.  
Peter Deutsch, Ed K. Van De Riet/DLS WSD CHI LPD EKV; Sub-Collections:  
SRI-ARC; Clerk: JCN;

Jeanne B. North  
Augmentation Research Center  
Stanford Research Institute  
Menlo Park, California 94025

To:  
Access Copy

8757

Request to send CNP to Dr. Kuwahara

Steve Crocker -

We request your approval to send a copy of Current Network  
Protocols to a recent visitor of DCE's:

Dr. Yutaka Kuwahara

Liaison Scientist

Central Research Laboratory

Hitachi, Ltd.

437 Madison Avenue

New York, N.Y. 10022

Please let us know.

JBN for DCE

1

JBN 2-FEB-72 9:13 8757

Request to send CNP to Dr. Kuwahara

(J8757) 2-FEB-72 9:13; Title: Author(s): Jeanne B. North/JBN;  
Distribution: Steve D. Crocker, Richard W. Watson, Douglas C. Engelbart,  
Jeanne B. North/SDC2 RWW DCE NICSTA; Sub-Collections: SRI-ARC NICSTA;  
Clerk: JBN;

## disk space allocation/restriction in tenx

HRLM	A,DIRDSK	;set new max allocation	2a3d
UMOVE	A,7(E)	;*** existing code	2a3e
jsys.fai;74 (pages 40 & 41)			2b
this change gets "new" max disk word for gtdir jsys			2b1
delete at gtdir1+10			2b2
MOVE	D,DDBMAX		2b2a
UMOVEM	D,2(E)		2b2b
add at gtdir2+12			2b3
PUSHJ	P,MAPDIR	;*** existing code	2b3a
HLRZ	D,DIRDSK	;get max allocation	2b3b
UMOVEM	D,2(E)	;give to caller	2b3c
MOVE	D,DIRDPW	;*** existing code	2b3d
jsys.fai;74 (page 72)			2c
account for pages (at expunge time)			2c1
insert at fdelfil+10			2c2
	JRST DELFIL/	;*** existing code	2c2a
PUSH	P,A		2c2b
MOVEI	A,DIRORG(D)	;point to fdb	2c2c
LDB	E,PFILPC	;get pages this file	2c2d
POP	P,A		2c2e
HRRE	F,DIRDSK	;get current count	2c2f
SUB	F,E	;compute new current count	2c2g
HRRM	F,DIRDSK	;and set it	2c2h

## disk space allocation/restriction in tenx

MOVE	D,(P)	;*** existing code	2c2i
direct.fai;43 (page 13)			2d
new word in directory overhead block			2d1
delete			2d2
SPARE: BLOCK 4		;locations for additional	
variables			2d2a
add			2d3
DIRDSK: BLOCK 1		;lh=max disk pages for this dir	2d3a
		;rh= current pages in use	2d3b
SPARE: BLOCK 3		;locations for additional	
variables			2d3c
disc.fai;52 (page 2)			2e
open failure if allocation exceeded			2e1
add at dskopn+15			2e2
JRST	OPENF1	;*** existing code	2e2a
PUSH	P,B		2e2b
PUSH	P,A		2e2c
HLRZ	B,DIRDSK	;get max allowed	2e2d
HRRE	A,DIRDSK	;and cuurent count	2e2e
SUB	B,A	;compute residue	2e2f
POP	P,A		2e2g
JUMPLE	B,[POP P,B		2e2h
MOVEI	A,OPNX10	;no room	2e2h1
UNLOCK	DIRLCK		2e2h2

disk space allocation/restriction in tenx

POPJ	P,O/		2e2h3
POP	P,B		2e2i
TRNE	STS,1B27	;*** existing code	2e2j
disc.fai;52 (page 15)			2f
account for pages used (at closf time)			2f1
add at dskc18+10			2f2
POP	P,A	;***existing code	2f2a
PUSH	P,B		2f2b
PUSH	P,C		2f2c
LDB	E,PFILPC	;get pages this file	2f2d
SUB	B,C	;compute net change	2f2e
HRRE	C,DIRDSK	;get current pages used	2f2f
ADD	B,C	;compute new total	2f2g
HRRM	B,DIRDSK	;save new total pages (this dir)	2f2h
POP	P,C		2f2i
POP	P,B		2f2j
DPB	B,PFILPC	;*** existing code	2f2k



disk space allocation/restriction in tenx

(J8758) 2-FEB-72 9:18; Title: Author(s): Don C. Wallace/DCW;  
Distribution: Bob Van Tyul, Jeanne B. North, Robert L. Dendy, John T.  
Melvin, Kenneth E. Victor, John W. McConnell, Peggy M. Karp, Dan L.  
Murphy, Rod M. Fredrickson, Peter H. Lipman, Don C. Wallace, Carl M.  
Ellison, Ted R. Strollo, Paul Rech, Michael D. Kudlick, Donald R. Cone,  
Don Limuti, William R. Ferguson, Priscilla Lister, Robert L. Dendy,  
Linda L. Lane, Marilyn F. Auerbach, Walter L. Bass, Mary S. Church,  
William S. Duvall, Douglas C. Engelbart, Beauregard A. Hardeman, Martin  
E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G.  
Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page,  
Bruce L. Parsley, William H. Paxton, Jeffrey C. Peters, Jake Ratliff,  
Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E.  
Victor, Don C. Wallace, Richard W. Watson, Don I. Andrews/TUG SRI-ARC;  
Sub-Collections: SRI-ARC TUG; Clerk: DCW;  
Origin: <WALLACE>DISK-ALLOCATION.NLS;8, 2-FEB-72 9:10 DCW ;

Response to (8747,) - NLS file version trimming proposal

I vote for trying your suggestion outlined in (8747,). Having the backup copy automatically kept around has saved me several times in the past, but I would change my habits under the new arrangement. This would be by undeleting files were I am nervous about being blitzed and leaving them around as long as I need the backup. This would be infrequent, I think. HOWEVER, the frequency of the running of DEED bears on the actual safety one has. If it runs often enough to catch a user after an update, but before he can undelete, he appears to have had it - right? If the only really safe way to be backed up is to output to a new file name, then it would be quite inconvenient. Therefore; can you give me some idea of the DEED running frequency planned, or the procedure to be used to warn users of its impending running?

1

JCN 2-FEB-72 9:47 8759

Response to (8747,) - NLS file version trimming proposal

(J8759) 2-FEB-72 9:47; Title: Author(s): James C. Norton/JCN;  
Distribution: Mary S. Church, Charles H. Irby, Don C. Wallace/MSO CHI  
DCW; Sub-Collections: SRI-ARC; Clerk: JCN;

the system as seen by superwatch, etc.

A brief summary of whats happening in the system, as reported by superwatch.

1

time breakdown:

1a

64% to 68% of real time is spent running user jobs

1a1

included in this is about 10% of real time handling page faults

1a1a

12% to 19% is spent in the scheduler, scheduling runnable jobs

1a2

about 5% of real time is spent running process clock code

1a3

included in this is about 3% of real time handling the net (impchk)

1a3a

3% to 4% of real time spent doing garbage collection

1a4

8% to 10% is spent looping in the scheduler, waiting on the drum (I/O wait)

1a5

at no time is the processor idle (no jobs runnable).

1a6

what we can expect:

1b

With more memory, we can expect fewer page faults and thus less time spent handling them. More memory may also tend to decrease the I/O wait time some.

1b1

The faster disks may tend to decrease the I/O wait also, and they will increase system response when we have a light or medium load. They will not make much difference with our current typical heavy load.

1b2

A few experiments with the system may pick up a little time spent in the scheduler.

1b3

All in all, I think the system is running quite efficiently. I think we cannot expect much increase in capacity from the disk packs and memory -- perhaps 5 more jobs but not more, if we are to run with our current level of service -- which I think is inadequate.

1b4

We may pick up a little more capacity with the display-string-input JSYS which would avoid scheduling jobs on every character. But I do not expect this to be a great

the system as seen by superwatch, etc.

increase either, because we only spend 12% or so scheduling.

1b5

We seem to be processor bound - or will be with the improvements we have in mind.

1b6

A big unknown is how much we can cut the process time inside NLS to do various functions. This is a big chunk of processor time and improvements could be sizable. But I am also pessimistic about this. This is really up to the NLS programmers -- how far out of their way they want to go to optimize NLS.

1b7

I think that we should give some serious consideration to alternatives to expanding our current configuration -- to establish a plan for the future (18 to 24 months kind of future).

1b8

DIA 2-FEB-72 11:00 8761

the system as seen by superwatch, etc.

(J8761) 2-FEB-72 11:00; Title: Author(s): Don I. Andrews/DIA;  
Distribution: Paul Rech, Michael D. Kudlick, Donald R. Cone, Don Limuti,  
William R. Ferguson, Priscilla Lister, Robert L. Dendy, Linda L. Lane,  
Marilyn F. Auerbach, Walter L. Bass, Mary S. Church, William S. Duvall,  
Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D.  
Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, John T.  
Melvin, Jeanne B. North, James C. Norton, Cindy Page, Bruce L. Parsley,  
William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed  
K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don C. Wallace,  
Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC;  
Clerk: DIA;  
Origin: <ANDREWS>SYSTATUS.NLS;3, 2-FEB-72 10:54 DIA ;