INTRODUCTION 1

This document records the ways in which the PCP implementation is diverging from its Version 2 documentation. It is a dynamic document of primary interest to implementers of PCP and code which must run in a PCP environment. It is organized by V2 document so that each section can, if desired, be physically stored with the document to which it corresponds. 1a

Comments, corrections, and additions are welcomed. The contents of this document will be used eventually to generate Version 3 documentation. In the interim, the most recent copy will be available on-line in the following forms: 1b

[SRI-ARC]<WHITE>PCPV2CHANGES.NLS 1b1
[SRI-ARC]<NLS>PCPV2CHANGES.TXT 1b2

The former is an NLS file, the latter an output-processed version suitable for printing on a non-SRI-ARC printer. 1c

PCP 2

CLARIFICATIONS 2a

(PCP -- 24459,4a3) Calling Rights of Superior and Inferior 2a1

Even though one process is said to be "superior" to another because the former creates the latter, that fact has no particular bearing upon which process has a right to call procedures in the other. As far as PCP is concerned, both do. Any specific process may either use or ignore the procedures of its superior; that decision is part of designing the system in which the process is to function. 2a1a

(PCP -- 24459,4b1b) Data Structure Capacity 2a2

pCp currently specifies neither the number of bits, the number of characters, nor the range of values that a data structure of type BITSTR, CHARSTR, or INTEGER, respectively, can be expected to hold. These maxima will, initially, be parameters of each PCP implementation, and the capacitiy of an INTEGER will probably be that of a word of memory on the implementation machine (36 bits on the PDP-10 and 16 on the PDP-11). 2a2a

The programmer is therefore advised initially to avoid using INTEGER data structures to contain data which requires more than 16 bits for its representation. The maximum capacity of a BITSTR or CHARSTR data store will be an (initially unpublished) attribute of the data store and, where chosen wisely, will present no practical problem to the programmer. 2a2b

TYPOS 2b

(PCp -- 24459,5a2d2) Acknowledgment of INTpRO Message 2b1

An INTPRO message is acknowledged with a temporary return of subtype INTERRUPTED, not with a permanent return. 2b1a

BUGS 2c

CHANGES 2d

(PCP -- 24459,5a2a) Identifying the Calling Processor 2d1

An additional parameter of type INTEGER called PRH is required, following PRIVILEDGED, in the CALPRO message. PRH is a handle for the processor that requested the procedure call. Its secification in the CALPRO message enables the callee (in particular, PMP's LCKDATA and UNLCKDATA procedures) to distinguish one processor from another. 2d1a

(PCP -- 24459,5a2b) Cost of a Procedure Call 2d2

An additional parameter of type INTEGER called COST is required, following RESULTS, in the RTNPRO message. It represents the cost of the procedure since its call in cents. 2d2a

(PCP -- 24459,5a2d) Priviledged Use of INTPRO Message 2d3

An additional parameter of type BOOLEAN called PRIVILEDGED is required, following CH, in the INTPRO message. It provides a mechanism by which a procedure call can be interrupted without regard for the setting of its processor's FRZLCK lock, making possible the implementation of debuggers capable of interrupting infinite loops. 2d3a

(PCP -- 24459,5b3a) Logging in via CRTPRC 2d4

An additional argument called USERINFO is required, following PRCADDR, in the CRTPRC procedure. It represents the login parameters to be associated with the newly-created process. In particular, USERINFO specifies a user USER, for purposes of controlling access to system resources; an account ACCOUNT, for billing purposes; and a password PASSWORD by which the creating process' right to pose as user USER can be established. The argument USERINFO has the following form: 2d4a

```
userinfo- LIST (%user% CHARSTR, %password% CHARSTR,
                %account% CHARSTR)                    2d4a1
```

IDEAS 2e

Alter Egos 2e1

Some form of special process handle is required for addressing the processor-controlling code within a process (in PCPTNXINT, the CF) to aid implementation of the debugger. 2e1a

Timeouts 2e2

Should PCP ever time out a procedure call? If so, how should it know what interval is appropriate? Should it be an argument to the CALPRO procedure, a compile-time parameter specified by the procedure implementer, a system constant? 2e2a

Batched procedure calls 2e3

Should PCP, to improve efficiency, provide a mechanism by which calls to a series of procedures can be batched in a single inter-process transmission? Any but a permanent return of subtype SUCCESS by any but the last procedure in the series would cause the entire series to be aborted. Argument- and result-list masks could be used, as desired, to make the result of one procedure an argument to a succeeding one. 2e3a

(PCP -- 24459,4c4a3) Error code semantics 2e4

When a procedure makes a permanent return of subtype ABORTED, it provides an error code which somehow indicates to the caller the reason for the callee's failure. PCP at presents says nothing about the value of the error code, simply requiring it to be an INTEGER data structure. It may prove useful to assign meanings to error codes that fall within certain ranges. For example: 2e4a

0-99 Errors which necessitate deletion and recreation of the callee's process 2e4a1

100-199 Errors which necessitate closing and reopening of the callee's package 2e4a2

200-299 Errors which necessitate recalling the callee 2e4a3

300-399 Errors which are harmless 2e4a4

Statistics Gathering 2e5

There must eventually be hooks throughout PCP to support statistical analysis of a system's performance, and possibly a package containing procedures by which the hooks can be enabled, disabled, and dynamically modified. 2e5a

(PCP -- 24459,4a1c1) Non-reentrant Procedures 2e6

Would it be desireable to allow the process implementer to individually designate each procedure as either reentrant or non-reentrant? Only one processor would be permitted to execute non-reentrant procedures, even when a request for a second had been made and another processor was available. 2e6a

WAIT (events -> event)

This procedure waits for (at least) one event EVENT of the events EVENTS to be signalled.

Argument/result types:

events- LIST (%event% INTEGER, ...)
event - INTEGER

(PIP -- 24460,3b) Cost of a Procedure Call 3d5

An additional result of type INTEGER called COST is returned, following RESULTS, by the RSMPRO procedure. It represents the cost of the procedure since its call in cents. 3d5a

(PIP -- 24460,3c) Priviledged Calls to INTPRO 3d6

An additional argument of type BOOLEAN called PRIVILEDGED is required, following CH, by the INTPRO procedure. It provides a mechanism by which a procedure call can be interrupted without regard for the setting of its processor's FRZLCK lock, making possible the implementation of debuggers capable of interrupting infinite loops. 3d6a

(PIP -- 24460,3d) Aborting Without Interrupting 3d7

A procedure needn't be interrupted with INTPRO before it is aborted with ABRPRO, the latter implying the former when necessary. 3d7a

IDEAS 3e

(PIP -- 24460,3e) CALPRO Disposition When All Processors Busy 3e1

CALPRC might require a BOOLEAN argument QUEUE which specifies the action to be taken if all of the target process' processors are busy. If QUEUE is TRUE, the request will be queued (assuming that the target process supports queueing and that its queue is not full) until a processor becomes available. Otherwise, the request will be aborted (with a PERMANENT return of SUBTYPE ABORTED). 3e1a

PSP 4

CLARIFICATIONS 4a

(PSP -- 24461,3a) Opening Packages 4a1

When a process calls the OPNPKS procedure in another process, the effect is to open the specified package(s) only for the caller's process. Only that single process is enabled, by the call to OPNPKS, to call procedures in those package(s); any other process that desires to do so must open the package(s) itself. 4a1a

By associating the openness of a package with the caller's, rather than the callee's process, it becomes possible to restrict access to a package on a per-neighboring-process basis. A process might desire, for example, to permit its superior to open a package and yet prevent its inferiors from doing so. 4a1b

TYPOS 4b

BUGS 4c

CHANGES 4d

(PSP -- 24461, 3e) Temporary Data Store Ownership 4d1

An additional argument called OWNER is required, following TMPNAME, by the CRTTMP procedure. It permits the caller to make the newly-created data store known to the calling processor, the calling process, or every process to which the local process is known. The argument OWNER has the following form: 4d1a

owner- INTEGER [PROCESSOR=0 / PROCESS=1 / ALL=2] 4d1a1

(PSP -- 24461, 3e) CRTTMP and DELTMP Renamed 4d2

CRTTMP and DELTMP have been renamed CRTDATA and DELDATA, respectively, in view of the wider use of the data stores they manipulate permitted by the addition of the OWNER argument to CRTDATA. 4d2a

IDEAS 4e

(PSP -- 24461,2b) Identifying Procedures in Documentation 4e1

Beginning with Version 3 documentation, the notation: 4e1a

pkname '/ pname (e.g. PMP/CRTPRC) 4e1a1

will be used to designate procedure PNAME in package PKNAME. 4e1b

(PSP -- 24462,3a) Protecting some Packages with Passwords 4e2

Is it desireable/neccessary to require a password in the OPNPKS procedure for certain very priviledged packages? This password would, of course, be in addition to that required by PMP's CRTPRC procedure. 4e2a

PMP 5

CLARIFICATIONS 5a

TYPOS 5b

BUGS 5c

CHANGES 5d

(PMP -- 24462,3a1) Logging in with CRTPRC 5d1

An additional argument called USERINFO is required, following PRCADDR, in the CRTPRC procedure. It represents the login parameters to be associated with the newly-created process. In particular, USERINFO specifies a user USER, for purposes of controlling access to system resources; an account ACCOUNT, for billing purposes; and a password PASSWORD by which the creating process' right to pose as user USER can be established. The argument USERINFO has the following form: 5d1a

userinfo= LIST (%user% CHARSTR, %password% CHARSTR,
%account% CHARSTR) 5d1a1

(PMP -- 24462,3a1) Preparing for Process Detach 5d2

An additional result called TOKEN is returned, following PRCNAME, by the CRTPRC procedure. Posession of the token permits a process to reatttach the newly-created process should it ever be detached, either voluntarily or involuntarily; unless the token is EMPTY, in which case the process can be neither detached nor attached. The result TOKEN has the following form: 5d2a

token= any / EMPTY 5d2a1

(PMP -- 24462,3a1) Splicing Trees 5d3

PMP permits two process trees to be "spliced" together, by providing a mechanism by which a process in one can establish a logical and physical channel between it and a willing process in the other. Once the splice has been performed, each process has a process handle that addresses the other and can therefore call its procedures, and processes in one tree can be introduced to processes in the other. 5d3a

The process that initiates or permits the splice is said to be the "active or passive associate" of the other, respectively. A splice is created by the active associate by means of the CRTPRC procedure. Splice and process creation are therefore indistinguishable, except by means of the process address passed as an argument to CRTPRC, which in the former case must designate an existing process, rather than a new one. A splice is deleted by the active associate by means of the DELPRC procedure. Splice and process deletion are therefore indistinguishable, except by context. 5d3b

(PMP -- 24462,3) Locking Procedures Added 5d4

Introduction 5d4a

The procedures described in this section enable processors in one or more processes to synchronize their execution (e.g. to control their manipulation of shared data bases). They permit a processor to "lock" a specified data store and thus obtain either exclusive or shared access to it, or to some other entity for which the data store is agreed (by the processes involved) to be a token. 5d4a1

A processor may lock a data store for either read or write. In the former case, the processor is assured that no other processor (in any process) has (or can) apply a write lock to it until it is unlocked; in the latter, both read and write lock attempts are prohibited while the data store is locked. 5d4a2

While a data store is locked for read, the attempt of any other processor to modify it will be prohibited by PCP and the intruding processor's call to WRDATA aborted. While the data store is locked for write, attempts to read it with RDDATA will be aborted as well. 5d4a3

Procedures 5d4b

Lock data store 5d4b1

LCKDATA (dsname, type, owner, wait)

This procedure applies a lock of type TYPE to local data store DSNAME. If WAIT is FALSE, the procedure will fail if the data store is currently locked (by another process or processor, according to OWNER) in a way that precludes its being locked immediately by the caller. Otherwise, the procedure will wait as long as necessary to set the lock, and then return to the caller.

If OWNER is PROCESS, the data store is locked on behalf of the entire calling process; all its processors are granted access to the data store while it is locked, and any may unlock it. If OWNER

is PROCESSOR, the data store is locked on behalf of the calling processor alone; only it is granted access to the data store while it is locked, and only it may unlock it.

DSNAME, a data structure of type DSELECTOR*, must have only PH, PKH, and DATA STORE KEY fields, the first of which must have the value SELF.

Argument/result types:

```
dsname- DSELECTOR*
type  - BOOLEAN [READ=TRUE / WRITE=FALSE]
owner - BOOLEAN [PROCESS=TRUE / PROCESSOR=FALSE]
wait  - BOOLEAN
```

Unlock data store 5d4b2

UNLCKDATA (dsname)

This procedure removes the lock most recently applied to data store DSNAME by the calling processor.

DSNAME, a data structure of type DSELECTOR*, must have only PH, PKH, and DATA STORE KEY fields, the first of which must have the value SELF.

Argument/result types:

```
dsname- DSELECTOR*
```

(PMP -- 24462,3) Attach/Detach Procedures Added 5d5

Introduction 5d5a

The procedures described in this section permit a process to "detach" and effectively plant a "branch" of its process tree, creating a new tree independent of its creator; and later if desired reattach it. The root process of the new tree must have been a direct inferior of the process that detaches it. 5d5a1

When the process that heads what becomes the detached branch is first created, a "token" for the process is returned as a result of the CRTPRC procedure. Possession of the token is what permits a process to reattach the process at some later time. The token is a Network-wide handle for the detached process, and with it any process, anywhere within the Network can reattach the process. 5d5a2

Tokens contain both the process' physical location and a date-and-time stamp or other password sufficient to assure that only the process that detaches the branch, or one to which it willingly transmits the token, can attach it, and that obsolete tokens never prove valid by coincidence.

The new tree will be allowed to run until it attempts to call a procedure or manipulate a data store in its root process' direct superior, at which time its execution will be suspended until it is attached (i.e. until it HAS a direct superior). 5d5a3

The DETPRC procedure may be used to create an independent tree, to prevent a process from communicating with its superior for an arbitrary length of time, to transfer a process from one point in a tree to another, or to transfer it from one tree to another. 5d5a4

If a process' superior fails in execution before deleting them, its inferior processes will be detached, rather than deleted. If the superior process was farsighted enough to save on secondary storage or with another process the tokens returned by CRTPRC, it can restart the inferiors after the crash of its host system (at least those that reside on different hosts). 5d5a5

Procedures 5d5b

Detach process 5d5b1

DETPRC (ph)

This procedure detaches from the process tree, the process known to the local process via PH, along with its direct and indirect inferiors. PH and, or course, the handle via which the local process was known to the detached process, are invalidated.

Argument/result types:

ph- INTEGER

Attach process 5d5b2

ATTPRC (token => ph)

This procedure reattaches the previously-detached process known via the token TOKEN, as a direct inferior of the local process via a physical channel, and makes it known to the local process via PH.

Argument/result types:

token- any
ph - INTEGER

(PMP -- 24462,3d3) CRTLOGCHNEND and DUPLOGCHNHLF Combined 5d6

The procedures CRTLOGCHNEND and DUPLOGCHNHLF have been replaced by the single procedure described below: 5d6a

Create half of logical channel 5d6a1

CRTLOGCHNHLF ! (prcident, chainsh, modelsh -> sh, ph)

If MODELSH is EMPTY, this priviledged procedure creates a logical channel end in the local process.

Otherwise it creates a copy of the logical channel segment/end with handle MODELSH in the local process, and chains it to the same process(es) as the original, one of which is the invoking process, but to different segments in those processes. The copy is chained on one side to the segment/end with handle CHAINSH in the invoking process, and on the other to a segment/end whose handle is to be obtained by calling CRTLOGCHNHLF in the segment's process. The process of obtaining this latter handle, of course, effectively duplicates the rest of the logical channel in one direction.

In either case, the procedure creates a segment with handle SH in the local process, and makes the process with ident PRCIDENT known to the end process via the handle PH.

Implementation:

[See Version 3]

Argument/result types:

```
prcident- PRCIDENT*
chainsh - INTEGER
modelsh - INTEGER / EMPTY
sh      - INTEGER
ph      - INTEGER
```

IDEAS 5e

(PMP -- 24462,3) Recovering Detached Processes 5e1

After the detachment and reattachment of a process, what is the state of an introduction involving a process in the detached branch and a process in the body of the tree? What's the state of a call handle for a non-permanently-returned procedure call when the callee is in the detached branch and the caller in the body of the tree? 5e1a

(PMP -- 24462,3a5) Prioritizing Processors and Requests 5e2

We might associate an INTEGER "priority" with each processor at compile-time, require an INTEGER priority argument in the CALPRO procedure, and then assign a procedure call request to a processor only if the request's priority equals or exceeds that of the processor. By proper use of such a mechanism, systems could assure that high-priority requests could always be serviced. 5e2a

Processor priority might be made modifiable at runtime (in PCPTNXINT, by means of a SSS). 5e2a1

CHANGES 7d

(PCPFRK -- 24576,4) Encoding of IPC Messages 7d1

The IPC messages are encoded in standard PCP formats, rather than in the ad hoc formats described. Hence: 7d1a

```
INITACK (prcname)                                          7d1a1
   LIST (%opcode% INTEGER [INITACK=0], %prcname%
         CHARSTR)
TERM ()                                                    7d1a2
   LIST (%opcode% INTEGER [TERM=1])
TERMACK (cost)                                             7d1a3
   LIST (%opcode% INTEGER [TERMACK=2], %cost% INTEGER)
IPCERR (errcode, errmsg)                                   7d1a4
   LIST (%opcode% INTEGER [IPCERR=3], %errcode%
         INTEGER, %errmsg% CHARSTR / EMPTY)
NOP ()                                                     7d1a5
   LIST (%opcode% INTEGER [NOP=4])
```

(PCPFRK -- 24576,4) Initialization Message Added 7d2

Initialize 7d2a

INIT (userid) 7d2a1

This message, sent only from superior to inferior, requests the latter's initialization. USERID contains the login parameters to be associated with the newly-created process. In particular, USERID specifies a user USER, for purposes of controlling access to system resources; an account ACCOUNT, for billing purposes; and a password PASSWORD by which the creating process' right to pose as user USER can be established. 7d2a2

Format: 7d2a3

```
LIST (%opcode% INTEGER [INIT=5], %userid% LIST
      (%user% CHARSTR, %password% CHARSTR, %account%
      CHARSTR))
```

IDEAS 7e

PCPHST 8

CLARIFICATIONS 8a

(PCPHST -- 24577,3a1) Process Implementation 8a1

When the CRTPRC procedure is employed to create a process in a Tenex host, the process that answers the ICP and reads the INIT message uses the login parameters provided to create a new job using the CRTJOB JSYS, and pass it the JFNs for the ICP-created connections. 8a1a

TYPOS 8b

BUGS 8c

CHANGES 8d

(PCPHST -- 24577,4) Initialization Message Added 8d1

Initialize 8d1a

INIT (userid) 8d1a1

This message, sent only from superior to inferior, requests the latter's initialization. USERID contains the login parameters to be associated with the newly-created process. In particular, USERID specifies a user USER, for purposes of controlling access to system resources; an account ACCOUNT, for billing purposes; and a password PASSWORD by which the creating process' right to pose as user USER can be established. 8d1a2

Format: 8d1a3

```
LIST (%opcode% INTEGER [INIT=5], %userid% LIST
      (%user% CHARSTR, %password% CHARSTR, %account%
      CHARSTR))
```

(PCPHST -- 24577,4a3b) Encoding of IPC Messages 8d2

The IPC messages are encoded in standard PCP formats, rather than in the ad hoc formats described. 8d2a

IDEAS 8e

PCPTNXINT 9

CLARIFICATIONS 9a

(PCPTNXINT -- 24792,6) Use of the PSI System by System Code 9a1

If possible, system code will use but a single channel of the PF's pseudo interrupt system (that to implement the IPC SNDMSG and RCVMSG procedures). We may as the need becomes clear (and it will), define one or more SSSs by which user code can use the remaining channels for its own use. 9a1a

(PCPTNXINT -- 24792,6c2b4) Responsibilities of BUDSMN 9a2

BUDSMN is responsible for checking the lock associated with the data store to be manipulated and for refusing the read/write attempt as appropriate. 9a2a

TYPOS 9b

BUGS 9c

(PCPTNXINT -- 24792,6b4a3) Size of Lock Word 9c1

LKSTS is a full word (with an initially-unused halfword inserted before it). 9c1a

CHANGES 9d

(PCPTNXINT -- 24792,6a3) USS and SSS Calling Sequence Change 9d1

The return TYPE is deleted from the parameter list returned by USSs and SSSs (and PERMANENT is assumed), since TEMPORARY returns are made via SYTRTN. 9d1a

(PCPTNXINT == 24792,6b1) System Descriptor Content Changes 9d2

The following fields are added to the system descriptor and their corresponding subroutines added to user code: 9d2a

Hword 11	SYNOTE	A(event reporter)	9d2a1
Hword 12	SYHELP	A(help summoner)	9d2a2
Hword 13	SYCORO	A(general coroutine effector)	9d2a3
Hword 14	SYCAPH	Process handle PH of calling process	9d2a4

USSs will always find in SYCAPH the process handle PH by which the process on whose behalf the USS is being called is known to the local process. 9d2b

Report event to caller 9d2c

SYNOTE (event, parm) 9d2c1

This subroutine, callable only by BUPDSP, effects a temporary return of subtype NOTE to its caller's caller. EVENT and PARM describe the event being reported. 9d2c2

Argument list format: 9d2c3

Word 0 Event
Word 1 Parm (A(PCPB36 data structure)) / zero

Summon assistance from caller 9d2d

SYHELP (problem, parm => reslist) 9d2d1

This subroutine, callable only by BUPDSP, effects a temporary return of subtype HELP to its caller's caller. PROBLEM and PARM describe the problem encountered and RESLIST the help provided. 9d2d2

If help cannot be provided, SYHELP returns subtype ABORTED. 9d2d3

Argument list format: 9d2d4

Word 0 Problem
Word 1 Parm (A(PCPB36 data structure)) / zero
Word 2 Reslist (A(PCPB36 data structure)) / zero

Effect general coroutine return to caller 9d2e

SYCORO (arglist -> reslist) 9d2e1

This subroutine, callable only by BUPDSP, effects a temporary return of subtype GENERALCOROUTINE to its caller's caller, with arguments ARGLIST and results RESLIST. 9d2e2

Argument/result list formats: 9d2e3

Word 0 Arglist (A(PCPB36 data structure)) / zero

Word 0 Reslist (A(PCPB36 data structure)) / zero

(PCPTNXINT -- 24792,6c1) User Descriptor Content Changes 9d3

The following fields are added to the user descriptor (other fields are moved down six halfwords) and their corresponding subroutines added to user code: 9d3a

Hword 3	USINTM	A(process initiator/terminator) or zero	9d3a1
Hword 4	USSUNS	A(splicer/unsplicer) or zero	9d3a2
Hword 5	USINSP	A(introducer/separator) or zero	9d3a3
Hword 6	USOKOP	A(package opening OKer) or zero	9d3a4
Hword 7	USOKAP	A(processor allocation OKer) or zero	9d3a5
Hword 8	USBKCH	A(broken channel observer) or zero	9d3a6

Initialize or terminate process 9d3b

USINTM (mode) 9d3b1

This subroutine initializes or terminates the process, according to MODE, and will be called by a system module just after the process is created (after each bundle is initialized by BUINTM) and again just before it is deleted (before each bundle is terminated by BUINTM). 9d3b2

USINTM may, if it wishes, when called in mode INITIALIZE, create one or more "background processors" by appropriate out-of-line calls to procedure(s) within the process. Any background processors created in mode INITIALIZE should be deleted in mode TERMINATE. If the process is the root process of its tree, USINTM MUST create at least one background processor to give life to the tree. 9d3b3

USINTM is an optional subroutine. If it is not provided, the process cannot be the root of a tree. 9d3b4

Argument list format: 9d3b5

Word 0 Mode [INITIALIZE=1 / TERMINATE=0]

Greet or see off splicing process 9d3c

USSUNS (mode, ph, userinfo) 9d3c1

This subroutine greets or sees off, according to MODE, the newly- or previously-spliced process known to the local process via the handle PH and will be called by a system module when the process first splices itself to the local process and again when it unsplices itself. If MODE is SPLICE, the USERINFO specified by the active associate in its call to CRTPRC is presented to the subroutine for verification (if desired). 9d3c2

USSUNS is an optional subroutine. If it is not provided, the local process cannot be spliced to. 9d3c3

Argument list format: 9d3c4

```
Word 0  Mode [SPLICE=1 / UNSPLICE=0]
Word 1  Ph
Word 2  Userinfo (addr of PCPB36 data structure) /
        zero
```

Greet or see off introduced process 9d3d

USINSP (mode, ph) 9d3d1

This subroutine greets or sees off, according to MODE, the newly- or previously-introdued process known to the local process via the handle PH and will be called by a system module when the process is introduced to the local process and again when it is separated from it. 9d3d2

USINSP is an optional subroutine. If it is not provided, any process that wishes to be introduced to the local process will be permitted to do so. 9d3d3

Argument list format: 9d3d4

```
Word 0  Mode [INTRODUCE=1 / SEPARATE=0]
Word 1  Ph
```

OK package opening 9d3e

USCKOP (ph, pkname) 9d3e1

This subroutine either authorizes or rejects (depending upon whether it returns subtype SUCCESS or FAILURE) an attempt by the process known to the local process via the handle PH, to open package PKNAME. It will be called by PSP's OPNPKS procedure. 9d3e2

USCKOP is an optional subroutine. If it is not provided, all attempts to open a package (regardless of source or package) will be honored. 9d3e3

Argument list format: 9d3e4

Word 0 Ph
Word 1 PKname (addr of ASCIZ string)

OK processor allocation 9d3f

USCKAP (ph, count) 9d3f1

This subroutine either authorizes or rejects (depending upon whether it returns subtype SUCCESS or FAILURE) a request that COUNT local processors be allocated to the process known to the local process via the handle PH. It will be called by PMP's ALOPCRS procedure. 9d3f2

USCKAP is an optional subroutine. If it is not provided, processors will be allocated on a first-come first-serve basis. 9d3f3

Argument list format: 9d3f4

Word 0 Ph
Word 1 Count

Note broken channel 9d3g

USBKCH (ph) 9d3g1

This subroutine notes the unexpected breakage of the physical channel that connects the local process and the remote process known to it via PH. It will be called by a system module whenever a physical channel breaks unexpectedly. 9d3g2

USBKCH is an optional subroutine. If it is not provided, the broken cannel will be reported to the process only when it next attempts to employ it. 9d3g3

Argument list format: 9d3g4

Word 0 Ph

(PCPTNXINT -- 24792,6c2) Bundle Descriptor Content Changes 9d4

The following field is deleted from the bundle descriptor and its corresponding subroutine removed from user code: 9d4a

Hword ? BUPRSM A(procedure resumer) 9d4a1

The following field is added to the bundle descriptor and its corresponding subroutine added to user code: 9d4b

Hword 6 BUFNDL A(data store lock locator) 9d4b1

Locate data store lock 9d4c

BUFNDL (pkcode, dsname => lock) 9d4c1

This subroutine returns the address LOCK of the LCB associated with data store DSNAME in the package whose code PKCODE is specified, and is called by PMP's LCKDATA and UNLKDATA procedures. 9d4c2

Argument/result list formats: 9d4c3

Word 0 Pkcode
Word 1 Dsname (addr of ASCIZ string)

Word 0 Lock (addr of LCB)

(PCPTNXINT -- 24792,6c3a) Package Descriptor Content Changes 9d5

The following field is deleted from the package descriptor (other fields are moved up one halfword) and its corresponding subroutine removed from user code: 9d5a

Hword 2 PKOPCL A(package opener/closer) 9d5a1

(PCPTNXINT -- 24792,6c3b1) PKINTM Calling Sequence Changes 9d6

PKINTM's PKCODE argument is deleted, and the result SHAREDPAGES previously returned by PKINTM is returned by BUINTM instead. Furthermore, an additional argument called SCOPE is required, following MODE. It specifies the kind of initialization or termination (processor or process) to be performed. The argument SCOPE has the following form: 9d6a

scope= BOOLEAN [PROCESS=TRUE / PROCESSOR=FALSE] 9d6a1

IDEAS 9e

(PCPTNXINT -- 24792,) Dynamically Changing Package Content 9e1

Because of the manner in which BUPDSP and BUDSMN have been defined, it is possible to implement a package for Tenex whose contents (i.e. procedures and data stores) change dynamically. Such packages may in the future prove reasonable and useful, but for the present, they violate fundamental process definitions (PCP -- 24459,4a1b) and are therefore prohibited. 9e1a

JEW 11-APR-75 18:48 25712

PCP Inter-Version (2-3) Documentation
PCPV2CHANGES

12 APR 75

James E. White
Augmentation Research Center

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PCPV2CHANGES records the ways in which the implementation of PCP is diverging from its Version 2 documentation, and should be viewed by implementers of both PCP and code which must run in a PCP environment as a dynamic appendix to the Version 2 PCP-related documents. The reader is of course assumed familiar with the Procedure Call Protocol (PCP -- 24459,).

(J25712) 11-APR-75 18:48;;; Title: Author(s): James E. (Jim) White/JEW; Sub-Collections: SRI-ARC; Clerk: JEW; Origin: < WHITE, PCPV2CHANGES.NLS;13, >, 31-JAN-75 12:40 JEW ;;;; ####;

KIRK 11-APR-75 20:48 25713

Design for Readmail Tool

For your review before going to Applications.

Design for Readmail Tool

READMAIL: A tool for reading your mail online.

The Readmail tool provides a variety of commands to help with reading mail online and related tasks such as filing and forwarding mail. For information on how to gain access to tools, see ... For information on how to use NLS tools in general, see ... 1

INITIAL FILE

Your online mail is delivered to your "initial" file which is the file you see when you first go to the NLS Editor. The name of this file is made from your identifier which is usually your initials. See ... to learn about identifiers. You should be in your initial file when you use Readmail. See ... for how to load a file. Your initial file is divided into categories. 2

CATEGORIES

New mail is filed in the catagory named "NEW". This category also contains mail for which you have not yet taken initial action. Mail you have authored is located in your AUTHOR category. Deleted mail is located in a "Deleted" category until you request that it be Undeleted, Expunged or Archived. you can create any other categories or categories- within- categories that you like using the NLS Editor command "Insert". You can ask Readmail to "Interrogate" you for answers on how to deal with the items in a category. This allows you to read each item in the category you specify and take initial action if you wish by deleting the item or moving it to another category. 3

ITEMS

Some Readmail commands ask you to specify ITEMS. You can specify a whole category of ITEMS by typing the category name. Each item within a category is given a number when you first view the category. The number appears at the beginning of the item. To specify a particular item, just type this number. The number stays with an item until you quit from Readmail. 4

% Designers comment: It will probably also be possible to bug words for category names and item numbers. 4a

COMBINATIONS OF ITEMS

You can specify a group of items within the same category by placing a dash between the numbers of the first and last items thus: 1-10. Groups of groups can also be specified by separating the groups with spaces thus: 1-4 6-8 10. ITEMS in a different category can be specified by prefacing the number(s) with the name of the category.

You can type filenames seperated by a comma in front of or in place of category names. You can also specify a category within a category by typing the supercategory a space and the subcategory. 4b

JOURNALIZED ITEMS

To retrieve items recorded in the NLS Journal for which you know the item's Journal number, use the Brief or Verbose command and type the number followed by a comma. 4c

% Designers comment: We could have "higher level" categories available to everyone using Readmail to allow easy access to indexes. They could be, for example, indexes, xdocs, title-words, numbers, and authors. 4c1

ENVELOPE

Each piece of mail has certain elements of information located in places chosen for their optimum online use. The resulting format is called the "envelope". First of all there is a citation or header. Under the citation is the distribution list followed by various optional fields such as Comments, Date Received, Items updated or made obsolete, etc. The body of the piece of mail, if delivered, occupies the rest of the envelope. More about this later. Here is a sample envelope. 5

3, GMT1332-22-OCT-75/AUTHOR: Title or subject of this piece of mail
<:w> <JMESSAGES,J12345:wg> [ACTION]
To: IDENTIFIERS OF PRIMARY RECIPIENTS
Cc: PEOPLE WHO RECEIVED COPIES
Comment: This is a sample envelope.
Received at: PDT1333 22-OCT-75
This is the body of the piece of mail. 5a

% Design Comment % 5b

This differs in one respect from the default format generated by RLL's "cooperative design". The time is in a form which allows it to be a statement name. This provides two capabilities. 5b1

It provides a handle to specific items that works outside of Readmail and is independant of category. 5b1a

It allows turning names off and getting more of the essential title information in clipped views. 5b1b

It should also be usefull for future automatic processes such as schedulars, diaries and sorters. 5b2

Slash was chosen as a name delimiter to divide the date and author because it is unlikely to accidentally create conflicts with category names. The slash could have spaces arround it if proves to be worth the two extra characters. 5b3

CITATION

The beginning of every piece of mail consists of a citation containing the time and date the item was sent, the ident of the author, and the title or subject. If the item has been recorded in the NLS Journal, a link to it's online location will be included. If there are any special notes such as "ACTION", "Private", and/or "Unrecorded", they will also be included in the citation. 5c

TIME AND DATE GMT1332-22-OCT-75: a handle

your time zone makes up the first three letters of the citation and follows the Readmail item number. It is followed immediately by the time of day the piece of mail was sent using a 24 hour clock with no punctuation. After the time of day comes the day, month, and year. The time and date are a handle with which you can specify any item independant of it's category. 5c1

AUTHOR AND TITLE

The author's identifier is placed after the time. If there is more than one author, their identifiers are separated by spaces. A colon divides the author field and the title field. The title follows the author part and is terminated by a carriage return. 5c2

LINKS

If the item has been recorded in the NLS journal, a link to it's location in the journal will be placed after the title. Links are surrounded by angle-brackets. See ,,, for more information about links. If the body of the item has been copied to your initial file, the short link: <:w> will appear before the link to the body. This is so your copy of the body of the item will be displayed rather than taking the time to go find it in the NLS journal. 5c3

NOTES

If the sender has written an additional note regarding the item intended for you especially, it will appear in square brackets at the end of the citation part of the envelope. If the item has been sent "Private", "Unrecorded", or for your "ACTION", these notes will also appear here. 5c4

ELEMENTS

Immediately under the citation is the list of the identifiers of the primary recipients preceded by the word "To:". After that is the list of secondary recipients (if any) preceeded by the word "Cc:". Various extra elements of information may appear after the distribution list. For a complete list of these with explanations of their use, see the Sendmail commands. 5d

Design for Readmail Tool

BODY
The entire contents of some items are placed in your initial file at the end of their "envelopes". For others there will just be a "link" in the citation to a file containing the actual information. When you ask to see one of these items, the message "Catalog file" will be typed while the files are being found before they are printed for you. Otherwise, the information will look as if it is located in your file. 5e

5f

% HOW TO READ AND FILE MAIL ONLINE
This section has only a tentative outline and will be filled in later if Readmail command descriptions are not self explanatory. Information about catalogs and indexes have no more appropriate place to reside for the time being, though the Readmail tool contains no commands to help with that task. 6

Reading the Mail in Category 6a

Action 6a1

Information 6a2

Author 6a3

MESSAGE.TXT 6a4

U.S. Postal Mail 6a5

CONTENT 6a6

Fileing the Mail 6b

Create this Category 6b1

Place this piece of mail in category: CONTENT 6b2

Copy this piece of mail to category: CONTENT 6b3

Moving/copying all the contents of category 1 to category 2 6b4

Delete this Category and every thing in it 6b5

Delete this piece of mail 6b6

Retrieving Old Mail you or others have sent 6c

From Categories you placed them in 6c1

(See Reading the Mail) 6c1a

Directly from the Journal by Number, 6c2

From the Journal via Catalog Indexes
> (Words in the title and authors' names) 6c3

6c4

COMMANDS IN READMAIL
See ... for general information on how to command tools integrated into the NLS environment. 7

Accept QUALITY CONTENT OK:
The Readmail command "Accept" allows you to view only items with certain qualities. A QUALITY filter remains in effect until you re-specify it or use the corresponding Readmail "Omit" command which works as the inverse of the "Accept" command.
QUALITY = Authors / Titlewords / Dates. 7a

Authors CONTENT OK:
specify for CONTENT the IDENTLIST of authors you wish to see. NULL for CONTENT means "ALL". In the Omit Authors command, NULL for CONTENT means "NONE". 7a1

Titlewords CONTENT OK:
Specify for CONTENT some words in the titles of the items you wish to see. NULL for CONTENT means "ALL". In the Omit Titlewords command, NULL for CONTENT means "NONE". 7a2

Dates (from) CONTENT (to) CONTENT OK:
Specify for each CONTENT the range of dates (with times if desired) of the items you wish to see. NULL in the "from" field specifies the origin of time. NULL in the "to" field specifies right now. 7a3

Brief (view for) ITEMS OK:
> The Readmail command "Brief" will show you the first line of each category or item one level under the category you specify for DESTINATION. A number is assigned to each item. <CTRL-O> stops printing. To read one of the items, use the Readmail commands "Interrogate", "Verbose", or "Next". 7b

Category ITEMS OK:
Use the Readmail command "Category" to specify the category without having it printed. If you have just entered Readmail, your category is already set to be "NEW". If you use the Interrogate command or if you have just used the Brief or Verbose command, you do not need to use the "Category" command. 7c

Copy (item(s)) ITEMS (to category) ITEMS OK:
You can file items under more than one category by using the Readmail command "Copy (item(s))". Specify the item you wish to copy for the first ITEMS. Specify the category for the second ITEMS. 7d

Delete ITEMS OK:
The Readmail command "Delete" moves the ITEMS you specify to a category named "deleted". Readmail has an "Undelete" command which moves ITEMS you have deleted to the current category in which you are working. You can use the Readmail command "Expunge" to anihaliate the "deleted" category forever or deleted items can be expunged automatically when you quit Readmail. See Quit. 7e

Execute:
##<fewm !execute>## 7f

Expunge (all deleted items) OK:
The Readmail command "EXpunge" anahilates your deleted items for good. This can happen automatically when you Quit Readmail. See Quit. The Undelete command will not undelete items that have been expunged. See also: Delete. 7g

Forward (item number) ITEMS (for) ACT/INFO (to) CONTENT OK:
The Readmail command "Forward" allows you to pass on the ITEMS you specify to the IDENTLIST you specify for CONTENT. ACT/INFO wants either the command-word Action or Information. Unlike the Sendmail "Forward" command, Readmail "Forward" does not accept the Journal number of an item. 7h

Goto:
##<fewm, goto>## 7i

Interrogate OK:
After typing an OK, the Readmail command "Interrogate" first asks for the name of the category you wish to examine. When you first enter Readmail your category is automatically set to "NEW". If this is the category you want, you can specify NULL for the category. See NULL. See also: SAMPLE. Interrogate then shows you each item in the category asking if you want to file it and if so, where. If you do not want to file it, Interrogate asks if you want to delete it. When you are done, the next item is shown. 7j

Move (item number:) ITEMS (under category) ITEMS OK
Use the Readmail command "Move" to file the item with the number you specify for the first ITEMS in the category you specify for the second ITEMS. See also: Copy. 7k

Next (item) OK:

Design for Readmail Tool

Use the Readmail command "Next" to see a full view of the next item in your current category. 7l

Omit QUALITY CONTENT OK:
The Readmail command "Omit" works as the opposite of the Readmail command "Accept". See Accept. 7m

Output ITEMS (to printer) OK:
The Readmail command "Output" prints what you indicate for ITEMS at the hardcopy device specified for you in your profile. 7n

Quit (update file?) Y/N:
The Readmail command "Quit" returns you to your previous tool. If you type y or your OK, then items you have deleted will be expunged and your file will be updated. See Delete. 7o

Remind (me of) ITEMS (on day) CONTENT OK:
The Readmail command "Remind" will move the ITEMS you specify to the "remind" category. The first time you use Readmail after the date and time you specify for CONTENT, the ITEMS will reappear in your "NEW" category. Specify the date and time in the following form DD/MM/YY HH:MM. If you leave off the time, 00:00 (midnight) will be assumed. If you leave off the DD/MM/YY, the current day will be assumed. 7p

Sort (category) OK/ORDER:
The Readmail command "Sort" orders the items in your current category. OK causes a sort by date and time, most recent at the top. Alternatively, you can specify for ORDER "Oldest (first) OK" or "Authors OK". If you specify "Authors", Those items with the same first author will be grouped together. 7q

Undelete ITEMS OK:
The Readmail command "Undelete" causes the deleted item you specify to be moved from the "deleted" category to your current category. See Delete. 7r

Verbose (view for) ITEMS OK:
> The Readmail command "Verbose" will show you a full view of the ITEMS you specify. If you specify a category name for ITEMS, a full view of each item in that category will be shown at your terminal. A number is assigned to each item. <CTRL-O> stops printing. See also: Output. 7s

% somehow there should be a way of showing MESSAGE.TXT messages either by automatically moving them into nls whenever the READMAIL subsystem is fired up or else having a command such as "Read Sndmsg". 7t

% We also need a "Read U.S. Postal mail" command which asks the secretary questions towards entering a letter as an XDOC item. The XDOC procedures for handling offline items classified in the online medium would be part of the Readmail help description file. 7u

7v

SAMPLE READMAIL SESSION

You are at a typewriter terminal and logged into the NSW using the NLS Editor. "EDIT C: " has been typed by the computer indicating it is ready for your next command. You type gr followed by the RETURN key. Readmail responds with the following things in quotes. 8

"Goto Readmail OK:
READ C: Brief (view for catagory) NEW". This is done automatically to generate the list of items on which you have not yet acted. Those you have received since you last read your mail are at the beginning, most recent first. Typeing <CTRL-O> would have stopped the printing of the brief view had you not wanted to see it. 8a

NEW
1. EDT2045-22-OCT-75 FEED: In response to your item concerning
2. EDT2040-22-OCT-75 DVN: Weekly Documentation report for
3. EDT1050-22-OCT-75 SGR: Phone Log - Architects Contacted
4. EDT0905-22-OCT-75 KIRK: New version of NLS brought up at 8b

Type an i followed by your OK.
"Interrogate OK:
(catagory:) T: " you respond with another OK to indicate your current category which is "NEW". The entire text of item 1 is typed followed by the question
"(file it?) Y/N: " to which you answer n for "No"
"(delete it?) Y/N: " is then asked and you hit your OK for "Yes". 8c

Item 1 is moved to the "deleted" category. 8c1

The entire text of item 2 is typed followed by the question
"(file it?) Y/N: " to which you answer y for "Yes"
"(under category) T:" You type "reports" followed by your OK. 8d

Item 2 is moved to the "reports" category. 8d1

Item 3 begins to type but you hit <CTRL-O>. Item 3 stops printing in the middle and the question
"(file it?) Y/N: " is asked to which you answer n for "No".
"(delete it?) Y/N: " is asked to which you also answer n for "No". 8e

Thus item 3 is left in the "NEW" category for later processing. 8e1

The entire text of item 4 is typed.
"(file it?) Y/N: " is asked to which you answer y for "Yes"
"(under category) T:" You type "changes" followed by your OK. 8f

Item 4 is moved to the category CHANGES. 8f1

"READ C: " is then typed at your terminal indicating that Readmail has finished "interrogating" you for the category NEW and awaits further instructions. You type bchanges followed by your OK.
Readmail types "Brief (view for) T: changes" . 8g

A brief view of the category CHANGES is typed. 8g1

"Output T: changes (to printer) OK:" is Readmail's response when you type ochanges followed by two OK's. 8h

A full view of each item in the changes category is printed on your local printer as specified by your Profile. 8h1

"Quit (update file?) Y/N yes
EDIT C: " indicates that you have been returned to the NLS Editor after typing q followed by your OK thus ending your sendmail session by updating your initial file. 8i

% Documenters Note: there is a link from <interrogate> to sample % 8j

KIRK 11-APR-75 20:48 25713

Design for Readmail Tool

(J25713) 11-APR-75 20:48;;; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /ARC-DEV([ACTION]) ; Sub-Collections: SRI-ARC
ARC-DEV; Clerk: KIRK; Origin: < HELP, READMAIL.NLS;1, >,
11-APR-75 20:31 KIRK ;;;;####;

NSW File Types

NSW Physical File Types 1

This document specifies the currently defined physical file types within the NSW, and specifies the PCP encodings used to communicate the files among various PCP processes. The actual PCP format , i.e. PCPB36 , PCPB8 or PCPTXT, used on the connection must be agreed upon between the PCP IPC modules at the two ends of a physical channel but is irrelevent to this discussion. 2

Physical File Attributes: 3

The physical file type is specified by three attributes: 3a

DATA TYPE: 3a1

This attribute has the value CHARACTER or BINARY and specifies whether the file is comprised of character strings or bit strings. Since it is clearly possible to encode any file as either data type this attribute is not an absolute constraint on the contents of the file but rather an indication of the most advantageous encoding to use. 3a1a

RECORD TYPE: 3a2

Record type indicates the record structure of the file in the originating process. It has the following legal values. 3a2a

FIXED: The file consists of records of fixed size. 3a2a1

VARIABLE: The file consists of records of variable size. 3a2a2

STRUCTURE TYPE: 3a3

This attribute specifies whether the file is a simple sequence of records or whether there is a more complex record structure. The legal values are: 3a3a

SEQUENTIAL: The file is transmitted as a sequence of records. 3a3a1

SPARSE: Each Record carries a record number along with it. The list of pairs (Record number,record data) are simply ordered on record number. That is the record number of each record is greater than that of its predecessor. The record number of the first record cannot be less than zero. 3a3a2

RANDOM: Each record carries a record number along with

it. The constraints on record numbers are that they are unique, and that record numbers are non-negative. 3a3a3

PCP encodings of files 4

CHARACTER (FIXED / VARIABLE) SEQUENTIAL 4a

LIST (%datarecord% CHARSTR, ...) 4a1

CHARACTER (FIXED / VARIABLE) (SPARSE / RANDOM) 4b

LIST (LIST (%recordnumber% INTEGER, %datarecord% CHARSTR), ...) 4b1

BINARY (FIXED / VARIABLE) SEQUENTIAL 4c

LIST (%datarecord% BITSTR, ...) 4c1

BINARY (FIXED / VARIABLE) (SPARSE / RANDOM) 4d

LIST (LIST (%recordnumber% INTEGER, %datarecord% BITSTR), ...) 4d1

Use Types: 5

In addition to Physical File Type each NSW file also has an attribute called use type which is assigned at creation time by the creating tool. This attribute is used to give an indication of the semantic content of the file. It is our intention that the WM will store a matrix whose entries are of the form (process name, package name, procedure name) and that is indexed by (source file physical type, source file use type, destination file physical file type, destination file use type). The procedure thus indexed has as parameters (source file name, destination file name) and will either return TRUE indicating the destination file has been successfully created and entered into the NSW file system or FALSE indicating failure of the conversion procedure. 5a

In the initial phases of the NSW it is expected that this conversion matrix will be extremely sparse. Indeed many of the elements of this matrix will never be implemented, for example the task of converting a 360 cobol object file into a fortran source file seems well beyond the initial design goals. However some of the entries in this conversion matrix will be supplied by the utility packages of each TBH (NSW Tool Bearing Host). In addition tool purveyers may find it in their interest to supply elements of the matrix corresponding to the use types most commonly created or requested by their tool. This allows a potential user to integrate the use of this tool more easily with other tools he uses. 5b

In the case where the use type of a file is undefined or where the element of the conversion matrix needed is empty it seems advantages to supply default conversions based soely on physical file type, In fact the set of conversions based solely upon physical file type should form the minimum set of conversions provided by the file package of each TBH. 5c

The following is a first cut at defining the conversions based solely on physical file type. 5d

Physical File Type conversions: 5e

The following conversions are defined separately for each physical file attribute, Conversion between physical file types is accomplished by performing each of the three possible translations (one for each attribute) concurrently. 5e1

Some of the following conversions take arguements which specify conversion parameters, I am as yet unclear exactly who specifies these , how and when, It seems that the requestor and supplier of the file must negotiate the proper values for these parameters, In the case where the requestor is a user this is fairly straight forward, however the case in which the requestor is a tool which in turn might want to consult the user is less clear, 5e2

Attribute conversion primitives: 5e3

CHARACTER => BINARY 5e3a

Each Character is simply converted to an eight bit byte containing the ASCII character code in the low order 7 bits, 5e3a1

BINARY => CHARACTER 5e3b

Treat each 8 bit bite as containing one ASCII character in the low order 7 bits. 5e3b1

FIXED => VARIABLE 5e3c

preceed each record by the character/bit count for the record, 5e3c1

VARIABLE => FIXED 5e3d

PARAMETERS (fixedrecordlength %INTEGER%, fillcharacter %CHARSTR%, break %BOOLEAN%, append %BOOLEAN) 5e3d1

If the input record is shorter than the requested fixedrecordlength and append is FALSE the record is padded with the fill character/bit . If however append is TRUE a new input record is fetched and is inserted in the current output record beginning with the next unused character/bit position. This continues until the current output record is full at which point a new record is begun if break is true, otherwise the unused portion of the input buffer is discarded. 5e3d1a

If the input record is longer than the fixedrecordlength and break is FALSE the record is truncated with the truncated portion being lost. If However break is TRUE a next record is begun. This is repeated until the entire input record has been processed. If append is FALSE then the last fixed record is padded, otherwise the next input record continues filling this current fixed length record and this process is continued until the last input record is processed at which point the last output record is padded if necessary. 5e3d1b

SEQUENTIAL => SPARSE and SEQUENTIAL => RANDOM 5e3e

parameters (initrecnum, recinc) 5e3e1

Each input record is assigned a record number beginning with initrecnum and incrementing by recinc. 5e3e1a

SPARSE => SEQUENTIAL 5e3f

Record numbers are simply discarded. 5e3f1

RANDOM => SEQUENTIAL 5e3g

The receiving process collects all the input records, sorts them by record number if necessary and then discards the record numbers. 5e3g1

SPARSE => RANDOM 5e3h

no conversion needed SPARSE is a proper subset of RANDOM 5e3h1

RANDOM => SPARSE 5e3i

The receiving process collects all the input records and sorts them by record number if necessary. 5e3i1

The file type is encoded into a small integer specified using the PCP data type INDEX when passed as an argument. 6a

File Types 6b

Type 1 6b1

CHARACTER FIXED SEQUENTIAL 6b1a

Type 2 6b2

CHARACTER VARIABLE SEQUENTIAL 6b2a

Type 3 6b3

CHARACTER FIXED SPARSE 6b3a

Type 4 6b4

CHARACTER FIXED RANDOM 6b4a

Type 5 6b5

CHARACTER VARIABLE SPARSE 6b5a

Type 6 6b6

CHARACTER VARIABLE RANDOM 6b6a

Type 7 6b7

BINARY FIXED SEQUENTIAL 6b7a

Type 8 6b8

BINARY VARIABLE SEQUENTIAL 6b8a

Type 9 6b9

BINARY FIXED SPARSE 6b9a

Type 10 6b10

BINARY FIXED RANDOM 6b10a

Type 11 6b11

BINARY VARIABLE SPARSE 6b11a

Type 12 6b12

BINARY VARIABLE RANDOM 6b12a

Type 13 6b13

Card Image 6b13a

CHARACTER FIXED SEQUENTIAL 6b13a1

where each CHARSTR is of length 80 (and does not include <CR> <LF> to signal end of card). 6b13a1a

Type 14 6b14

Text Line 6b14a

CHARACTER VARIABLE SEQUENTIAL 6b14a1

where each CHARSTR ends with the character pair <CR> <LF>, all the ASCII format effectors [<FF>, <CR>, <LF>, <HT>, <VT>, <BS>] are allowed (See document format 2, RFC 678 -- 31524,). 6b14a1a

Type 15 6b15

Tenex Page 6b15a

BINARY VARIABLE SPARSE 6b15a1

where each BITSTR is a maximum of 18432 (512*36) bits, and missing records are 18432 bit chunks. 6b15a1a

Type 16 6b16

Print Line 6b16a

CHARACTER VARIABLE SEQUENTIAL 6b16a1

where each CHARSTR ends with the character pair <CR> <LF>, and printer format is directed by the ASCII format effectors <FF>, <CR>, and <LF> (See document format 3, RFC 678 -- 31524,). 6b16a1a

NSW File Types

(J25714) 12-APR-75 00:54;;; Title: Author(s): Jonathan B. Postel, David S. Maynard/JBP DSM; Distribution: /NPG([INFO-ONLY]) NSW([INFO-ONLY]) ; Sub-Collections: SRI-ARC NPG NSW; Clerk: JBP; Origin: < POSTEL, NSW-FILETYPES.NLS;3, >, 12-APR-75 00:50 JBP
;;;;####;

DIA 14-APR-75 14:38 25715

Note on Procedure-Coroutine Interaction (ala CHI,JEW)

Suppose procedure P1 opens coroutines C1 and C2. Then pcalls C1. C1 does a procedure call to P2 (giving it PORT) and P2 pcalls P1. Then P1 pcalls C2 which calls P3 and it pcalls back to P1 also. From botom up the frames in the stack look like: P1 (with C1 and C2); P2; P3; 1

Now suppose P1 pcalls P2 (it got the port id from C1) and P2 RETURNS! Like it or not, the stack reverts to a single frame for P1 (which includes instances of C1 and C2). The frame for P3 is gone. Any subsequent pcall using the port id for P3 (P3's pcall back to P1) will result in a fatal error for "non-existant port called." ("recover" will be called). 2

Saving factor: If P3 happened to invoke a catchphrase, it would be activated with signal name "return". Hence it would know it was going away. The fella holding the port ID has no general way of finding that out. (except for IF portid>S THEN non-existant [on PDP-10! use < for PDP-11]). Moral: Be careful and document pcall characteristics for all routines. 3

DIA 14-APR-75 14:38 25715

Note on Procedure-Coroutine Interaction (ala CHI,JEW)

(J25715) 14-APR-75 14:38;;; Title: Author(s): Don I. Andrews/DIA;
Distribution: /NPG([INFO-ONLY]) ; Sub-Collections: SRI-ARC NPG;
Clerk: DIA;

RLL 16-APR-75 14:41 25716

clinic for TNLS attendance

I might attend, How basic will you make it? Will it be just a series of tips? Hope so, Robert 1

RLL 16-APR-75 14:41 25716

clinic for TNLs attendance

(J25716) 16-APR-75 14:41;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /SGR([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: RLL;

POOH DVN KIRK BEV 14-APR-75 19:49 25716

Weekly informal documentation report for week ending 4/11/75

POOH 1

Wrote part of the introduction to the calculator and continued work on help for the calculator <Help, Calculator,> 1a

Editing of the Final Report 1b

proofed the proofs of the Command Summary, made the necessary changes and sent them off to DDSI for camera ready copy 1c

The format library (NDM) has been sent to print 1d

helped the new people as needed 1e

DVN 2

We have been slogging through the mud this week, Kirk and I for example each lost half a day trying to recover from a bad file of the glossary. Eventually we backed up to Thursday night of last week and lost one and a half day's editing work. I have been setting up directives and other minor editing of the final report. Problems printing drafts locally made this work much harder. It will go to SRI editing Tuesday morning or so. Other time went to recruiting, helping new people gain expereince editing on the glossary. 2a

KIRK 3

Cheery monday was spent on the bad glossary. Answered questions from Beverly and Pam concerning the glossary and NLS. Finished the Readmail Help description file and tutorial. I looked over the latest Glosssary COM sample. Fixed a small COM bug. Another sample seems unnecessary. 3a

BEV 4

Spent Monday through Wednesday training. Began working on LZglossary Thursday. Edited about half-way through the O's by Friday. 4a

POOH DVN KIRK BEV 14-APR-75 19:49 25716

Weekly informal documentation report for week ending 4/11/75

(J25716) 14-APR-75 19:49;;; Title: Author(s): Ann Weinberg, Dirk H. Van Nouhuys, Kirk E. Kelley, Beverly Boli/POOH DVN KIRK BEV; Distribution: /DIRT([INFO-ONLY]) DMB([INFO-ONLY] for dirtt notebook) ; Sub-Collections: SRI-ARC DIRT; Clerk: BEV;

KIRK 14-APR-75 23:45 25717

The Whole Universe Catalog Video Tape to be shoWn

5:00 Wednesday (tomorroW) in Kirk and Bev's office (J2029). It lasts about 30 minutes. 1

KIRK 14-APR-75 23:45 25717

The Whole Universe Catalog Video Tape to be shown

(J25717) 14-APR-75 23:45;;;; Title: Author(s): Kirk E. Kelley/KIRK; Distribution: /RA3Y([INFO-ONLY]) KLM([INFO-ONLY]) JOAN([INFO-ONLY]) JLE([INFO-ONLY]) BEV([INFO-ONLY]) PKA([INFO-ONLY]) ACM([INFO-ONLY]) RH([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: KIRK;

DVN 15-APR-75 11:59 25718

Please Journalize File with Output Processor Problem

yes, please journalize an early copy of task/time. I've had the flu and not looked at it. Have you tried taking the same header statement and putting it on a new file to see what happens? 1

DVN 15-APR-75 11:59 25718

Please Journalize File with Output Processor Problem

(J25718) 15-APR-75 11:59;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /DAP([ACTION]) DMB([ACTION] dpcs notebook please) ; Sub-Collections: SRI-ARC; Clerk: DVN;

SGR 15-APR-75 12:20 25719

tnls clinic (outcome of user productivity study)

due to popular request a tnls clinic will be held friday april 18th from 9 to 11. if anyone is unable to attend who would like to let me know and we'll see about changing the time. this will be basically a refresher course for dnls users who would like to be more proficient in tnls. i'd like to know who is planning to attend so let me know. 1

SGR 15-APR-75 12:20 25719

tnls clinic (outcome of user productivity study)

(J25719) 15-APR-75 12:20;;;; Title: Author(s): Susan Gail Roetter/SGR; Distribution: /SRI-ARC([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: SGR;

POOH KIRK DVN BEV 15-APR-75 12:38 25720

Slow Progress on Final Report,Glossary, NSW Readmail and Calculator Tools: Documentation Weekly Report.

POOH 1

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Editing of the Final Report 1b

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POOH KIRK DVN BEV 15-APR-75 12:38 25720

Slow Progress on Final Report,Glossary, NSW Readmail and Calculator Tools: Documentation Weekly Report.

(J25720) 15-APR-75 12:38;;; Title: Author(s): Ann Weinberg, Kirk E. Kelley, Dirk H. Van Nouhuys, Beverly Boli/POOH KIRK DVN BEV; Distribution: /DMB([ACTION] dirt notebook please) DIRT([INFO-ONLY]) ; Sub-Collections: SRI-ARC DIRT; Clerk: DVN;

SGR 15-APR-75 12:44 25721

comments on (macro,mrao,)

elizabeth and i reviewed your mrao file and have the following comments. 1

my overall impression was that one of the biggest problems would be how to recover from errors. people will make them and may not know how to get around them. step 9 in the instructions says to do the editing online and i think at this point it might be good to add a comment to the effect - if you need help doing online editing get in touch with arlene or whoever and make sure that person knows how to recover from statements put in the wrong place etc. would it be a good idea to mention ctrl-x or the del key somewhere? (the beginning) 2

also i think a note should be included about not typing cr's at the end of a line. otherwise people will be sure to do so if they really are uninitiated users. 3

in step 4 (and maybe you just havn't done this yet) i think it would be good to replace type in in the example with (here type in the activities ... as in all the succeding examples. 4

in step 5 i didn't understand what samso was - my own ignorance i'm sure! also i think it would be good to switch the columns so that the new text is first and the old text is second. this would be a hassle column wise and maybe would look worse but might be more intuitive if it could be read left to right. 5

elizabeth wondered if it might be good to have a filled in example for one of the samples just to get a picture of what the final result is. this may be more desirable for people like us who don't have a real clear picture of the final outcome. what do you think about arpa people? maybe an example of it printed on letterhead? 6

elizabeth thought it might be nice to try this process out with a simpler document. you'll have to judge whether you want to do that first or go ahead and try this thing on some real people. 7

she also said that if the process works, it would be a fairly simple process to change it to a user subsystem. when you come back next - and hopefully by then we'll know how this is working, you and i can use this as a practice project after we've learned some 110 and cml. 8

all in all i'm really pleased with the way this looks. i'd be interested to know which offices you're planning to try this out on first. 9

SGR 15-APR-75 12:44 25721

comments on (macro,mrao,)

(J25721) 15-APR-75 12:44;;; Title: Author(s): Susan Gail Roetter/SGR; Distribution: /JMB([ACTION]) RH([ACTION]) EKM([INFO-ONLY]) JCN([INFO-ONLY]) PKA([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: SGR; Origin: < ROETTER, MRAO,NLS;1, >, 15-APR-75 12:40 SGR ;;;;####;

DVN 15-APR-75 13:21 25722

Please Really Add Rita Hysmith to DIRT

Susan just discovered that Rita Hysmith is not yet really on the DIRT distribution. Can you fix that up? She is RH. Could you also add Pam Allen (PKA). While you are about it you might remove JR (jake ratlif) and DCW (Smokey Wallace).

1

DVN 15-APR-75 13:21 25722

Please Really Add Rita Hysmith to DIRT

(J25722) 15-APR-75 13:21;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /MLK([ACTION]) DMB([ACTION] dirt notebook please) &DIRT([INFO-ONLY]) PKA([INFO-ONLY]) RH([INFO-ONLY]) SGR([INFO-ONLY]) ; Sub-Collections: SRI-ARC DIRT; Clerk: DVN;

DSM 15-APR-75 13:37 25723

Some Comparative Timings for typical NLS commands at BBNB, Office-1 and SRI-AI.

The following tables give the time of day, the elapsed time, the number of cpu milliseconds used, and the per cent of the total cpu used by this job in executing two complete NLS commands. In each case the first command executed is a slightly modified version of Insert Time(command uses approx 1300 ms cpu), and the second command executed is listed at the left.The times for the DNLS cases also include recreating the screen, The Load averages indicated are approximations. 1

The statistics are gathered by a process commands branch. To gather your very own statistics you may: 1a

At BBNB, 1a1

Process (Commands from) Branch (at) nls,newtimer,commands 1a1a

At Office-1, 1a2

Process (Commands from) Branch (at) documentation,newtimer,commands 1a2a

This will create a file called stopwatch in your directory. If you are using tnls you should Print Branch (at) stats to see the results. 1b

DNLS@BBNB Load ave = 1.45 2 users in 40% pie slice group 12-APR-75 2

COMMAND	Time	ET	CPUms	% of cpu	
Jump Link	17:52	23	6018	26%	2b
Insert statment	17:52	17	4856	27%	2c
Delete STatement	17:53	21	4558	21%	2d
Insert Text	17:53	13	4759	35%	2e
Delete Text	17:53	12	4721	38%	2f
Jump Origin	17:53	20	4869	24%	2g
Jump Content	17:54	19	7373	38%	2h
Jump Link	17:54	9	3663	38%	2i
Output Quickprint	17:54	9	3986	40%	2j
Totals	17:54	151	46764	30%	2k

DSM 15-APR-75 13:37 25723

Some Comparative Timings for typical NLS commands at BBNB, Office-1 and SRI-AI,

DNLS@BBNB Load ave = 3,33 7 users in 40% pie slice group 14-APR-75 3

COMMAND	Time	ET	CPUms	% of cpu	
Jump Link	17:28	29	5647	19%	3b
Insert statment	17:28	14	4564	31%	3c
Delete STatement	17:28	19	4268	21%	3d
Insert Text	17:28	14	3997	27%	3e
Delete Text	17:29	28	4155	14%	3f
Jump Origin	17:29	26	4306	16%	3g
Jump Content	17:30	23	7186	30%	3h
Jump Link	17:30	11	4145	37%	3i
Output Quickprint	17:31	49	4819	9%	3j
Totals	17:31	225	45094	19%	3k

TNLS@BBNB LOAD AVE = 1,65 2 users in 40% pie slice group 13-APR-75 4

COMMAND	Time	ET	CPUms	% of cpu	
Jump Link	19:55	5	3728	73%	4b
Insert statment	19:55	3	2954	81%	4c
Delete STatement	19:55	3	2800	88%	4d
Insert Text	19:55	3	2966	86%	4e
Delete Text	19:55	3	2917	87%	4f
Jump Origin	19:55	10	2540	23%	4g
Jump Content	19:55	8	5586	62%	4h
Jump Link	19:56	3	2725	84%	4i
Output Quickprint	19:56	4	3098	76%	4j
Totals	19:56	47	30753	65%	4k

DSM 15-APR-75 13:37 25723

Some Comparative Timings for typical NLS commands at BBNB, Office-1 and SRI-AI,

TNLS@BBNB Load Ave = 0,45 1 user in 40% pie slice group 14-APR-75 5

COMMAND	Time	ET	CPUms	% of cpu	
Jump Link	01:36	4	3415	69%	5b
Insert statment	01:36	3	2507	83%	5c
Delete STatement	01:36	2	2396	86%	5d
Insert Text	01:36	2	2541	87%	5e
Delete Text	01:36	11	2449	21%	5f
Jump Origin	01:36	2	2104	90%	5g
Jump Content	01:36	5	5003	85%	5h
Jump Link	01:36	2	2297	88%	5i
Output Quickprint	01:36	10	2602	23%	5j
Totals	01:36	48	26574	54%	5k

DNLS@SRI-AI load = 3,70 (7 users in 12% pie slice group) 14-APR-75 6

COMMAND	Time	ET	CPUms	% of cPu	
Jump Link	15:48	37	5622	14%	6b
Insert statment	15:48	29	4642	15%	6c
Delete STatement	15:49	20	4221	20%	6d
Insert Text	15:49	9	4204	42%	6e
Delete Text	15:49	22	4299	19%	6f
Jump Origin	15:50	26	4698	17%	6g
Jump Content	15:52	153	8063	5%	6h
Jump Link	15:53	47	4545	9%	6i
Output Quickprint	15:53	8	4168	48%	6j
Totals	15:53	371	46675	12%	6k

Some Comparative Timings for typical NLS commands at BBNB, Office-1 and SRI-AI.

TNLS@SRI-AI load = 2,60 (5 users in 12% pie slice group) 13-APR-75 7

	COMMAND	Time	ET	CPUms	% of cpu	
7a						
7b	Jump Link	17:50	8	3574	41%	
7c	Insert statment	17:50	5	2674	49%	
7d	Delete STatement	17:50	5	2522	50%	
7e	Insert Text	17:51	5	2781	48%	
7f	Delete Text	17:51	4	2670	62%	
7g	Jump Origin	17:51	2	2277	87%	
7h	Jump Content	17:51	9	5323	58%	
7i	Jump Link	17:51	4	2422	54%	
7j	Output Quickprint	17:51	5	2501	47%	
7k	Totals	17:51	51	28050	53%	

DNLS@OFFICE-1 Load ave = 4,66 14-APR-75 (one drum down) 8

	COMMAND	Time	ET	CPUms	% of cpu	
8a						
8b	Jump Link	14:50	49	3894	7%	
8c	Insert statment	14:50	39	2965	7%	
8d	Delete STatement	14:51	19	2403	12%	
8e	Insert Text	14:51	19	2502	12%	
8f	Delete Text	14:51	24	2540	10%	
8g	Jump Origin	14:52	27	2664	9%	
8h	Jump Content	14:52	29	5535	18%	
8i	Jump Link	14:53	19	2549	12%	
8j	Output Quickprint	14:53	12	2317	19%	
8k	Totals	14:53	255	28709	11%	

DSM 15-APR-75 13:37 25723

Some Comparative Timings for typical NLS commands at BBNB, Office-1 and SRI-AI.

DNLS@OFFICE-1 Load ave = 5.10 14-APR-75 (one drum down) 9

COMMAND	Time	ET	CPUms	% of cpu	
Jump Link	16:31	26	4173	15%	9b
Insert statment	16:31	25	3304	12%	9c
Delete STatement	16:32	29	2913	9%	9d
Insert Text	16:32	28	3287	11%	9e
Delete Text	16:32	18	2932	16%	9f
Jump Origin	16:33	19	3148	15%	9g
Jump Content	16:34	54	5774	10%	9h
Jump Link	16:34	18	2697	14%	9i
Output Quickprint	16:34	16	2523	15%	9j
Totals	16:34	251	32211	12%	9k

TNLS@OFFICE-1 Load ave = 9.05 14-APR-75 (one drum down) 10

COMMAND	Time	ET	CPUms	% of cpu	
Jump Link	10:57	55	2738	4%	10b
Insert statment	10:57	33	1625	4%	10c
Delete STatement	10:58	23	1628	7%	10d
Insert Text	10:58	23	1619	6%	10e
Delete Text	10:58	33	1674	5%	10f
Jump Origin	10:59	15	1274	8%	10g
Jump Content	11:00	75	4096	5%	10h
Jump Link	11:00	27	1818	6%	10i
Output Quickprint	11:01	49	1745	3%	10j
Totals	11:02	375	19338	5%	10K

DSM 15-APR-75 13:37 25723

Some Comparative Timings for typical NLS commands at BBNB, Office-1 and SRI-AI.

(J25723) 15-APR-75 13:37;;; Title: Author(s): David S. Maynard/DSM; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DSM;

RLL 15-APR-75 14:17 25724

Bug: with viewspec v

Place = BBNB, If you have frozen statements on, viewspec v set (defer recreate), and then do a release frozen statement command the result is a blank screen. I repeated this a total of three time to be sure. I suspect there might be other situations where this might happen so it might be a more general problem that needs checking. In any case, with the slowness of refreshing the viewspec v is becoming more important and bugs associated with it should get high priority. thanks. P.S. aother bug: the displayed viewspecs on the screen (DNLS) have a "u" viewspec where in fact it is a "v" viewspec. This happens after one does a "f" viewspec while "v" is on. (did you get all that?).

1

RLL 15-APR-75 14:17 25724

Bug: with viewspec v

(J25724) 15-APR-75 14:17;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /FEED([ACTION]) JCN([INFO-ONLY]) JHB([INFO-ONLY]) RA3Y([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RLL;

DVN 15-APR-75 15:14 25725

Visit from Representative of G E San Jose Nuclear Enginneerig
Proposal Group Delayed

At his request, the vist has been moved to 10:00 Wednesday the 23. 1

DVN 15-APR-75 15:14 25725

Visit from Representative of G E San Jose Nuclear Enginneerig
Proposal Group Delayed

(J25725) 15-APR-75 15:14;;;; Title: (Unrecorded) Title:
Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /EKM([INFO-ONLY])
PWO([INFO-ONLY]) RLB2([INFO-ONLY]) RLL([INFO-ONLY]) DCE([
INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DVN;

KS 15-APR-75 15:26 25726

Please read file <SATILEY, FE-CMDS,>.

Charles: 1

I've created an NLS file < SATTLEY, FE-CMDS, :G > which you're invited -- indeed, urged perhaps -- to read. When it's completed, its main value to you will be that it will provide a full specification of the Help (or is it "Co-Routine") returns from the WM White Boxes to the FE, and for each return, a specification of what responses the WM will expect upon resumption. For our use here, it will serve as a record of what exchanges occur between the user and the WM. 2

The file is not complete yet, but it is far enough along for you to be able to criticise the structure and approach; I'll continue -- either in this form or in some better one we work out between us -- to complete the specifications you need. To within some fudging about Semaphores, it is intended to be complete for the three basic file commands DELETE, RENAME, COPY, and I've gotten started on RUNtool and ENDtool. 3

Please feel free to read or copy the file at any time, though I'll be making changes to it frequently for the rest of this week, and beyond. 4

Looking forward to hearing from you. 5

-- Kirk. 6

KS 15-APR-75 15:26 25726

Please read file <SATTLEY, FE-CMDS,>.

(J25726) 15-APR-75 15:26;;; Title: Author(s): Kirk Sattley/KS;
Distribution: /CHI([ACTION]) WEC([INFO-ONLY]) SW([INFO-ONLY]
) REM([INFO-CNLY]) ; Sub-Collections: NIC; Clerk: KS;

preliminary Graphics Editor User Interface Design

The graphics editor provides the user with a set of commands to create, modify and view diagrams stored within an NLS file. 1

DIAGRAM is the name given to the higest structural level containing linework and captions. Diagrams are associated with an existing statement within an NLS file by means of the Originate Diagram command. Once created diagrams can be manipulated by the following commands. 2

Originate Diagram (at statement) DESTINATION OK 2a

Move Diagram (from statement) DESTINATION (to statement) DESTINATION OK 2b

Copy Diagram (from statement) DESTINATION (to statement) DESTINATION OK 2c

Erase Diagram (at statement) DESTINATION OK 2d

Each diagram is constructed from one or more CELL's. These cell's are similar in function to the acetate cells used by illustrators and animators. Figures, such as rectangles, circles and captions, are drawn onto a specific cell. While figures cannot be named directly, each cell has a unique name. A cell has its own origin so that several cells may be arranged in two-space to form the final illustration. The REFERENCE COORDINATE is a arbitrary point on the source cell which will be mapped onto the open cell at the given coordinate. The following commands manipulate cells: 3

Originate Cell (named) CONTENT OK 3a

Move Cell (or SUBCELL named) CONTENT (reference coordinate) (to) OK 3b

Copy Cell (or SUBCELL named) CONTENT (reference coordinate) (to) OK 3c

Erase Cell (or SUBCELL named) CONTENT OK 3d

A SUBCELL is simply a cell whose origin is based on a parent cell. Each subcell takes its name from both its own and its parent's as the Originate Subcell command shows. Any number of subcells may be attached to a cell, and any cell or or subcell may have a subcell attached to it. 4

Originate Subcell (parent's name) CONTENT (name) CONTENT OK 4a

Line work can only be placed into the OPEN cell. The originate commands open the new cell so that all draw and move commands

manipulate the figures within the open cell. To re-open a cell for editing the following command is used. 5

Refer (to cell or subcell named) CONTENT OK 5a

Figures are drawn using the DRAW command. Each draw command collects coordinate information from the user to construct the desired figure. The figures is displayed and stored in the NLS file within the open cell. 6

Draw Arrowhead (pointing) Along (a line starting) (ending) OK 6a

Draw Arrowhead (pointing) Right (at) OK 6b

Draw Arrowhead (pointing) Left (at) OK 6c

Draw Arrowhead (pointing) Down (at) OK 6d

Draw Arrowhead (pointing) Up (at) OK 6e

Draw Circle (center) Touching (point) OK 6f

Draw Circle (center) Vertically (tangent to) OK 6g

Draw Circle (center) Horizontally (tangent to) OK 6h

Draw Diamond (top at) (bottom at) (side at) OK 6i

Draw Line (between) (and) OK 6j

Draw Point (at) OK 6k

Draw Rectangle (corner at) (opposite at) OK 6l

Draw Triangle (pointing) Along (a line starting) (ending) (one base point at) OK 6m

Draw Triangle (pointing) Right (top) (one base point at) OK 6n

Draw Triangle (pointing) Left (top) (one base point at) OK 6o

Draw Triangle (pointing) Down (top) (one base point at) OK 6p

Draw Triangle (pointing) Up (top) (one base point at) OK 6q

Draw Unconstrained (line between) (and) OK 6r

Figures (Lines, Circles, Triangles, etc) may be manipulated by means of an ATTACHING POINT associated with every figure. The attaching

point is the LEFT MOST UPPER point on the figure. For example the left side of a circle or diamond or the upper left hand cornor of a rectangle. By means of attaching points, any figure may be moved, erased or copied by the following commands. 7

Erase FIGURE (at) OK 7a

Move FIGURE (at) (to) OK 7b

Copy Circle (at) (to) OK 7c

Copy Triangle (at) (to) OK 7d

Copy Diamond (at) (to) OK 7e

Copy Rectangle (at) (to) OK 7f

Cells may be copied either directly or with a transformation of size and angle. This form of copy allows the creation of libraries of commonly used cells to be used as templates. 8

Copy Cell (or SUBCELL named) CONTENT (reference coordinate) (to) OK 8a

Transform (the cell named) OK 8b

Captions within the diagram may consist of one or more statement, that is a plex of an NLS file. Space in which to portray the caption is assigned by the user for each caption along with the initial text. Caption text is simply standard NLS statements and can be edited directly with the facilities of the NLS editor. 9

Anotate (the window at) (and) CONTENT OK 9a

The format for text displayed in a window is controlled by the Set command. 10

Set Justification Center OK 10a

Set Justification Right OK 10b

Set Justification Left OK 10c

Once established the caption format can be changed by means of the Change command. 11

Change Justification Center (for anotation at) DESTINATION OK 11a

Change Justification Right (for anotation at) DESTINATION OK 11b

Change Justification Left (for anotation at) DESTINATION OK 11c

Space on the graphics window can be PARTITIONED by the following commands. 12

Partition (the graphics window) Vertically (through) OK 12a

Partition (the graphics window) Horizontally (through) OK 12b

Move Partition (at) (to) OK 12c

Erase partition (at) OK 12d

Graphics windows may be ASSOCIATED with text windows by means of the following command. Diagrams connected to statements in the text window will be displayed in the associated graphics window. 13

Associate (graphics window) (with text window) OK 13a

Dissociate (graphics window) OK 13b

The use of storage tubes in the graphics workstation precludes the automatic update of screen information, moreover, the time required to repaint the screen may be several minutes for complex pictures and high loads. The Update command provides the user the option to repaint the current state of the display. 14

Update (all the graphics viewports) OK 14a

Workstation verification may be accomplished by the Test command which exercises the terminal so that the user may verify that all is in working order. 15

Test (*** Configuration CheckOut ***) OK 15a

Preliminary Graphics Editor User Interface Design

(J25727) 15-APR-75 15:30;;; Title: Author(s): Robert Louis Belleville/RLB2; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RLB2; Origin: < BELLEVILLE, GRAPHICS-EDITOR-COMMANDS.NLS;1, >, 15-APR-75 15:20 RLB2 ;;;;####;

Copying files within NSW

Note: 1

This needs to be combined with the file structure types and the conversion procedure ideas. 1a

Introduction 2

This is a description of the procedures involved in moving a NSW file from one file package controlled location to another file package controlled location. 2a

General Structure 3

filespec = LIST (directory, password, filename, element-spec) 3a

fileelm = LIST (ph, did, filename, element-spec) 3b

COPY (NSW => NSW) 3c

Internal Works Manager routine looks up the two file references and determines the source and destination locations, and source and destination file package names for the files. 3c1

Internal Works Manager routine creates a channel between the source and destination file packages (which are already open) by calling on the local process management package. 3c2

CRTPHYCHN (ph1, Ph2 => poh1, poh2, pcn) 3c3

The internal Works Manager routine calls the PULLFILE procedure in the "macro file package" at the source location. 3c4

PULLFILE (filespec, dstype, dst => value) 3c5

This routine simply parses out the filespec arguments and calls the file package to first open the directory and then get the file. 3c5a

OPNDIR (directory, password => did) 3c5b

GETFIL (fileelm, disp, dst, dstype => value) 3c5c

The file access parameters are checked and then the sub procedure getit is called. 3c5c1

GETIT (fileelm, disp, dst, dstype => value) 3c5c2

This routine actually reads the file from the local file system and send the file via the IPC procedure

SNDMSG, generally this will require a series of file reads and sndmsgs. 3c5c2a

SNDMSG (pohi, message) 3c5c2b

The internal Works Manager routine calls the PUSHFILE procedure in the "macro file package" at the destination location. 3c6

PUSHFILE (filespec, srctype, src) 3c7

This routine simply parses out the filespec arguments and calls the file package to first open the directory and then put the file. 3c7a

OPNDIR (directory, password => did) 3c7b

PUTFIL (fileelm, disp, src, srctype) 3c7c

The file access parameters are checked and then the sub procedure putit is called. 3c7c1

PUTIT (fileelm, disp, src, srctype) 3c7c2

This routine actually receives the file via the IPC procedure RCVMSG and stores the file to the local file system, generally this will require a series of rcvmsgs and file stores. 3c7c2a

RCVMSG (pohi, message) 3c7c2b

Particular Structure 4

NSW-file = LIST (filespec, locspec) 4a

filespec = LIST (directory, password, filename, element-spec) 4b

fileelm = LIST (ph, did, filename, element-spec) 4c

Note: the notation 4d

listname(i) 4d1

indicates the "i-th" element of the list "listname". 4e

COPY (NSW-file => NSW-file) 4f

CRTPHYCHN (ph1, ph2 => sport, dport, pcn) 4f1

PULLFILE (filespec, CHNL, sport => value) 4f2

```
        directory <= filespec(1)                                    4f2a

        password <= filespec(2)                                     4f2b

        OPNDIR ( directory, password => did )                       4f2c

        fileelm <= LIST ( did, filespec(3), filespec(4) )           4f2d

        GETFIL ( fileelm, RETAIN, sport, CHNL => value )            4f2e

           GETIT ( fileelm, RETAIN, sport, CHNL => value )          4f2e1

              loop:                                                 4f2e1a

                 message <= % a portion of the file element
                 specified encoded as          a PCP data
                 structure %                                        4f2e1a1

                 SNDMSG ( poh1, message )                           4f2e1a2

                 if not end of file then go to loop                 4f2e1a3

              end                                                   4f2e1b

     PUSHFILE ( filespec, CHNL, dport )                             4f3

        directory <= filespec(1)                                    4f3a

        password <= filespec(2)                                     4f3b

        OPNDIR ( directory, password => did )                       4f3c

        fileelm <= LIST ( did, filespec(3), filespec(4) )           4f3d

        PUTFIL ( fileelm, RETAIN, dport, CHNL )                     4f3e

           PUTIT ( fileelm, RETAIN, dport, CHNL )                   4f3e1

              loop:                                                 4f3e1a

                 RCVMSG ( poh1, message )                           4f3e1a1

                 % a portion of the file element specified decoded
                 from          a PCP data structure % <= message    4f3e1a2

                 if not end of file then go to loop                 4f3e1a3

              end                                                   4f3e1b
```

Copying files within NSW

(J25728) 15-APR-75 16:00;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /JBP([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JBP; Origin: < POSTEL, FILE-COPIES,NLS;4, >, 27-FEB-75 18:35 JBP ;;;;####;

Copying files within NSW

Introduction 1

This is a description of my model of the procedures involved in moving a NSW file from one file package controlled location to another file package controlled location. 1a

The Model 2

COPY (nswfilename1 -> nswfilename2) 2a

The internal Works Manager routine looks up the two file references and determines the source and destination locations, and source and destination file package names for the files. 2a1

ph1 - source process 2a1a

ph2 - destination process 2a1b

A file is specified by three character strings: the directory, the password, and the name. 2a2

filename1 - source file 2a2a

filename1 - LIST (workspace1, name1) 2a2a1

workspace1 - LIST (directory1, password1) 2a2a1a

filename2 - destination file 2a2b

filename2 - LIST (workspace2, name2) 2a2b1

workspace2 - LIST (directory2, password2) 2a2b1a

The internal Works Manager routine creates a channel between the source and destination file packages (which are already open) by calling on the local (to the WM) process management package. 2a3

CRTPHYCHN (ph1, ph2 -> poh1, poh2, pcn) 2a4

poh1 - handle by which ph1 knows the channel 2a4a

poh2 - handle by which ph2 knows the channel 2a4b

pcn - handle by which the WM knows the channel 2a4c

The internal Works Manager routine calls the GETFILES procedure in the file package at the source location. 2a5

srclist = LIST (filename1) 2a5a

filtypelist1 = LIST (filetype1) 2a5b

disp = RETAIN 2a5c

Getfiles (srclist, filtypelist1, disp, poh1) 2a6

The files are sent on the physical channel indicated by poh1 as specified by srclist. 2a6a

The type information in filtypelist1 is used to determine the mapping from storage format to transmission format for the files. 2a6b

The retention or deletion of the source files is indicated by disp. All files in srclist have the same disp. 2a6c

The file access parameters are checked. 2a6d

This routine actually reads the file from the local file system and send the file in the PCP format indicated by filetype1 via the IPC procedure SNDMSG, generally this will require a series of file reads and sndmsgs. 2a6e

message = a portion of the file 2a6e1

SNDMSG (poh1, message) 2a6f

The internal Works Manager routine calls the Putfiles procedure in the file package at the destination location. 2a7

dstlist = LIST (filename2) 2a7a

filetypelist2 = LIST (filetype2) 2a7b

Putfiles (dstlist, filetypelist2, poh2 -> EMPTY) 2a8

The files received on the physical channel indicated by poh2 are assigned the names and entered into directories as indicated by dstlist. 2a8a

The type information in filetypelist2 is used to determine the storage format for the files. 2a8b

The file access parameters are checked. 2a8c

This routine actually receives the file via the IPC procedure RCVMSG and stores the file to the local file

system, generally this will require a series of rcvmsgs and file stores. 2a8d

message = a portion of the file 2a8d1

RCVMSG (pohi, message) 2a8e

Comments 3

The procedures Getfiles and Putfiles must be implemented such that there is careful consideration of the asynchronous timing of the calls. 3a

If parallel calls are made to a pair of file packages the caller must be careful to provide a distinct channel for each simultaneous transfer requested. 3b

References 4

The File Package (25677,) 4a

File Types (25714,) 4b

JBP 15-APR-75 21:02 25730

Copying files within NSW

(J25730) 15-APR-75 21:02;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /NSW([INFO-ONLY]) NPG([INFO-ONLY]) ; Sub-Collections: SRI-ARC NSW NPG; Clerk: JBP; Origin: < POSTEL, COPYING-FILES.NLS;2, >, 15-APR-75 20:56 JBP ;;;;####;

RLL 13-MAY-75 02:41 25731

Contact report: NAVCOSSACT, McKenzie on 20Mar75

(NAVCOSSACT) A contact report 25731 1

(DATE) 20 Mar 75 1a

(BY) LIEBERMAN 1b

(ATTENDEES) 1c

Doug McKenzie (M3) - NAVCOSSACT 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

New phone number = 202-433-3930 1d1

Home phone number = 301-345-2914 1d2

Al Sorkowitz (S8) phone = 301-937-8674 1d3

(MEDIUM) PHONE 1e

(WHERE) Menlo Park, CA and Washington, DC 1f

(ACTION-ITEMS) 1g

Phone Doug back with info. 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25752 25732 25746 25751 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Doug and Al Sorkowitz of NAVCOSSACT (Naval Command System Support Activity) visited Frank Brignoli (FGB) this week. The result was that NAVCOSSACT could use the NSRDC slots for the six months beginning 1 July 75. I don't know to what extent, but they will get a directory or two. 1k1

NAVCOSSACT would like to lease a Line Processor, mouse, and keyset. 1k2

Contact report: NAVCOSSACT, McKenzie on 20Mar75

They have talked to Cybernex on buying mice and keysets for their in-house built terminals. 1k2a

They would like the display workstation up and running by 1 July 1975. 1k2b

At the moment they plan to use Vadic modems to a local TIP. 1k3

After a six-month experiment with NLS, NAVCOSSACT will consider one of the following options: 1k4

(1) buy slots on their own right 1k4a

(2) install NLS on their computers 1k4b

(3) drop the use of NLS 1k4c

I will check back with Doug on the possibility of leasing line processors. 1k5

RLL 13-MAY-75 02:41 25731

Contact report: NAVCOSSACT, McKenzie on 20Mar75

(J25731) 13-MAY-75 02:41;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact Report: NAVCOSSACT, McKenzie 21Mar75

(NAVCOSSACT) A contact report 25732 1

(DATE) 21 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Doug McKenzie - NAVCOSSACT 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) PHONE 1e

(WHERE) Menlo Park, CA and Washington, DC 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25752 25731 25746 25751 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

I called Doug McKenzie to tell him that our policy is not to lease line processors. He will try to find the money for buying the equipment. Also he will talk again to Cybernex on the possiblity of leasing the equipment from them. 1k1

He asked if a 1 July 1975 deadline could be met for delivery of a line processor, mouse, and keyset. 1k2

I told him I thought so, but I will have to check. 1k2a

Doug informed me that NAVCOSSACT is building a terminal in-house that will sell, hopefully, for $2500 to $3000. 1k3

It will have an extend character set beyond full ASCII. The

fonts and styles will be changeable with a ROM (Read Only Memory). 1k3a

Graphics will be possible. They have been suitably impressed enough with the mouse and keyset that they are now planning to incorporate them into the terminal. 1k3b

Doug will keep us posted on the progress of this terminal. 1k3c

It might be available for production in a year or so. 1k4

Contact Report: NAVCOSSACT, McKenzie 21Mar75

(J25732) 13-MAY-75 02:44;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: KAISER, Koreneff on 21Mar75

(KAISER) A contact report 25733 1

(DATE) 21 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

C. Koreneff - Kaiser 1c1

Dave Berg - SRI-USS 1c2

Kathy Green - SRI-USS 1c3

Robert Lieberman -SRI-ARC 1c4

(ADDRESSES) Full name of organization, address, and phone number 1d

Koreneff, project director 1d1

Health Orientation Services 1d1a

Kaiser-Permanente Medical Center 1d1b

900 Kiely Boulevard 1d1c

Santa Clara, CA 95051 1d1d

408-246-4000, x741 1d1e

Brown and Green 1d2

Urban and Social Systems Division 1d2a

x3887 1d2b

(MEDIUM) FACE-TO-FACE 1e

(WHERE) SRI, Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

Contact report: KAISER, Koreneff on 21Mar75

(GIVEN) Date and documents given 1j1

"Coordinated Information Services for a Discipline- or Mission-Oriented Community," Douglas Engelbart, 12-DEC-72, (mjournal,12445,) 1j1a

"The Augmented Knowledge Workshop," Douglas C. Engelbart, Richard W. Watson, and James C. Norton, 1-MAR-73, (ijournal,14724,) 1j1b

"The SRI-ARC Workshop Utility Service: What and Why," James Norton, 1-OCT-74, (jjournal,24031,) 1j1c

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

The Urban and Social Systems Division arranged a visit by Dr. Koreneff of the Kaiser Foundation. I gave a demonstration to Koreneff, Berg, and Kathy Green, also of USS Division. Green is working on a heart study project for Kaiser. 1k1

We only had one hour to talk. In this short period, I covered the bare essentials of our system. 1k2

Koreneff's interest is in having doctors read or write medical reports, status reports, lab reports, patient histories, etc., on-line with many CRT terminals throughout a hospital. 1k3

Eventually, communications to other hospitals is desired. 1k4

Another application is to interface the doctor with diagnostic and analysis computer programs. 1k5

Although hurried, I thought Koreneff was interested. 1k6

A much better philosophical background must be given to him if he revisits. 1k7

He is apparently not familiar with computer technology, but was fascinated by the terminal. 1k7a

RLL 13-MAY-75 02:47 25733

Contact report: KAISER, Koreneff on 21Mar75

(J25733) 13-MAY-75 02:47;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report:Steve Brown [SRI] 7Mar75

(EPA) A contact report 25734 1

(DATE) 7 MAR 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Steve Brown - SRI-ESD 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

Brown 1d1

Engineering Systems Division 1d1a

SRI 1d1b

(MEDIUM) FACE-TO-FACE 1e

(WHERE) SRI, Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25735 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Steve Brown of SRI recommended that I make contact with his Project Manager, Bill McCarthy. Apparently, they (EPA) have several contractors preparing jointly authored reports. This distributed community is presently using WORD ONE text editor. 1k1

There is some discontent and dissatisfaction with WORD ONE. It is not rich enough or flexible enough for the application EPA has. Thus, Steve Brown thought it would be appropriate to call on EPA. 1k1a

Contact report:Steve Brown [SRI] 7Mar75

Steve also gave me the name of the data coordinator D. Swink <S9>, in the Office of R and D at EPA. Harry Landon <L1> (202-426-9454) is a technical type that might be interested. 1k2

RLL 13-MAY-75 02:49 25734

Contact report:Steve Brown [SRI] 7Mar75

(J25734) 13-MAY-75 02:49;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: EPA, McCarthy on 11Mar75

(EPA) Contact report 25735 1

(DATE) 11 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Bill McCarthy - EPA 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

McCarthy 1d1

Environmental Protection Agency 1d1a

401 M. Street 1d1b

West Tower, Room 611 1d1c

Washington, DC 1d1d

202-755-8823 1d1e

(MEDIUM) PHONE 1e

(WHERE) Washington, DC 1f

(ACTION-ITEMS) 1g

Call back in a few weeks 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25734 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

"Coordinated Information Services for a Discipline- or Mission-Oriented Community," Douglas Engelbart, 12-DEC-72, (mjournal,12445,) 1j1a

"The Augmented Knowledge Workshop," Douglas C. Engelbart, Richard W. Watson, and James C. Norton, 1-MAR-73, (ijournal,14724,) 1j1b

Contact report: EPA, McCarthy on 11Mar75

"Investments in Tomorrow," SRI, No. 14, Winter 1975 1j1c

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

In response to Steve Brown's suggestion (see -- 25734,), I called McCarthy when I was in the Washington, D.C. area. 1k1

After a few words on what NLS is all about, he said he would prefer a short paragraph or two to read. The next day I delivered the three above referenced documents. 1k2

My impression is that Bill is not knowledgeable in the computer field and operates in a conservative business-like manner. 1k3

I feel additional contact should be made via Steve Brown, if it is to be made at all. 1k4

RLL 13-MAY-75 02:52 25735

Contact report: EPA, McCarthy on 11Mar75

(J25735) 13-MAY-75 02:52;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /DCE([INFO-ONLY]) ARC-LOG([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: ALFA-LAVAL, Brynne on 19Mar75

(LAVAL) Contact report 25736 1

(DATE) 19 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Bengt Brynne <B5> - ALFA-LAVAL 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

Brynne 1d1

Manager Technical Documentation 1d1a

ALFA-LAVAL 1d1b

Reseach and Development Group Staff, 1d1c

Tumba, Sweden 1d1d

Phone 0753/311 00 1d1e

(MEDIUM) FACE-TO-FACE 1e

(WHERE) SRI, Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

"Coordinated Information Services for a Discipline- or Mission-Oriented Community," Douglas Engelbart, 12-DEC-72, (mjournal,12445,) 1j1a

"The Augmented Knowledge Workshop," Douglas C. Engelbart, Richard W. Watson, and James C. Norton, 1-MAR-73, (ijournal,14724,) 1j1b

Contact report: ALFA-LAVAL, Brynne on 19Mar75

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Bengt Brynne learned of our work from a paper by Conrath and Bair, "The Computer as an Interpersonal Communication Device: A Study of Augmentation Technology and Its Apparent Impact on Organizational Communication," 1k1

I gave him a 2 1/2 hour demo. That night we had dinner together and spoke more on the relationship between NLS and his application. 1k2

I believe Brynne was pleasantly surprised by what he saw and has definite intentions to talk to us again in several months, with a strong possibility of having an Alfa-Lava subsidiary in Poughkeepsie, N.Y., participate in our utility. He will also contact Dr. Samuelson in Stockholm to participate. Alfa-Lava is a relatively large company principally manufacturing milk separators. They have some 10 to 12 million U.S.A. dollars spent in R. and D. each year. 1k3

Brynne has the objective of fostering better communication among the various parts of this world-wide company. 1k4

Presently they have some 7,000 documents catalogued in an information-retrieval system. 1k5

They use the IMDOC system. He wishes to run pilot studies on what are the information needs of a large company and what are the means for better communication. 1k6

Brynne believes our system joined with his studies in formatting data in information needs, etc., would make a good marriage. 1k7

RLL 13-MAY-75 02:54 25736

Contact report: ALFA-LAVAL, Brynne on 19Mar75

(J25736) 13-MAY-75 02:54;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

RLL 13-MAY-75 02:56 25737

Contact report: NWC, Zenor on 20Mar75

(ZENOR) Contact report 25737 1

(DATE) 20 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

John Zenor <Z1> - NWC 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) FACE-TO-FACE 1e

(WHERE) SRI, Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL JHB 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

John Zenor of the Naval Weapons Center in China Lake, California, will be using NLS as part of the NSRDC slots. He came to ARC to learn about the system. 1k1

I (RLL) gave him a brief conceptual overview of the system. Jim Bair gave a demonstration and began training for John. 1k2

NWC is a very progressive Navy Research and Development Laboratory that has potential of using NLS. The technical director, Hollingsworth, would be the proper person to contact after NWC gains some familiarity with the advantages of NLS. 1k3

RLL 13-MAY-75 02:56 25737

Contact report: NWC, Zenor on 20Mar75

(J25737) 13-MAY-75 02:56;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) JHB([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: List of tried but uncontact people, 10Mar-14Mar75

(NO-VISITS) Contact report 25738 1

(DATE) 10 Mar to 14 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Dr. Christenson - NIOSH 1c1

Dr. O'Neil - ARPA 1c2

Bob Kahn - ARPA 1c3

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) 1e

(WHERE) Washington, DC 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

The above people were NOT contacted during my recent trip to Washington because of vacations, travel, etc. Phone contact with someone at their respective offices were made and my name was left. 1k1

RLL 13-MAY-75 02:59 25738

Contact report: List of tried but uncontact people, 10Mar-14Mar75

(J25738) 13-MAY-75 02:59;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: ARPA, McLindon on 11Mar75

(MCLINDON) contact report 25739 1

(DATE) 11 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Connie McLindon - ARPA 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) FACE-TO-FACE 1e

(WHERE) ARPA, Arlington, VA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

On my trip to Washington, D. C., I spoke to Connie several times on things in general. Of course, the initial conversation centered about the problems ARPA was having with Office-1 and the ARPANET. 1k1

She emphasized the seriousness and crisis of the situation. Connie conveyed the strong dislike for "mere verbiage" that she has consistently received from SRI and BBN. 1k1a

She wanted to know exactly what was being done to find the problem. Analysis is needed and not more conjectures of where the problems might be. 1k1b

Finally, the quality of the FEEDBACK responses has substantially deteriorated to the point of being irritating. 1k1c

Contact report: ARPA, McLindon on 11Mar75

(J25739) 13-MAY-75 03:01;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: OSHA,Boyd on 12Mar75

(OSHA) Contact report 25740 1

(DATE) 12 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Dr. Dan Boyd <B3> - OSHA 1c1

Robert Cluck <C5> - OSHA 1c2

Pete Bouker <B6> - OSHA 1c3

Pete Lunnie <L2> - OSHA 1c4

Robert Lieberman - SRI-ARC 1c5

(ADDRESSES) Full name of organization, address, and phone number 1d

Occupational Safety and Health Administration 1d1

1726 M Street NW 1d2

Washington, DC 1d3

Boyd phone = 202-961-5248 Room number = 610 1d4

Cluck phone = 202-961-4243 1d5

OLD

(MEDIUM) FACE-TO-FACE 1e

(WHERE) OSHA, Washington, DC 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25741 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

Draft of "Using Technology to increase the information and

decrease the time for the regulatory process," Dan Boyd NODATE 1j2a

(REMARKS) 1k

For several hours I talked to the above attendees. Dr. Boyd is the director of one of the divisions at OSHA. Except for Bouker, who comes from the Office Management Data Systems Division, all the above attendees work for Boyd. 1k1

Gary Hartzler, not present, is currently doing a requirement analysis for Boyd. There are about 100 people on Boyd's staff. 1k2

Dan stated that the mission of OSHA is to promulgate standards in the area of Occupational Safety and Health. 1k3

There are many regional offices of some 60 to 100 people each. As the given draft document states, Boyd has a problem of getting information from various sources, communicating to diverse groups (10 regional offices and many of the organizations), and coordinating the formulation of standards. 1k4

After telling what facilities we have developed SRI-ARC, the conclusion was that we had a very good match of their needs with our services. 1k5

Because of time constraints, the actual demonstration was postponed until Friday morning. Dr. Boyd wanted us to put forth an unsolicited proposal to include one slot, one display workstation, and perhaps some other terminals. It was also unclear as to what communications channel they would be using. Boyd, being decisive, asked if $100,000 would be enough to cover everything. I thought that would. 1k6

Contact report: OSHA,Boyd on 12Mar75

(J25740) 13-MAY-75 03:07;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

RLL 13-MAY-75 03:09 25741

Contact report: OSHA, Boyd on 14Mar75

(OSHA) Contact report 25741 1

(DATE) 14 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Dan Boyd - OSHA 1c1

Robert Cluck - OSHA 1c2

Pete Lunnie - OSHA 1c3

Phil Hartzler - consultant for OSHA 1c4

Grover Wrenn - OSHA 1c5

Joan Begelman - consultant for OSHA 1c6

Robert Lieberman - SRI-ARC 1c7

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) FACE-TO-FACE 1e

(WHERE) ARPA, Rosslyn, VA 1f

(ACTION-ITEMS) 1g

Call back the week of the 7 April. 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25740 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

The above attendees were present at the demonstration I gave for OSHA. Most everyone seemed pleased. Dr. Boyd was very satisfied with what he saw. 1k1

I gathered that the coherent, integrated approach that NLS

offers is a very strong advantage. Boyd was even suggesting that additional moves might be found to have some interfaces made to special systems; for example, MEDLINE. 1k2

Another point which caught his fancy is the possibility of NLS accepting MAGCARD input or interfacing with the ATS sytem (I believe this is an IBM product). 1k3

Dan was enthusiastic enough to want to have access to NLS as soon as possible. I thought it best that one or more of their technical types talk more closely with us and Boyd so that OSHA would have a better idea of what kind of augmentation will be provided. 1k4

The week of 7 April we are expected to contact one another. 1k5

Overall, I got the impression that Boyd was willing to pump money into NLS. It remains to be seen how real a possibility this is. 1k6

RLL 13-MAY-75 03:09 25741

Contact report: OSHA, Boyd on 14Mar75

(J25741) 13-MAY-75 03:09;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) RLL([INFO-ONLY]) JCN([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: Air Univ., Westfall on 4 Mar75

(AIRU) contact report 25742 1

(DATE) 4 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Col. Westfall - AIRU 1c1

Robert Lieberman - SRI-ARC 1c2

Doug Engelbart - SRI-ARC 1c3

(ADDRESSES) Full name of organization, address, and phone number 1d

Westfall 1d1

Air University 1d1a

Maxwell AFB, Alabama 1d1b

Phone 205-293-5103 1d1c

(MEDIUM) FACE-TO-FACE 1e

(WHERE) SRI, Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Colonel Westfall is the Deputy Chief of Staff at Air University in Alabama. He is a friend of Bob Rodden of SRI. In fact, Westfall was on an assignment at SRI for a year. Dave Brown of SRI notified us of his coming. Westfall has a Ph.D. in physics. 1k1

Contact report: Air Univ., Westfall on 4 Mar75

Some 310,000 students are trained by Air University per year. Most-- 240,000--take job-related training courses at their various bases throughout the world. Typically, each course volume is 30 hours of work in 3 to 4 calendar months. Usually a student takes 3 volumes. 1k2

The other students take education courses in subjects such as operational research, management, programming, etc. 1k3

The courses are contained in hardcopy documents that are mailed to the various sites. In most cases, an expert is on hand to assist the student. 1k4

Another smaller part of Air University is AFIT (Air Force Institute of Technology). Actual course work is given at the University. 1k5

They will have the TICKET system on 7 May 1975 and PLATO in April. The LTS terminal will come sometime in the future. 1k6

The authors of the manuals, tests, etc., are usually not at the University. Air University does the editing, reviewing, packaging, and mailing of the documents. 1k7

At the moment they are using MAGCARD for the authors; this is then transferred to a computer. 1k8

I (Lieberman) gave him a demo, but felt the relevance of NLS to his application was not received by him. He was much too interested in the methods of training. Also, some time was wasted, since he initially thought NLS was the MAE system. I did not realize this until later. 1k9

Contact report: Air Univ., Westfall on 4 Mar75

(J25742) 13-MAY-75 03:12;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) RLL([INFO-ONLY]) JCN([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

RLL 13-MAY-75 03:15 25743

Contact report: SRI, Discher re NIOSH on 7Mar75

(NIOSH) Contact report 25743 1

(DATE) 7 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Dr. David Discher - SRI 1c1

Robert Lieberman - SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

Discher 1d1

SRI 1d1a

Director of Center for Occupational and Environmental Safety and Health 1d1b

Phone = x5077 1d1c

(MEDIUM) PHONE 1e

(WHERE) Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

As head of the NIOSH Project for SRI, I spoke to Dr. Discher to find out the appropriate person to talk to at NIOSH. 1k1

Discher pointed me to Dr. Herb Christenson (301) 443-3680. In fact, Christenson has expressed some interest in using NLS. 1k2

Contact report: SRI, Discher re NIOSH on 7Mar75

Vernon Rose is the Director of the Office of Research and Standards; Christenson is the Deputy Director. Rose, however, is on leave for one year. 1k3

RLL 13-MAY-75 03:15 25743

Contact report: SRI, Discher re NIOSH on 7Mar75

(J25743) 13-MAY-75 03:15;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: Stefferud on 18Mar75

(STEFFERUD) Contact report 25744 1

(DATE) 18 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Einar Stefferud 1c1

Doug Engelbart - SRI-ARC 1c2

Robert Lieberman - SRI-ARC 1c3

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) FACE-TO-FACE 1e

(WHERE) SRI, Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Doug and Stefferud talked about the possibility of having Stefferud consult us on specific management policies. 1k1

Doug thought the specific outline of management and roles within our organization should be addressed. Any further discussion should be after DCE talks to Norton. 1k2

Doug revealed the existence of an ARC Steering Committee composed of some higher SRI officials. 1k3

This committee will act on a higher level. 1k3a

RLL 13-MAY-75 03:40 25744

Contact report: Stefferud on 18Mar75

(J25744) 13-MAY-75 03:40;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: AMC, Uhlig on 11Mar75

(AMC) contact report 25745 1

(DATE) 11 Mar 75 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Ron Uhlig - AMC 1c1

Shirley Martin - AMC 1c2

Ed Van Gehern - AMC 1c3

Robert Lieberman - SRI-ARC 1c4

(ADDRESSES) Full name of organization, address, and phone number 1d

Shirley Martin 1d1

Phone 274-8949/50 1d1a

(MEDIUM) FACE-TO-FACE 1e

(WHERE) AMC-HQ, Alexandria, VA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

"Investments in Tomorrow," SRI, No. 14, Winter 1975 1j1a

(RECEIVED) Date and documents received 1j2

Copy of Letter sent to members of the SECC from Uhlig 1j2a

(REMARKS) 1k

Their initial attempt of NLS training will be for the secretaries of division chiefs, directors, and agency heads. Only the very simple things will be shown. 1k1

Contact report: AMC, Uhlig on 11Mar75

The real payoff for AMC (Army Materiel Command) is in Teleconferencing. This will be for the heads, chiefs, and directors of various agencies and divisions who are members of the Scientific and Engineering Computer Council (SECC) and the business computer counterpart called the Business ADP Chiefs (BAC). 1k2

RLL 13-MAY-75 03:42 25745

Contact report: AMC, Uhlig on 11Mar75

(J25745) 13-MAY-75 03:42;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: NAVCOSSACT, McKenzie on 25Mar75

(NAVCOSSACT) contact report 25746 1

(DATE) 25 March 1975 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Doug McKenzie of NAVCOSSACT 1c1

Robert Lieberman of SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) PHONE 1e

(WHERE) Washington, D.C. & Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 25731 25732 25751 25752 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Doug called me today to say that Bob Simmons of Cybernex will lease line processor, mouse, and keyset for $350 per month. This is, of course, not a reasonable figure since NAVCOSSACT will be experimenting for six months. I told Doug that the best route would be to amend an existing contract, say, with NSRDC (or RADC). 1k1

Doug also wondered if we could just make up a contract for the equipment. He will definitely contact us next week to make firm the process of getting the workstation. 1k2

RLL 13-MAY-75 03:44 25746

Contact report: NAVCOSSACT, McKenzie on 25Mar75

(J25746) 13-MAY-75 03:44;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RLL([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;

Contact report: NSRDC, Brignoli on 28Feb75

(BRIGNOLI) Contact report 25747 1

(DATE) 28 February 1975 1a

(BY) Lieberman 1b

(ATTENDEES) 1c

Frank Brignoli of NSRDC 1c1

Robert Lieberman of SRI-ARC 1c2

(ADDRESSES) Full name of organization, address, and phone number 1d

(MEDIUM) COMPUTER 1e

(WHERE) Washington, DC and Menlo Park, CA 1f

(ACTION-ITEMS) 1g

Actions taken, to be taken, etc., dated 1g1

(DISTRIBUTION) ARC-LOG DCE JCN RLL 1h

(REFERENCES) 1i

(DOCUMENTS) Hard copy given and received 1j

(GIVEN) Date and documents given 1j1

(RECEIVED) Date and documents received 1j2

(REMARKS) 1k

Asked FGB about Sue Roetter's training trip. Wanted to know if my presence at any of these sites would be helpful (from a marketing point of view). 1k1

FGB felt Panama City was too small to be worthwhile. San Diego was uncertain at the moment. 1k2

New London was a possibility. Talk to Roger Praeger first. Others at New London: 1k3

George Egeland 1k3a

Jim Shore 1k3b

Arthur Werbner 1k3c

Contact report: NSRDC, Brignoli on 28Feb75

John Zenor from China Lake will be at ARC. 1k4

PTI person called--looks bad for NLS at PTI. 1k5

RLL 13-MAY-75 03:48 25747

Contact report: NSRDC, Brignoli on 28Feb75

(J25747) 13-MAY-75 03:48;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /ARC-LOG([INFO-ONLY]) DCE([INFO-ONLY]) RLL([INFO-ONLY]) JCN([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG; Clerk: RLL;