ARH 30-MAR-74 13:07 30365

HELPDOC

The report that is supposed to be delivered by April 1 will not be released on time. This is the result of my not having access to a portable arpanet terminal and in no way reflects upon the attitudes and production of other members of the committee. If anyone desires to take over the document and produce it in a shorter time span,
please let me know. I will be glad to offer any administrative help I can. Unless someone helps out the document will be 1 to 2 weeks late.
Sorry,

Alan

Hill

1

HELPDOC

(J30365) 30-MAR-74 13:07; Title: Author(s): Alan R. Hill/ARH;
Distribution: /HELPDOC CF DHC NJN; Sub-Collections: NIC HELPDOC; Clerk:
ARH;

contains structure and ",_ font markers

Chapter 8 1

PROGRAMS, PROCEDURES, AND FUNCTIONS 1a

8.1 Introduction 1a1

Whereas Chapter 7 concerned itself mostly with "data:declarations, Chapter 8 is mostly concerned with "processing:declarations. "Data:declarations declare data structures (items, tables, and data blocks) and do not result in the generation of machine instructions; "processing:declarations, on the other hand, declare programs, procedures, and functions, and, therefore, contain both other "declarations and "statements that do give rise to machine instructions. Also presented in this chapter is the "form:declaration. 1a1a

8.2 "Processing:Declarations 1a2

Programs, procedures, and functions are established by a class of declarations called "processing:declarations. 1a2a

.1 "Processing:declarations are a major means of defining scope (see Section 7.3). A "program:declaration defines main scope and "procedure:declarations within "program:declarations define procedure scope. Compool and external scopes are also defined as scopes outer to the main scope of a program. 1a2a1

.2 The "alternate:entrance:declaration can occur only within a "procedure:declaration. It defines an alternate way in which the code of the procedure cn be executed. 1a2a2

8.3 "Program:Declaration 1a3

"Program:declarations declare independent and dependent programs. An independent program is designed to perform a service generally thought of as holistic or unitary. A dependent program is generally compiled independently but intended to e utilized as a procedure to be executed when called by another program. 1a3a

.1 A "program:declaration in the form of JOVIAL code is sometimes known as a source program--an independent source program or a dependent source program. The result of compiling a source program, the collection of machine instructions and data, is known as an object program. 1a3a1

.2 If a compilation is to be compool sensitive, the

"compool:directive must precede either of the introductory "primitives _PROGRAM or _PROC. Other "directives may also appear at this point as well as other points within the "program:declaration (see Chapter 11). 1a3a2

.3 Each program must be named. The "name becomes a "program:name or a "procedure:name as appropriate. 1a3a3

.4 The syntax of the "independent:program:declaration allows for an arbitrary string of "characters enclosed in "parentheses following the "program:name. This form allows for the implementation-specific expression of any required system parameter type information. 1a3a4

.5 A "program:declaration contains a collection of "statements and "declarations. If more than a single "declaration or "statement is involved, the compound form must be used in which the entire collection is delimited by the "primitives _BEGIN and _END. 1a3a5

8.4 "Procedure:Declaration 1a4

A "procedure:declaration sets aside a closed body of code. A procedure is invoked by "name in explicit "procedure:call:statements and never operates as a result of normal sequential operation of "statements. Inherent in the nature of procedures is the transmittal of "parameters and the automatic return of control to the point following the invocation unless steps are taken to divert the exit of the procedure. A "procedure:declaration is one of the major means for defining scope. Data defined within the "procedure:declaration become of local scope and are unavailable in outer scopes; they are however, available in inner scopes (nested "procedure:declarations) as outer scope "names unless the "name is masked by a local "declaration. 1a4a

.1 The "procedure:heading names a procedure, determines the form for proper invocations of the procedure, and controls the allocation of both data and instructions. The "procedure:body is made up of the "statements and "declarations which give rise to the instruction set of the procedure and its local environment. 1a4a1

.2 The "procedure:declaration is used to declare both procedures and functions. The declaration of a procedure may specify "formal:output:parameters while that of a function must not. The "procedure:heading for a function, however, must contain an "item:description

(with certain other specifications optional) which acts as the description of the implicit output parameter of the function. This implicit output parameter--the only output of a function--is referenced within the "procedure:declaration as a simple "variable of the same "name as the function. 1a4a2

8.5 "Procedure:Heading 1a5

The "procedure:heading names the procedure, optionally provides direction for controlling the allocation of both the instructions and data of the procedure, lists any "formal:input:parameters and "formal:output:parameters, and, in the case of the "declaration of a function, describes the implicit output parameter. 1a5a

.1 The "environmental:specifier, "data:allocation:specifier, and "instruction:allocation:specifier all have to do with the management of the data space and instruction space of the procedure or function. Their explanation follows, as a separate section, the description of the occurrence of "formal:input:parameters, "formal:output:parameters and the declaration of the implicit output parameter of a function. 1a5a1

.2 "Formal:input:parameters and "formal:output:parameters are listed in the "procedure:heading within "parentheses; the two categories of "parameters are separated by a "colon while within each category individual "parameters are separated by "commas. The occurrence of "parameters in a "procedure:heading is optional. If a procedure is being declared, there may be no "parameters, "formal:input:parameters only, "formal:output:parameters only, or both. If a function is being declared, there may either be no "parameters or there may be "formal:input:parameters. "Formal:output:parameters are not allowed in the "declaration of a function. In any particular "procedure:heading a particular "name can appear no more than once as a "formal:input:parameter and no more than once as a "formal:output:parameter. A given "simple:item:name, however, can be used as both a "formal:input:parameter and a "formal:output:parameter in one "procedure:heading. 1a5a2

.3 While the "declaration of a function does not provide for a list of "formal:output:parameters it does provide for the description of the implicit output parameter that

acts as the only output of the function. This description occurs in the "procedure:heading following the parenthesized list of "formal:input:parameters, if any; it acts as if it declared a simple item of the same "name as the function. The "declaration may optionally include an "environmental:specifier or an "allocation:specifier. If either of these elements is to appear in the context of the implicit output parameter it must follow the "parentheses that enclose the list of "parameters; in this case the "parentheses are mandatory even though no "parameters are listed. Occurrence here is independent of earlier appearance of the "data:allocation:specifier or "environmental:specifier. The earlier instances, if present, refer to the treatment of all local data as a whole while the later instance refers only to the treatment of the implicit output parameter. (See Section 8.6 for a completion discussion.) The "item:description functions as it does within any "item:declaration to give the type and size, etc. of the implicit output parameter. Any "parameter:specifier (for compiler packing), beginning bit position is a word (in "brackets) or preset value for the implicit output parameter follows the "item:description. Of course, as with any preset data, the implicit output parameter, if preset, must be in reserve and the presetting is done just once for each loading of the entire load module. 1a5a3

.4 The "allocation:specifier that makes the implicit output parameter of a function pointed to can employ a local or outer "pointer:variable or even a "pointer:formula that includes both local and outer "names. This is an exception to the general rule that requires all "names in "pointer:formulas to have prior "declaration. The exception is made because in order to avoid two "declarations of the same "name--the "procedure:declaration for the function and the "item:declaration for the implicit output parameter of the function--the "procedure:heading is made to contain the necessary elements to describe the implicit output parameter. This is treated by the compiler as if it formed a complete "declaration and the "declaration is considered to appear following any necessary prerequisites. Any other "pointer:formula in a "procedure:heading, however, may contain "names only if they are outer to the "procedure:declaration. 1a5a4

.5 If the "procedure:heading lists "formal:input:parameters, "formal:output:parameters or

both, all "parameters, except for "statement:names, must be declared within the "procedure:body. This is true whether the "parameter is referenced or not. Furthermore, the "declaration for a "parameter must precede any reference thereto. 1a5a5

.6 Within a "procedure:declaration, formal "parameters or other local data can be pointed to by outer "variables, other formal "parameters, or other local data. Within a procedure, as elsewhere, care must be exercised to avoid attempting to use a "variable before it has been given a meaningful value. If, for example, one "formal:input:parameter is pointed to by another "formal:input:parameter, it is generally necessary to have the pointer occur to the left, in the list of "parameters, of the "variable it points to. 1a5a6

.7 A "procedure:name which is a "formal:input:parameter must be declared as a "procedure:name within the "procedure:body. Such a "declaration consists of just the "procedure:heading followed by a "procedure:body containing only the "declarations for the formal "parameters (of the procedure whose "name is itself a formal "parameter). 1a5a7

.8 For "formal:input:parameters that are "simple:item:names there occurs, at invocation of the procedure or function, a transfer of the values of the corresponding "actual:input:parameters to the "formal:input:parameters as if by an "assignment:statement. A local table or a local data block can be pointed to by a simple item formal "parameter. In references within the procedure to elements of such a local table or local data block, the space actually utilized is that pointed to by the "actual:input:parameter corresponding to the "formal:input:parameter pointer, since that pointer now contains the value transferred in at the call. 1a5a8

.9 For "table:names and "data:block:names as "formal:input:parameters the location of the data structure associated with the corresponding "actual:input:parameter is transferred and not the value or contents of the structure. The "declarations of the "formal:input:parameters can declare data structures which either are or are not pointed to by local simple items. If the "declaration includes a pointer, the pointer is allocated space in the named data space of the procedure--no space is allocated the declared table or

data block. The location of the "actual:input:parameter is transferred to the local pointer and in references within the procedure to elements of such a local table or data block, the space actually used is that of the "actual:input:parameter. Even if no pointer is included in the "declaration no space is allocated for the local table or data block. Processing proceeds as if an implicit unnamed pointer is allocated in the procedure's unnamed data space. The value transferred in from an "actual:input:parameter corresponding to a "formal:input:parameter that is a "table:name or a "data:block:name is, then, a location and the value is given to the pointer (named or unnamed) for the table or data block. 1a5a9

.10 Reference to a "formal:input:parameter that is a "statement:name within a "go:to:statement causes exit from the procedure or function. "Actual:output:parameters are set from the "formal:output:parameters as if by an "assignment:statement. Then control is transferred in accordance with the "actual:input:parameter corresponding to the referenced "formal:input:parameter (see Section 5.11). A "statement:name is the only kind of "formal:input:parameter for which no "declaration is required in the "procedure:body. 1a5a10

.11 When a "formal:input:parameter that is a "procedure:name is referenced in a "procedure:call:statement or "function:call (within the "procedure:body) it is as if a "procedure:call:statement or "function:call were executed referencing the "procedure:name presented as the corresponding "actual:input:parameter. Depending upon the "actual:input:parameter, then, a single parameterized "procedure:call:statement or "function:call can invoke different procedures. The "procedure:declaration for the "formal:input:parameter may include "formal:input: and "formal:output:parameters of its own. This places an additional burden on the user to provide compatibility between the various levels of "parameters. This can best be illustrated by example. 1a5a11

.12 Let us name some procedures for illustration: _P1 is a procedure having procedure _PX as a "formal:input:parameter and a call on _P1 is executed in which _PA is the "actual:input:parameter procedure corresponding to _PX. Within _P1 there is a "declaration for _PX with "formal:input:parameters. Also within _P1

there is a call on _PX with "actual:input:parameters corresponding to the "formal:input:parameters in the "declaration for _PX. This call on _PX is executed as a call on _PA; however, the "parameter matching and any required conversions are based on correspondence of the "actual:input:parameters in the call inside _P1 with the "formal:input:parameters of _PX. It is thus the programmer's entire responsibility to be sure that the "formal:input:parameters of _PA are such as to make these "parameter matchings and conversions correct and reasonable. For example, if _PX and _PA have different numbers of "parameters there may be serious trouble. If _PX has one floating "formal:input:parameter and _PA has one fixed "formal:input:parameter with 17 bits after the point, the "actual:input:parameter in the call in _P1 will be converted to floating and transferred to the input region of _PA--most likely a meaningless move. 1a5a12

.13 "Formal:output:parameters are limited to "simple:item:names. Upon exit from the procedure (functions do not have "formal:output:parameters) the values of the "formal:output:parameters are transferred to the corresponding "actual:output:parameters as if by an "assignment:statement. No more complex of diverse form of "formal:output:parameter is needed. For one thing, the value of the named simple item may represent a pointer to a more complex data structure. Also, the call-by-location logic as applied to "table:names and "data:block:names as "formal:input:parameters results in all references--both of those of an input (fetching) and output (setting) nature--being resolved in terms of the space of the structure represented by the "actual:input:parameter thereby obviating the need for "table:names and "data:block:names as "formal:output:parameters. 1a5a13

8.6 Location of Data and Instructions 1a6

The "data:allocation:specifier, "environmental:specifier, and "instruction:allocation:specifier provide the means for controlling the allocation of data space and instruction space. 1a6a

.1 All data declared in a "procedure:declaration are of procedure scope and, if none of the optional controls are exercised, their permanence is environmental to the program and they are in reserve. While their scope remains invariant, their permanence can be restricted to that of some lesser scope (either local or outer but not

inner or disjoint) or the data can be made pointed-to. The syntax of "procedure:declarations allows for the control of local data on two levels--controls can be exercised collectively for all local data as a whole or individually within the "declaration of each datum. 1a6a1

.2 The data space of a procedure consists of two parts, the named and the unnamed data space. The named data space includes all those local items (including the implicit output parameter of a function) and other local data structures not individually declared to be either in some other environment or pointed-to. Remember that there is no local data structure associated with "formal:input:parameters that are "table:names or "data:block:names. The unnamed data space includes housekeeping space required by the compiler (such as the return address to the current call and temporary work space), unnamed pointers to table and data block parameters, and inner scope data declared to be private to this procedure. (Inner scope data so declared will actually be private to this procedure only if the unnamed data space of this procedure is made private in its entirety.) 1a6a2

.3 This data space can be considered to be an unnamed data block. It's normal fixed allocation, environmental to the program and in reserve, can be altered by the presence of either an "environmental:specifier or a "data:allocation:specifier immediately following the "procedure:name in the "procedure:heading. 1a6a3

.4 An "environmental:specifier at this point in a "procedure:heading has the effect of restricting the permanence of the procedure's data space either to that of the named scope or to that of the local scope should the "environmental:specifier contain no "name. (The forms with _RESERVE are of no effect here.) The named scope can either be the local scope or some other containing scope--it cannot be an inner scope or a disjoint scope. If the permanence is restricted to the local scope, the data space becomes private to the current procedure. If the permanence is restricted to some outer procedure, the data space is in the unnamed data space of that procedure. If the outer, containing data space is in no way restricted or pointed to then there has, in fact, been no restriction placed on the instant data space--it is still environmental to the program and in reserve. If, however, the outer, containing data space is restricted (either by being made

private to its local scope or pointed to or in some outer scope data space that has been made private or pointed to, etc.) then the same restrictions apply to the instant data space. 1a6a4

.5 There is the possibility of the occurrence of a second "environmental:specifier in the "procedure:heading but this later instance affects only the implied output parameter of a function. Individual "data:declarations within the "procedure:declaration (including that of the implied output parameter of a function) can override the effect of the procedure level "environmental:specifier by either including "environmental:specifiers of their own which would place the data structure back in reserve again (with _RESERVE or _IN _RESERVE) or else in the unnamed space of some other scope, or by making the data structure pointed to by the use of an "allocation:specifier. Either of these actions serves to remove the concerned datum from the data space of the object procedure and therefore out of the influence of the procedure level "environmental:specifier. If the datum is placed in a data space that is itself not restricted, the datum can become environmental and in reserve even though the main data space is restricted. In particular, in an independent program containing "procedure:declarations, if main program data are in reserve and procedure data are generally private, individual procedure data can be reserved by declaring them to be _IN "program:name, or _IN _RESERVE or simply _RESERVE. 1a6a5

.6 The "data:allocation:specifier makes the data space of the procedure pointed to. No "pointer:formula is included; the "pointer:formula must be specified within the invoking "procedure:call:statement or "function:call. As is the case with all pointed-to structures the permanence is derived from that of the pointer. Just as is the case for the procedure level "environmental:specifier, the effect of the "data:allocation:specifier can be overriden for individual "data:declarations. "Environmental:specifiers and "allocation:specifiers in these "declarations remove the declared data structures from the data space and thereby remove them from the influence of the local "data:allocation:specifier. 1a6a6

.7 Data local to some inner scope that has been declared to be in the environment of the current procedure is in the unnamed data space. As such, it shares the fate of

the local data space. It may become pointed to, or in some other environment or it may remain environmental and in reserve. 1a6a7

.8 In the absence of any environmental or pointer information, each call on the procedure uses its data space as it exists in reserve. If the space is made private it is used at a location the compiler or system considers appropriate and convenient. If the space is to be pointed to, the location used is determined by the value of the explicit pointer at the call. Private data space allows certain economies and a pointed-to data space allows recursive and reentrant procedures. 1a6a8

.9 A "procedure:declaration is made recursive or reentrant by declaring its data space to be pointed to and properly managing the pointers used at the "procedure:call:statement. There may be other reasons for declaring the data space to be pointed to. Therefore, the compiler cannot know the programmer intends the procedure to be recursive unless it contains a call upon itself or a "recursive:directive. A "procedure:declaration with _@ following the "procedure:name indicates the data space of the procedure (except for specific data declared to be environmental or individually pointed to) is to be in an unnamed data block whose pointer is given explicitly at each call on the procedure. By proper management of the pointers, a fresh copy of the data space can be provided to each recursive or reentrant iteration of the procedure. _DSIZE (see Section 4,19,22) gives the space requirement. 1a6a9

.10 The effect of declaring local data to be private to some local scope is to permit the compiler to utilize the same space for other purposes--perhaps for local data for some other procedure which will never be active at the same time. In the same manner, data for a recursive procedure (with controlled allocation) can be declared to be in some outer environment. In this case, such data, as well as being preserved between activations, is removed from the data block for which a separate copy is generated for each recursive call. This local data in the outer environment serves as a data base for communication between separate recursive activations of the recursive procedure. 1a6a10

.11 The allocation of the instruction set of the procedure may be controlled by the "instruction:allocation:specifier. This is possible only

for procedures on the level of the dependent program, not for procedures that are parts of programs and it requires the support of a system that provides for dynamic loading of the instruction set upon call to the procedure. Lacking the required support, the "instruction:allocation:specifier is not functional. With the proper support, the "pointer:formula that is the "instruction:allocation:specifier provides the location of the instruction set. The "pointer:formula must be expressed in terms of external data, data that is known to the compiler either because it is defined in the compool or by some other implementation-specific device as, for example, a "directive. _ISIZE (see Section 4.19.21) tells how much space is required for the load module. 1a6a11

8.7 "Procedure:Body 1a7

The "procedure:body contains the "statements and "declarations which determine the procedure and its environment. 1a7a

.1 If the "procedure:body is to contain more than just a single "statement or "declaration then the compound form must be used. The collected "statements and "declarations are delimited by the "primitives _BEGIN and _END. 1a7a1

.2 All "formal:input:parameters (except "statement:names) and "formal:output:parameters must be fully declared in the "procedure:body before they are first referenced. In fact, all local data must be declared in the "procedure:body prior to their first reference. Simple items, tables, and data blocks are declared as in Chapter 7. For "formal:input:parameters that are "procedure:names the "declarations are only skeletons without executable code. 1a7a2

.3 Special attention must be given to local "statement:names and nested "procedure:names. The possibility of confusion with outer scope "define:names of the same spelling must be avoided. If these "names are referenced before they are declared, then, unless appropriate steps are taken, the references will be mistaken for "definition:invocations. The unintentioned reference to the outer definition can be avoided by listing the "names in a "name:declaration (see Section 7.35) before their first use. 1a7a3

.4 The "procedure:name is local to the scope in which the "procedure:declaration occurs. It is outer to the "procedure:declaration. Thus the "procedure:name can be masked within the procedure it names by "declaration of a local item with the same "name--or even by "declaration of a nested procedure with the same "name. If the "procedure:name is masked by a local entity with the same "name, then of course the "procedure:name cannot be used with "primitives such as _RETURN or _ALT. With either "primitive, omitting the "name results in the same meaning as using the "name of the most deeply nested procedure at the point of use. These forms still operate normally even when the "name of that procedure is masked. 1a7a4

.5 Whereas the "name of a function is outer to its "declaration, the "name of the implicit output parameter of the function is local to the "procedure:declaration bearing the same "name. Inasmuch as functions can be called recursively, there is need to distinguish between a "function:call and a reference to the implicit output parameter. The distinction is made on the basis of the "parentheses that enclose the list of "actual:input:parameters. These "parentheses, while being optional in a "function:call with no "parameters, are always allowed. If the "function:call is within the "declaration of the function of the same "name, the "parentheses--even empty "parentheses in case there are no "parameters--are required. The "name of the function (omitting "parentheses and "parameters) may appear within the "procedure:body as a reference to the implicit output parameter in "statements and in "overlay:declarations. If the function "name is to appear in the "procedure:body as a "procedure:name as in a recursive "function:call or as an "actual:input:parameter, for example, it must be accompanied by the "parentheses even though they be empty. 1a7a5

8.8 Alternate Entrances 1a8

An alternate entry point for a procedure can be established by an "alternate:entrance:declaration. 1a8a

.1 An alternate entrance provides an alternate means whereby the procedure may be invoked. While it is important to realize that syntactically an "alternate:entrance:declaration occurs within a "procedure:body, the effect is as if another "procedure:heading were being provided the "procedure:declaration. An alternate entrance allows the

code of the containing procedure, or a part thereof, to be operated under changed conditions. In an "alternate:entrance:declaration the set of "parameters can be varied from those defined in the "procedure:heading and the status as either a procedure or a function can also be varied. 1a8a1

.2 Invocation of a "procedure:declaration via the alternate entrance is by means of a "procedure:call:statement or a "function:call upon the "alternate:entrance:name (the "name following _ENTER in the "declaration). The requirements as to "parameter matching are the same as if a normal entrance to a procedure were being invoked except that it is the "parameters of the particular "alternate:entrance:declaration that must be matched as to number, type, and position. Just as with a "procedure:name, the "alternate:entrance:name has outer scope when used "as a "procedure:name --local scope when used as the implicit output parameter of a function. The "alternate:entrance:declaration need not have the same nor the same number of "parameters as the "procedure:heading under which it occurs. "Parameters are to be declared once and only once in the "procedure:body no matter how many times they occur in the "procedure:heading and in "alternate:entrance:declarations in the "procedure:body. Furthermore, no restrictions are placed on the relative position within the "procedure:body of the "declarations of the "parameters and the "alternate:entrance:declarations which name them as parameters. 1a8a2

.3 An "alternate:entrance:declaration may determine either a procedure or a function without regard to the treatment of the normal entrance or other alternate entrances. If a function is to be established, the "alternate:entrance:declaration must omit the list of "formal:output:parameters and must include an "item:description for the implicit output parameter. If a procedure is to be established, the "declaration must omit the "item:description and may include "formal:output:parameters as appropriate. 1a8a3

.4 The position of the entry point within the procedure or function is determined by the position of the "alternate:entrance:declaration within the "procedure:body. It is at this point that the procedure is entered upon invocation of the

"alternate:entrance:name. Any entrance code generated for the entrance will be protected against inadvertant operation due to sequential operation of "statements. For any such entrance code that does not follow an unconditional jump, the compiler must generate a jump to the first "statement following the "alternate:entrance:declaration. In the example of Section 8.8.9 (below) the alternate entrance for the cosine function does follow a jump and therefore, the entrance code requires no special protection from the compiler. 1a8a4

.5 The condition of formal "parameters upon entrance to a procedure with more than one entrance point is the same as the condition of other local data. If the "parameter is set upon entrance, of course it contains the value established by the call. If the particular "parameter is not set by the particular entrance point used, then it is merely treated as local data. If there has never been a call or a local "statement execution that set the value, the value is undefined. If the "parameter is private, the value is undefined. If the "parameter has been declared to be in the environment of an outer scope that has remained active between calls on this procedure, the value is whatever it was upon the previous exit from this procedure. A recursive call creates a new copy of private data and sets the "formal:input:parameters, but leaves environmental data undisturbed (as a communication data base between recursions). 1a8a5

.6 When execution of the procedure or function is completed, the exit processing performed is that associated with the activating entrance. In the case of a reentrant or recursive procedure, it is that of the most recent entrance (i.e., that at the top of the stack or the entrance active in the current copy of the procedure). 1a8a6

.7 Associated with each entrance of a "procedure:declaration is a number and a "status:constant. The "status:constants are collected into an intrinsic "status:list. Successive integer values are assigned to each entrance to the procedure as their "declarations are encountered. The numbers start with zero for the normal entrance, -1 for the first alternate entrance, etc; the corresponding "status:constants employ the "name of each entrance as the status in each "constant. The intrinsic "status:list

is made up of the various "status:constants and associated with the assigned numbers in the obvious way. 1a8a7

.8 Within each procedure it is possible to dynamically determine which entrance was invoked by comparing the value returned by the intrinsic function _ALT with the possible values of the intrinsic "status:list. Either the "status:constant or the equivalent "integer:conntant can be used in making this check. The syntax for invoking _ALT is as follows: 1a8a8

```
_ALT _(    "procedure:name    _)                    1a8a8a
```

If no "procedure:name is included, the most local procedure is checked. By including a "procedure:name, an outer, containing procedure can be tested. Two "statements invoking _ALT are included in the following example with the result that certain "statements are executed only if the function is invoked via the _SIN entry point while others are executed only on an entry via the _COS entry point. 1a8a9

.9 The following example illustrates a procedure used as a function to return either sine or cosine by Taylor Series evaluation: 1a8a10

```
_PROC SIN(DEG) F;"                                  1a8a10a
        BEGIN                                       1a8a10b
        ITEM DEG S 32 ;                             1a8a10c
        ITEM RAD, FACTOR F ;                        1a8a10d
        DEFINE PI "3.14159265" ;                    1a8a10e
                                                    1a8a10f
        SIN = 0.0 ;                                 1a8a10g
        GOTO LAB ;                                  1a8a10h
                                                    1a8a10i
ENTER COS(DEG) F ;                                  1a8a10j
                                                    1a8a10k
        COS = 1.0 ;                                 1a8a10l
```

```
LAB:  RAD = DEG*PI/180.0 ;                                    1a8a10m
          FACTOR=1.0 ;                                        1a8a10n
          FOR I(1 BY 1 UNTIL I > 20) ;                        1a8a10o
               BEGIN                                          1a8a10p
               FACTOR=RAD*FACTOR/I ;                          1a8a10q
               IF I ;                                         1a8a10r
                    BEGIN     "IF I IS ODD"                   1a8a10s
                    IF ALT(SIN)=V(SIN) ;                      1a8a10t
                                                              1a8a10u
                         SIN = SIN + FACTOR ;                 1a8a10v
                        FACTOR = -FACTOR ;                    1a8a10w
                    END                                       1a8a10x
               ELSE IF ALT(SIN) = V(COS) ;                    1a8a10y
                    COS = COS + FACTOR ;                      1a8a10z
               END                                            1a8a10a@
          END                                                 1a8a10aa
```

8.9 "Form:Declaration 1a9

The "form:declaration provides for defining bit fields or character fields to be assembled into a single bit value or character value. 1a9a

.1 Each "form is named and the "name becomes a "form:name. _B means it is a "bit:form and the value of each "field:width gives the width of a field in bits. _C means it is a "character:form and each "field:width gives the width of a character field in bytes. The total size of a "form is the sum of the values of all the values of all the "field:widths; it is in bits for a "bit:form and bytes for a "character:form. 1a9a1

.2 In usage (permitted only after the "form:declaration and within its scope), each "form becomes a "formula.

either a "bit:formula or a "character:formula as appopriate. A reference to a "form has the appearance of a "function:call. For example, reference to a "bit:form has the following syntax: 1a9a2

"form:name _("bit:formula _) 1a9a2a

Within the "parentheses there must be as many "formulas as there are "field:widths in the "declaration for the "name. Each "formula is converted to its bit value and truncated from the left or padded with zero bits on the left to its respective "field:width. The value of the "bit:form is then the concatenation of all these truncated or padded bit values. The analogies for "character:forms are valid. For a complete discussion of the use of "forms see Section 4.17. 1a9a3

contains structure and ",_ font markers

Chapter 9 1

EXTERNAL ENTITIES 1a

9.1 "External:Declaration 1a1

JOVIAL "names normally denote entities known only within the program in which they are declared. An "external:declaration establishes certain of these entities--items, tables, data blocks, procedures, functions, alternate entrances, and named locations in programs--as external. "External" means available to or accessible from other programs. 1a1a

.1 In a "external:declaration one of the "primitives _DEF or _REF precedes an otherwise normal "declaration. The effect is that entities defined in one program under the influence of the "primitive _DEF become available in other, independently compiled programs when identified by the appropriate use of the complementary "primitive _REF. 1a1a1

.2 For an entity to be external, two things must happen. First, the "name of te entity must become of external scope. A "name that is of external scope is not only known in the program in which it is declared but it can also be made known to other, independently compiled programs of the same system. Second, the associated structure or location must be made available between programs. An entity declared in one program must be available for reference from other programs. The "primitive _DEF marks the declared entity as one that might be referenced from another program; the "primitive _REF makes the marked "declaration just such a reference. 1a1a2

.3 It is helpful to introduce te terms "def" and "ref". Used as adjectives, they describe both the "declarations containing he "primitives _DEF and _REF and the entities declared thereby. We have then, for example, def and ref "declarations as well as def aad ref structures. Ref means that the entity which it describes is defined externally to this "program:declaration and that addresses mut be resolved by some form of linking loader. Def means that the entity which it describes, besides having its normal attributes, is also available as an externally defined entity. 1a1a3

.4 A def "declaration makes the declared entity external. The "declaration is processed exactly as if the "primitive _DEF were not present. Procedures, functions,

and alternate entrances are compiled as always, space is allocated to data structures, and locations are associated with "statement:names. However, _DEF makes these entities external. The "name becomes of external scope and available for reference in other programs that include the complementary ref "declaration. The structure is flagged as external in such a way that the loader will be able to recognize it and make its location available to the other referencing programs. 1a1a4

.5 Only a single def "declaration is allowed for a "name in any system of programs. There may be many ref "declarations but only a single def. There is, for any system of programs, only a single external scope. A "name consists of both a spelling and a scope. To attempt more than one def "declaration for a given spelling would be to attempt multiple "declarations of the same "name in a single scope. This is against a basic rule of JOVIAL and remains unefined. 1a1a5

.6 For ref "declarations there is no limit on the number of occurrences; a datum declared only once can be referenced as many times as is meaningful. The restriction imposed upon the user of ref "declarations is that they be compatible with the corresponding def "declaration. The ref "declaration is a skeleton. It portrays enough information to the compiler to allow the compiler to generate code--empty code skeletons devoid of addresses--referencing the external entity. The compiler depends upon the ref "declaration to supply a description of the external entity and upon the loader to provide the linkage and addresses that give meaning to the code skeletons. 1a1a6

.7 Incompatibilities between the def and ref "declarations may lead to inconsistent results. Should, or example, a def table of parallel structure be described in a ref "declaration as being of serial structure, the code in the referencing program will most likely give inconsistent results. It is possible, of course, that the apparent inconsistency exactly expresses the intent of the programmer. Such practices are allowed but the user is cautioned that it is solely the responsibility of the programmer to ensure that the attributes of ref "names are compatible with those of the complementary def "name. 1a1a7

9.2 External Items, Tables, and Data Blocks 1a2

A def item, table, or data block is allocated space in the data space of the declaring program. The data structure must be in reserve; it must not be pointed to, and its permanence must not be restricted to some private data space. The effect of the def "declaration is to make the address of the structure available externally for other programs. 1a2a

.1 The "declaration for a ref data structure causes no allocation of space. References to ref structures will be resolved by the loader in terms of the addresses of the corresponding def structure. A ref "declaration, therefore, requires the existence of the complementary def "declaration. 1a2a1

.2 The "primitives _DEF and _REF are in effect only for the single "declaration that follows. The "declaration can, of course, be of the compound form which groups "declarations between the "primitives _BEGIN and _END. In this case, all of the declared structures become external. 1a2a2

.3 When tables and data blocks are made external, only the "name of the top-level structure (i.e., only the "table:name or "data:block:name) becomes of external scope. Lower level "names --"names of items within the tables and of items, tables, and other data blocks within a data block--do not become of external scope; these "names can only be known by association with their parent "name. This does not mean that the lower level "names are not available to the programmer. It only means that by the time the program is presented to the loader, references to these "names must have been reduced to references relative to the top-level "name. 1a2a3

.4 The top-level def "name and ref "name must be the same and are the linking key; the def "name is used to provide a base address for the ref structure. Lower-level "names need not be the same between the ref and def "declarations; in fact, even the entire description can be different. It is wholly the responsibility of the programmer to ensure compatibility within the "declarations. References to lower-level "names are resolved in terms of the top-level "name; the loader resolves references to the top-level ref "name in terms of the load-time location of the def structure. 1a2a4

.5 The following examples show "declarations of def and ref data structures. 1a2a5

```
a.  _DEF  BEGIN                                          1a2a5a
    _ITEM EXT1,EXT2  S  9=-14;                           1a2a5b
    _TABLE  TO  [1:5];                                   1a2a5c
        _ITEM  FF  F;                                    1a2a5d
    _NAME  L1,L2,L3;  END                                1a2a5e
b.  _REF  BLOCK  DATA;                                   1a2a5f
    _BEGIN                                               1a2a5g
        _ITEM  AA  U;                                    1a2a5h
        _TABLE  TAB  [10]  P  1  N;                      1a2a5i
            _ITEM  CC  F=1,0,,3,0,,5,0,,7,0,,9,0;        1a2a5j
    _END                                                 1a2a5k
```

In example a, only the "names _EXT1,_EXT2,_TO,_L1,_L2, and _L3 are externally defined; item _FF is treated as a part of _TO and is not itself external. Data declared in a ref data block, such as _AA, _TAB, and _CC in example b, would be resolved as a relative offset from the address of the top of the data block. Presets for _CC would be ignored in this case. In other situations, a "constant in such a position might affect the effective description for the item, but no preset values are compiled for ref data. 1a2a6

9.3 External "Statement:Names 1a3

"Statement:names are made external by listing the "statement:names in a "name:declaration preceded by the appropriate "primitive. The _DEF or _REF "primitive is not permissible before the defining occurrence of a "statement:name. 1a3a

.1 The effect of making a "statement:name a def "statement:name is to make the location assigned in the normal compilation process available to other programs. A ref "statement:name is a reference to a "statement:name of some other scope. A ref "statement:name is not used to name a "statement in the scope of the ref "name:declaration. 1a3a1

.2 A "go:to:statement referencing an outer scope "statement:name or a ref "statement:name does not activate the scope of that "statement:name --it must already be active or the jump is undefined. It does, however, deactivate the scope from which the jump occurred. This includes all calling scopes back to the scope of the cited "statement:name. If that "statement:name is in a recursive procedure, the deactivation backs up only so far as the most recent activation of the scope containing the cited "statement:name. 1a3a2

9.4 External Procedures, Functions, and Alternate Entrances 1a4

A def "procedure: or "alternate:entrance:declaration is compiled just as if the "primitive _DEF were not present. An instruction set and a data set are created as parts of the containing program. Then, as a result of this being a def "declaration, the procedure or function is made externally available. Because the procedure may be invoked externally certain considerations, as will be seen later, may be required in the "declaration. 1a4a

.1 A ref "procedure:declaration is only a skeleton. Its purpose is to give the compiler all the information it needs to be able to generate loader-level code that references the external procedure. A ref "procedure:declaration consists of a "procedure:heading preceded by the "primitive _REF and a "procedure:body containing only "declarations for the "formal:input: and "formal:output:parameters and ref "alternate:entrance:declarations as required. No space is allocated a ref "procedure:declaration; it is merely a reference to the corresponding def "procedure:declaration. 1a4a1

.2 A ref "procedure:declaration may have as its complement a def "alternate:entrance:declaration. A non-def "procedure:declaration can contain a def "alternate:entrance:declaration. To invoke the alternate entrance externally, there is no need to create a dummy "procedure:declaration to contain the desired ref "alternate:entrance:declaration. Instead, a ref "procedure:declaration can be written using the appropriate "alternate:entrance:name as the ref "procedure:name. In fact, ref "alternate:entrance:declarations need never be written. They will, however, provide an economy those times when a

procedure and an alternate entrance share "parameters and both are to be external. 1a4a2

.3 A "procedure:call:statement or a "function:call on an externally defined procedure activates the procedure and its local environment. Referencing outer scope data or local data not made private to the local scope or branching to "statement:names in an outer scope may have undesired results. Since the normal mode of allocation places all local data in reserve, two cautions are suggested with regard to external procedures. Either the caller must assure that the environmental data is already active or the def "declaration must take steps to make its data private. 1a4a3

.4 The following examples illustrate def and ref "procedure:declarations. 1a4a4

```
a. _REF  PROC  SIN(XX)  F  ;                          1a4a4a
          _ITEM  XX  S  26,24;                        1a4a4b
b. _REF  PROC  RANDOM  U;  BEGIN  END                 1a4a4c
c. _DEF  PROC  PP;BEGIN                               1a4a4d
          _ITEM  XX  F;                               1a4a4e
     _DEF  ITEM  YY  C  4;                            1a4a4f
          _XX=3;  YY='ABCD';                          1a4a4g
     _END                                             1a4a4h
```

Notice that in example c, local "names within _PP are not external unless explicitly stated to be; local item _XX is not available for external reference. 1a4a5

9.5 _REF and _DEF Within a Single Program 1a5

While the primary purpose of the "external:declaration is to provide communication between independently compiled programs, there is, occasionally, reason for employing both ref and def "declarations for a "name within the same "program:declaration. The "declarations must occur in different scopes, of course. 1a5a

.1 Consider the effect of the rules of scope on "external:declaration. Although ref and def

"declarations make "names available externally, the rules of scope are not infringed upon. Proper use of def and ref "declarations can allow an outer scope "name to be referenced within an inner scope even though there may be an intervening scope with a local "declaration that would otherwise mask the outer-scope "name from use in the inner scope. 1a5a1

.2 This use of def and ref "declarations can best be shown by example. In the following example the vertical line is drawn with numbered segments to correspond to the various scopes within the "program:declaration. 1a5a2

```
      _PROGRAM  AA;                                    1a5a2a
      _BEGIN                                           1a5a2b
  1     _DEF  ITEM  II  U;                             1a5a2c
                                                       1a5a2d
        _PROC  BB(II);                                 1a5a2e
        _BEGIN                                         1a5a2f
  2       _NAME  II;                                   1a5a2g
                                                       1a5a2h
          _PROC  CC;                                   1a5a2i
  3       _BEGIN                                       1a5a2j
              _REF  ITEM  II  U;                       1a5a2k
                                                       1a5a2l
          _END                                         1a5a2m
  4                                                    1a5a2n
      _END                                             1a5a2o
  5                                                    1a5a2p
    _END                                               1a5a2q
```

.3 In regions 1 and 5 of the "program:declaration _II is a def item. Over the inner scope (regions 2 and 4) the

local "declaration as a "statement:name is in effect. Within the inmost scope (region 3) the ref "declaration for _II corresponds to the def "declaration in the main scope (regions 1 and 5). Without the use of the ref and def "declarations, the intervening definition as a "statement:name would prevent use of the main scope "variable _II within the inmost scope. _II could, of course, have been redefined as a local item but it would not have been the same as the main scope item of the same "name. By making the scope external, this problem is avoided. 1a5a3

(J30367) 30-MAR-74 15:06; Title: Author(s): Duane L. Stone/DLS;
Distribution: /RJC; Sub-Collections: RADC; Clerk: DLS;

contains structure and font markers.." & -

Chapter 10 1

INDEXING 1a

10.1 Introduction 1a1

"Indices in JOVIAL, have two purposes. A "go:to:statement that references a "switch:statement may have an "index. In this case, the "index is a determining factor in the selective operation of "statements within the "switch:statement. This use of an "index is completely specified in Section 5.13.5. But the most predominant use of an "index is selecting a particular occurrence of an item or entry from a table. The rest of this chapter discusses various aspects of this indexing process. 1a1a

10.2 Data References 1a2

An "index is used to select a particular entry from a table composed of many similarly constructed entries. In usage, an "index is enclosed in "brackets. It is composed of "index:components which, if there are more than one, are separated by "commas. Reference to an item or an entry in a multidimensional table requires a multicomponent "index. "Index:components, however, do not have to be explicitly stated in some circumstances (see Section 10.3). 1a2a

.1 Every "table:declaration has a "dimension:list giving the number of dimensions and, for each dimension, the "lower: and "upper:bounds that give the extent or size of the table in each dimension (see Section 7.22). These same "numbers give the range of values permissible for "index:components for each dimension. Every "index:component must reduce to an integer value such that for its corresponding dimension it obeys the following relation: 1a2a1

"lower:bound "index:component "upper:bound 1a2a1a

.2 Since "lower:bounds may be other than zero, the meaning of a "linearized" "index is difficult to determine. Therefore, if any "index:component is outside the range of its "lower:bound and "upper:bound, its meaning is undefined It is also undefined to have more "index:components than there are dimensions in the corresponding table. 1a2a2

.3 Each "index:component is concerned with one dimension of the table to which it is applied. If each

"index:component is considered in turn, it is seen that, starting from the left, they elect: 1a2a3

The _n-1 dimensional manifold within the _n dimensional table, 1a2a3a

The _n-2 dimensional manifold within that _n-1 dimensional manifold, 1a2a3b

. 1a2a3c

. 1a2a3d

. 1a2a3e

The plane within that volume, 1a2a3f

The row within that plane, 1a2a3g

The particular entry within that row, 1a2a3h

.4 The above order corresponds to the order in which dimension bounds occur in a "dimension:list. A table _MN with the "dimension:list _[2, 3, 1] has three planes, four rows within each plane and 2 entries in each row. Note that since the "lower:bounds for each dimension default to the value zero, there is one more volume, plane, and row than the value that expresses the "upper:bound. The following example is a reference to a particular entry within that table; it so happens that the reference is to the last entry. 1a2a4

The number _2 (or third) plane 1a2a4a

The number _3 (or fourth) row 1a2a4b

The number _1 (or second) entry 1a2a4c

_MN[2, 3, 1] 1a2a4d

.5 In any reference to a table or item in a pointed-to structure, the pointer, whether implicit or explicit, points to the beginning of the structure. Indexing within a pointed-to structure proceeds as a displacement from the beginning of the structure as determined from the value of the pointer plus the displacement, if any, from the beginning of the pointed-to structure to the beginning of the referenced structure plus, finally, the displacement due to the indexing. Notice that generally

the value of the pointer is not the value of the "location:function:call. The value of the "location:function:call incorporates all the relevant displacements. If such a value is used as an explicit pointer to an "indexed:variable within a data structure, the relevant displacements are counted again in completing the reference. 1a2a5

10.3 Missing "Index:Components 1a3

"Index:components or even the complete "index may be sometimes omitted. The meaning depends upon the situation. If initial or embedded "index:components are missing, their places must be marked by a "comma. Trailing "index:components can merely be omitted. 1a3a

.1 The primary meaning of an omitted "index:component in a data reference is to use the correspondng "lower:bound instead. If all "index:components are omitted, the "brackets and the "commas that hold the positions of "index:components may also be omitted. Example: 1a3a1

```
_TABLE  $1  [9,9,1:10] P F ;                    1a3a1a

_TABLE  $A  [9,9 ] S;                           1a3a1b

_$1[5,6] = $A[,9];    $A[,9] = $1;              1a3a1c
```

.2 In the above example, neither table has any infrastructure. _$1 is a three-dimensional, parallel table of floating entries. The first two dimensions run from _0 through _9 and the third dimension runs from _1 through _10. _$A is a two-dimensional, serial (default) table of signed integer entries. The first "assignment:statement puts the _[0,9]th value of _$A into the _[5,6,1]th entry of _$1. Then the second "assignment:statement puts the first value of _$1 (entry _$1[0,0,1] into the _[0,9]th entry of _$A. 1a3a2

.3 The second meaning of the omitted "index in a data reference is involved with a pointed-to table having a submanifold "allocation:increment. In a reference to such a table in which the pointer is implicit, omitting an "index:component usually has the primary meaning of "lower:bound. In the "declaration of the pointed-to table, "dimension:list components relating to the pointer must be omitted. Example: 1a3a3

```
_  TABLE  PTR [5:10,17:23] U ;                  1a3a3a
```

```
_ TABLE  TAB @ PTR:1 [ , , 1: 100];                    1a3a3b

_ ITEM   AA, BB  S 47, 15;                             1a3a3c

_ AA[7, , 47] = BB[8,20];                              1a3a3d
```

.4 In this example, _PTR is a two-dimensional table of unsigned integers, with unusual "lower:bounds Table _TAB is three dimensional, allocated by rows, and pointed to by _PTR. In its "declaration, the first two "dimension:list components, actually relating to _PTR must be empty. _TAB contains two fixed, signed items, _AA and _BB. In the "assignment:statement the first two "index:components of the "indices for _AA and for _BB refer actually to _PTR. The value of the first element of _BB (defaulted "lower:bound for the third "index:component) in the row pointed to by _PTR [8,20] is given to the instance of _AA designated by an "index:component of _47 in the row pointed to by _PTR[7,17] (defaulted "lower:bound for the second "index:component). 1a3a4

.5 If there is an explicit pointer in the reference to a pointed-to entity allocated by submanifolds, all "index:components must be omitted except those indexing into the submanifold. If any of those indexing into the submanifold are missing, they default to their respective "lower:bounds. Example: 1a3a5

```
_AA @ 985 = AA@985 +AA[,,K]@985;                       1a3a5a
```

.6 In the first two occurrences of _AA in the above example, the entire "index, including the "brackets, is omitted. The first two "index:components must be omitted because the explicit pointer, _985, is used. Omitting the third "index:component defaults to its "lower:bound, _1 in this case. In the third occurrence of _AA, the first two "index:components must be omitted and the third one, _K, selects the element of the row starting at location _985. 1a3a6

.7 A missing "index:component in connection with a "number:of:entries:function:call causes that "index:component to be ignored in computing the number of entries (see Section 10.4.10). 1a3a7

10.4 "Index:Ranges 1a4

In a list of data elements occurring in an

^assignment:statement, whether being assigned values, or used in assigning values, or involved in formatting translations, it is often desirable to have an ^index:component take on a sequence of values from some ^low:point to a ^high:point. This can be done by using an ^index:component:range or, more generally, an ^index:range. 1a4a

.1 ^Low:point and ^high:point must reduce to integer values such that for the corresponding dimension: 1a4a1

^lower:bound ^low:point ^high:point ^upper:bound 1a4a1a

.2 If ^low:point is missing, it defaults to ^lower:bound; if ^high:point is missing, it defaults to ^upper:bound. If only the ^colon is given for an ^index:component:range, the meaning is from ^lower:bound through ^upper:bound, inclusive. The general meaning of ^index:component:range is from ^low:point through ^high:point, inclusive. Thus: 1a4a2

_I: means from _I through ^upper:bound, and 1a4a2a

_:J+2 means from ^lower:bound through _J+2, and 1a4a2b

_: means from ^lower:bound through ^upper:bound 1a4a2c

.3 An ^index:range from the definition given above is seen to be an ^index in which one or more ^index:components may be replaced by ^index:component:ranges. An ^index:range used with an ^indexed:variable to represent a list of data elements in an ^assignment:statement results in an ^indexed:variable:range. 1a4a3

.4 The meaning of the first form of ^indexed:variable:range given above is the same as a list of several occurrences of the ^item:name or ^table:name in which each ^index:component:range is replaced with the successive values of he ^index:component it replaces. If ^index:component:ranges replace more than one ^index:component, the meaning is as if such expansion of occurrences of the ^item:name (^table:name) happened first wth respect to te leftmost ^index:component:range and then progressed through ^index:component:ranges to the right. For example, consider the ^indexed:variable:range 1a4a4

_BB[, :19, 99:] 1a4a4a

which references the data structure of Section 10.3.3. This can be seen to be equivalent to the partial expansion 1a4a5

_BB[,17,99:], BB[,18,99:], BB[,19,99:] 1a4a5a

which in turn is equivalent to the full expansion 1a4a6

_BB[,17,99], BB[,17,100], BB[,18,99], BB[,18,100], 1a4a6a

_BB[, 19,99], BB[,19,100] 1a4a6b

.5 Notice, in the example above, that the misssing first "index:component for _BB means "lower:bound, not "lower:bound through "upper:bound. 1a4a7

_BB is shorthand for _BB[, ,] 1a4a7a

it is not shorthand for _BB[:,:,:] 1a4a7b

.6 There is a special "primitive, _ALL, that may be used as a shorthand for a reference to an "indexed:variable:range in which all "index:components are replaced with "colons: 1a4a8

_ALL (BB) "is shorthand for _BB[:,:,:] 1a4a8a

.7 Note that _ALL may occur only in an "assignment:statement to represent a list of data elements. In this case 1a4a9

_ALL _("name_) means "name _[: _] 1a4a9a

where there are as many "colons as the dimensionality of the named entity. _ALL must not be used unless the entire table is allocated space at this time. 1a4a10

.8 An "index:range may be used in one place other than an "indexed:vaiable:range. This is with the "number:of:entries:function:call. 1a4a11

.9 "Index:component:range has a different meaning when used in the context of _NENT. When used with an "hnddxdd:v'rh'bld:r'nfd, thd ld'nhnf hr "low:point through "high:point indicating a sequence of values to be used as "indices. With _NENT, "index:component:range means a single value to be used as a multiplier in determining the number of entries. That value is: 1a4a12

```
   "high:point  _+ 1 - "low:point                                  1a4a12a
```

.10 In the "number:of:entries:function:call, there is no concern about specific "index:components. In fact, the value of the "number:of:entries:function:call is just the product of multiplying together the extent of the referenced table in all the dimensions indicated by "index:component:ranges. The "index:components not represented by "index:component:ranges can be considered as multipliers of value _1 whether they are missing or not. With reference to the examples in Section 10.3.3, the value of 1a4a13

```
   _NENT (TAB[, , :])                                              1a4a13a
```

is "upper:bound _+ 1 - "lower:bound (using default values for "low:point and "high:point) for the third dimension which gives _100 + 1 - 1 = 100, the length of a row. The value of 1a4a14

```
   _NENT  (PTR[:]) is te same as the value of                      1a4a14a

   _NENT  (PTR[:,]) and the same s the value of                    1a4a14b

   _NENT  (PTR[:,20])                                              1a4a14c

   which is _10 + 1 - 5 = 6                                        1a4a14d
```

.11 Since, in the context of _NENT, there is no utility in omitting all "index:components, there is an exceptional meaning to a "table:name without any "index or "index "brackets. Only in context with _NENT, 1a4a15

```
   _NENT("table:name_)                                             1a4a15a
```

means the same as 1a4a16

```
   _NENT _( "table:name _[:   _] _)                                1a4a16a
```

wherein there are as many "colons as the dimensionality of the table, 1a4a17

10.5 Indexing Tables With Variable Bounds 1a5

Pointed-to tables can have "upper: and "lower:bounds that are "simple:integer:variables. Ordinarily, the "program:declaration would set the bounds before beginning a process involving the table, allocate space for the table (perhaps using the "number:of:entries:function:call and the

"words:per:entry:function:call), start and complete the process, and then release the space. To change the bounds during processing of the table could have undesired effects on the indexing of other entries, but this is not illegal--in case the programmer needs to make such changes and understands the ramifications. 1a5a

.1 Such tables can involve the "parameters of a procedure. The "lower: and "upper:bounds of a local table might be "formal:input:parameters; the table itself might be a "formal:input:parameter; or both the table and its bounds might be "formal:input:parameters. Here the ordinary sequence of events is: set the "lower: and "upper:bounds from the corresponding "actual:input:parameters, allocate space, process, release space. 1a5a1

.2 If the table itself is a "formal:input:parameter, the allocation and releasing of space is accomplished by the calling program. The location provided as the "actual:input:parameter is the location to be used by the procedure as the beginning of the table. The entry whose "index is all the "lower:bounds of this table begins at this location. 1a5a2

.3 This is the situation whether the "lower:bounds are set by "parameters, outer data, local data, or "constants. Even if the bounds of the table are changed during execution of the procedure--the entry whose "index is all the "lower:bounds always begins at the location specified by the pointer--implicit if not mentioned at the reference, explicit otherwise. 1a5a3

10.6 Indexing as Related to Storage Allocation 1a6

The order for storage allocation for a multidimensional table is elements of a row, rows of a plane, planes of a volume, etc. This order is the same as that of the values in a "constant:list used in presetting a multidimensional table (see Section 7.13). 1a6a

.1 Entries are allocated storage so that the first "index:component varies most slowly, the second "index:component the next most slowly, and so forth. The allocation for a table with a "dimension:list _(2,3,1) is given in Figure 10-1. Each entry of the table has a two-word item _AB (_1) _AB means the first half of _AB; _2 AB means the second half of _AB) followed by a one-word item _Xy. The figure relates the "index,

"item:name and relative position within the table for both parallel and serial structures. 1a6a1

.2 A table with tight structure might be allocated storage in different ways. Figure 10-2 depicts two possible allocations on a machine that has 32 bits per word for the table whose "declaration is: 1a6a2

```
_TABLE BB [5,7] T D U 10 ;
```
1a6a2a

The allocation on the left requires more words of storage than the one on the right, but might result in more efficient usage since the storage structure for each row is the same. 1a6a3

.3 The examples show effective allocation structures. There is no requirement that storage actually be allocated in the manner shown. 1a6a4

(J30368) 30-MAR-74 15:21; Title: Author(s): Duane L. Stone/DLS;
Distribution: /RJC; Sub-Collections: RADC; Clerk: DLS;

FEED 30-MAR-74 15:35 30369

Duane, Your Journal msg of 25 mar is being attended to . You will be notified of further developments. Thanks for the input. (JHB) 1

FEED 30-MAR-74 15:35 30369

(J30369) 30-MAR-74 15:35; Title: ,Hi="Response to "Problems Sorting Plex", dLS"; Author(s): Special Jhb Feedback/FEED; Distribution: /DLS FEED DLS; Sub-Collections: SRI-ARC; Clerk: FEED;

contains stucture and fornt markers " & _

Chapter 11 1

DIRECTIVES 1a

11.1 Introduction 1a1

"Directives provide supplemental information to a compiler about the program being compiled. One "directive supplies descriptions of definitions external to the program. Others control the compilation process or request debugging facilities. Some permit a compiler to do a better job of code generation by specifying referenced data, frequency of reference, etc. 1a1a

.1 The "directives listed above are part of standard JOVIAL. Other "directives may be added to the language at the implementer's option. Any "directives added must fit the form described in the next paragraph. 1a1a1

.2 A "directive is signaled by the use of an "exclamation:point followed immediately by a unique key word. Optional parameters (depending upon the "directive) and a "semicolon complete a "directive. The key word may be the same as a JOVIAL "primitive or a "name in the program since the "exclamation:point flags it as a "directive:key. The following definition gives the "directive:keys in standard JOVIAL: 1a1a2

.3 "Directives may appear before a "program:declaration and before or after a "statement or "declaration. "Directives are not considered as "statements or "declarations. Some "directives are restricted more as to where they may appear. These restrictions are noted for the individual "directives. A "directive following the single "statement that forms the body of a "program:declaration is lost; the compiler does not look beyond the final _END for further direction. 1a1a3

11.2 "Compool:Directive 1a2

All "names to be used in a JOVIAL program must be declared except those known intrinsically to the compiler. "Names whose attributes exist in a compool or library are "declared" using the "compool:directive. 1a2a

.1 If multiple compools exist for an implementation, "compool:name identifies the compool to which the "directive applies. "Compool:name may be omitted for single-compool implementations or if a default, system

compool exists. If there is only one compool and the entire compool is to be included, the "compool:directive is: 1a2a1

_!COMPOOL; 1a2a1a

.2 The "names in the "compool:directive direct the accessing of those "names' attributes from the indicated compool. "Table:names, "item:names, "data:block:names, "form:names, "define:names, "status:list:names, "statement:names, "program:names, "procedure:names, and "alternate:entrance:names may all be included in a compool. The significant attributes associated with "program:names and "alternate:entrance:names would be identical to those of "procedure:names. 1a2a2

.3 Certain "names may be enclosed in "parentheses with the following significance: 1a2a3

a. A "data:block:name in "parentheses declares the data block and all data declared within it. 1a2a3a

b. A "table:name in "parentheses declares the table and all of its table items. 1a2a3b

c. A "compool:name in "parentheses declares all "names within it. 1a2a3c

.4 All "compool:directives precede the "program:declaration and serve to establish a compool scope outside the source program in which the "names indicated in the "directive are assumed declared. This provides for overriding any "name declared in a compool at any level of source program scope; a "declaration would be in effect for the local scope at which the "declaration occurred as well as any inner scopes not containing a "declaration for the same "name. Ordinarily, compool data are in reserve, but there is no reason why pointed-to structures cannot be defined in the compool--perhaps with other compool data as implicit pointers. 1a2a4

11.3 Conditional Source "Directives 1a3

The following "directives are used to control or bracket conditional source compilation. 1a3a

.1 The "begin: and "end:directives bracket the "statements and "declarations which are to be

conditionally compiled. A "begin:directive must always be followed by a corresponding "end:directive and corresponding pairs of these "directives must not be overlapped or nested. 1a3a1

.2 The "skip:directive directs that "statements within the related "begin: and "end:directives (As indicated by "reference) are to be skipped and not compiled. If the "reference is absent from the "skip:directive, the "statements within all "begin: and "end:directives are skipped. If "reference is omitted from the "begin:directive, the "statements following, until the next "end:directive, are affected only by a "skip:directive with "reference omitted. 1a3a2

.3 In the program example below, the calls on _PRINT are suppressed by the "directive _!SKIP 1;. _!SKIP 3; causes the "statement printer _ERR to be suppressed. The "statement bracketed by _!BEGIN 2; and its corresponding _!END; are not suppressed because there is no _!SKIP; or _!SKIP 2; "directive. 1a3a3

```
                    _PROGRAM PROG;  !SKIP 3;                    1a3a3a
          _BEGIN                                                1a3a3b
                    _!SKIP 1;                                   1a3a3c
                    _TABLE  AA [100]  S  10;  NULL;             1a3a3d
_LAB:               _!BEGIN 1;  PRINT('LAB');  !END;            1a3a3e
          _FOR  I(0  BY  1  UNTIL  I  >  100)   J(0
THEN  J);                                                       1a3a3f
          _BEGIN                                                1a3a3g
                    _!BEGIN 2;                                  1a3a3h
                        _IF  I  >  50;  OUT('I', AA[I]);        1a3a3i
                    _!END;                                      1a3a3j
_LOOP               _!BEGIN 1;  PRINT('LOOP');  !END;           1a3a3k
                    _IF  AA[I] = 0;                             1a3a3l
                    _BEGIN                                      1a3a3m
```

```
                        _AA[I]=AA[J];  J=J+1;                    1a3a3n
                        _IF  J > 100;                            1a3a3o
                        _BEGIN                                   1a3a3p
                            _!BEGIN 3;  OUT('ERR', I);
    !END;                                                        1a3a3q
                            _GOTO EX'IT;                         1a3a3r
                        _END                                     1a3a3s
                    _END                                         1a3a3t
                    _AA[I]=AA[I]+1;                              1a3a3u
                _END                                             1a3a3v
    _EX'IT:         _!BEGIN 1 ; PRINT('EXIT');  !END;            1a3a3w
                        _STOP;                                   1a3a3x
                _END                                             1a3a3y
```

11.4 "Trace:Directive 1a4

The "trace:directive provides for dynamic tracing of control flow and the recording of data at the point of modification. 1a4a

.1 If a "statement:name, "procedure:name, or "alternate:entrance:name appears in the list of "names, execution at the named point in a program is noted symbolically at run time; execution in this context is meant to describe either a branch or fall through to a "statement:name or invocation of a procedure or alternate entrance. 1a4a1

.2 If the "name in the list is a "data:name, modification of the datum is noted along with the "data:name and its new value; modification may occur by assignment, exchange, or by usage as a "parameter. If the "data:name is a "table:name, tracing is performed for the table and its table items; for a "data:block:name, tracing is for the data block and all items, tables, and data blocks within it. 1a4a2

.3 The optional "conditional:formula, if present, is tested at any trace point and tracing is not performed if

the "formula is zero (false). If the "conditional:formula is _1 (true) or not present, the trace is performed. 1a4a3

.4 It is expected that trace output will be transmitted to the standard output file but the actual disposition of this output is system dependent and is specified by the implementation. 1a4a4

11.5 "Copy:Directive 1a5

The "copy:directive is used to cause an inclusion of JOVIAL source code into the "program:declaration from an external source. 1a5a

.1 The "character string is implementation defined and contains parameters to describe the source to be included; i.e., the file name, version name, library name, device name, line range, etc. It must not, of course, include a "semicolon. 1a5a1

.2 The copied source code is processed as if it had occurred in the "program:declaration at the point of the "copy:directive. 1a5a2

11.6 Compiler Optimization Philosophy and Assumptions 1a6

Ideally, a compiler optimizes code to produce a program which occupies minimal space and has a minimal run time. In practice, this is difficult, if not impossible, to achieve. With the inclusion in the language of such features as "overlay:declarations and "specified:table:declarations (which describe space sharing) and pointed-to data, any optimization at all might have a deleterious effect upon the result of a program. 1a6a

.1 The philosophy of JOVIAL with regard to optimization is to define the language with a reasonable compromise between object program efficiency and insurance of achieving the intended result. To accomplish both, the basic philosophy leans toward "safe" processing of the program "statements with a supplemental facility of using "directives to inform the compiler more completely of ramifications, associated with the data and with program logic, which would allow for more extensive optimizations. 1a6a1

.2 In general, if the supplemental information is not supplied, the compiler proceeds on a safe basis.

However, if any "directive information is supplied, the compiler may assume no impact exists other than that supplied, for the indicated "directive subject. For instance, when a ref (see Section 9.1.3) procedure is invoked, the compiler must assume all ref and compool data are set and used by the "procedure:call:statement. However, if the programmer includes "sets: and "uses:directives for the "procedure:declaration, the compiler may assume only those data elements named in the "directives are set or used. 1a6a2

.3 Taking the safe approach has the obvious benefit of protecting the novice or unsophisticated user. On the contrary, assuming the worst in the name of safety precludes many optimizations which probably are safe since the events which could have an adverse impact on these optimizations are very unlikely to occur. Consequently, the compiler compromises safety by making possibly unsafe assumptions in the critical areas mentioned below (Section 11.6.4 through Section 11.6.11) unless the programmer provides "directives to do otherwise. 1a6a3

.4 The compiler assumes that data are normal, i.e., data are not modified by interrupt processing or concurrent tasks (parallel processing). This is not generally a bad assumption since many systems do not have a capability for parallel processing and the compiler may know that interrupt processing does not modify program data. The programmer may use the "abnornal:directive (Section 11.7.1) to override this assumption. 1a6a4

.5 From the viewpoint of the "procedure:call:statement the compiler assumes that a procedure references only entities within its scope, "actual:input: and "actual:output:parameters, and def (see Section 9.1.3) entities. It further assmes that the results of functions having no "parameters other than "simple:items, no reference to outer entities, and no pointed-to, environmental, or reserved data are reproducible for identical "parameters. The "sets:directive and "uses:directive (Section 11.7.2) may be used to override these assumptions. 1a6a5

.6 The compiler assumes that overlay or interference does not result from the use of pointers. The "pointer:directive (Section 11.7.3) can inform the compiler that interference may result from the use of pointers. 1a6a6

,7 The compiler assumes that computations may be reordered (even around "procedure:call:statements providing it can determine by scanning the procedure that pertinent data are not referenced). The programmer may use the "order:directive (Section 11.7.4) to prevent this assumption. 1a6a7

,8 The compiler assumes that procedures are not recursive unless there is direct self-invocation. The "recursive:directive (Section 11.7.5) can be used to indicate that a procedure can be called recursively or reentrantly. 1a6a8

,9 The compiler assumes that interference results from item overlays within an entry word only if their bits overlap (by "specified:table:item:declarations or "subordinate:overlay:declarations) and that interference also results from overlays as described by "independent:overlay:declarations. It assumes that interference does not result from entry overlaps caused by variable-entry-length tables or from any implied overlay caused by the use of absolute addresses. The "interference:directive (Section 11.7.6) can be used to point out where such interference does occur, but would not be assumed by the compiler. 1a6a9

,10 A variable-entry-length table is a table declared by a "specified:table:declaration containing "specified:table:item:declarations placing items in the entry beyond the size of the entry specified in the "specified:table:heading. Whether any significant use can be made of such a structure is system dependent, but it seems highly unlikely unless the activity is confined to an allocation submanifold of a serial table. The chances for successful usage decrease as the attempt tries to encompass submanifolds (even within an allocation submanifold) of greater dimensionality. The greatest probability for success lies within a row. 1a6a10

,11 The compiler assumes that "formal:input:parameters to a procedure are independent of each other and of other data. Again, the "interference:directive may state that this is not the case. 1a6a11

11.7 "Directives for Code Optimization 1a7

The "directive described in this section are intended to provide a compiler with information that is useful for optimizing the object program. Some of them may be used to

override assumptions that might normally be made by the compiler (see Section 11.6). Others are independent of compiler assumptions and could be ignored by the compiler without affecting the validity of the object program. 1a7a

.1 "Data:name in the "abnornal:directive is that of any previouly declared data element and indicates that modification of the data element may occur by interrupt processing or concurrent tasks. This "directive must appear before the first reference to the "data:names in the list. 1a7a1

.2 The "sets:directive and "uses:directive apply to "direct:statements and certain procedures. In "direct:statements one or both "directives immediately follow _DIRECT and are used to inform the compiler of data referenced in the "direct:statement. If either "directive occurs in a "direct:statement, the compiler may assume the list or lists of "data:names are all inclusive. In a ref "procedure:declaration (see Section 9.4), these "directives inform the compiler of data referenced in the external procedure. The compiler may assume the list or lists include all "data:names the compiler need be concerned with for optimization purposes. In the "declaration of a procedure that is a "formal:input:parameter these "directives inform the compiler of data referenced in the procedures that will be "actual:input:parameters corresponding to this "formal:input:parameter procedure. The compiler may assume, if either "directive is used with a particular procedure, the sets and uses information is all inclusive. The "sets:directive and the "uses:directive for a procedure are placed between the "procedure:heading and the "procedure:body. 1a7a2

.3 The "pointer:directive indicates that reference to data via the "pointer:formula should be considered a reference to the "data:names in the list following the "colon. Several "pointer:formulas may be described with a single "directive. The "pointer:directive is placed anywhere after the "declaration of the "data:names referenced in the "directive but prior to any uses of the "pointer:formula. 1a7a3

.4 The "order:directive dictates that "formula 'llptt'thnn nrddr bd frnl ldft tn rhfht 'nd hn 'bbnrd'nce with precedence rules (Section 4.15) and that any "function:call within the "formula must be evaluated even though the eventual result is known. This "directive is

effective for the "statement immediately following it and prevents the compiler from reordering for code optimization in or with respect to that "statement. In addition, if this "directive is placed between a "procedure:heading and its "procedure:body, any "statement referencing this procedure or function is effected as if the "directive had preceded the referencing "statement. 1a7a4

.5 The "recursive:directive is placed between a "procedure:heading and its "procedure:body if the current procedure may be called recursively or reentrantly. This "directive restricts certain optimizations performed across a "procedure:call:statement which might be unsafe if a recursive entrance occurs. The "recursive:directive is assumed for procedures that call themselves directly. The recursive attribute does not cascade to called procedures; if called procedures are also recursive, it must be indicated by use of a direct self-invocation or the "recursive:directive. "Direct self-invocation" or "calling itself directly" means that the procedure uses its own "name or one of its own "alternate:entrance:names as a "procedure:call:statement or a "function:call. Direct self-invocation includes, of course, being called by an internal nested procedure (this does not necessarily make the nested procedure recursive). An example of the need for the "recursive:directive is exemplified by procedure _ABC which calls procedure _XYZ which calls _ABC. If, in fact, these calls will never be executed to the extent that either _ABC or _XYZ is doubly active, then there is no need for the "recursive:directive. On the other hand, if one of these procedures can be doubly active, then, of course, it must be programmed so its data space will be properly managed and it must contain the "recursive:directive for proper optimization. 1a7a5

.6 The "interference:directive is used to specify data elements that interfere with each other. The interference is specified by sets; the data element named to the left of the "colon interfereres with the data elements named in the list to the right of the "colon and vice versa. The data elements named in the list do not interfere with each other. More than one set may be specified; the sets are not related. The "interference:directive is placed after the "declarations for and before the first reference to any "data:name specified in the "directive. In the example: 1a7a6

```
_!INTERFERENCE AA : BB,CC DD : EE,FF,GG FF
:GG;                                                    1a7a6a
```

mutual interference is indicated for _AA and _BB, for _AA and _CC, for _DD and _EE, for _DD and _FF, for _DD and _GG, and for _FF and _GG, no other interference exists for these data elements. The compiler may assume there is no interference (except that already known to the compiler) for data elements not named in "interference:directives. 1a7a7

.7 The "space:directive or "time:directive is intended to provide generalized direction that execution space or execution time, respectively, should be favored where the compiler has a choice. The extent to which space or time is compromised in favor of the other may be limited by an implementation-dependent parameter given in the optional "character string. For instance, the following "directive might direct the compiler to favor time versus space in its optimization but not to the extent that execution space increases by 10%: 1a7a8

```
!TIME 10;                                               1a7a8a
```

A "space: or "time:directive is effective from the point at which it occurs in the "program:declaration until a subsequent "space: or "time:directive occurs. Ignoring these two "directives has no effect on the validity of the object program. 1a7a9

.8 The "linkage:directive is placed between a "procedure:heading and the "procedure:body and is used to describe a non-standard linkage for the procedure. The parameters given in the optional "character string are implementation dependent. For a system that has only one form of non-standard linkage, 1a7a10

```
_!LINKAGE;                                              1a7a10a
```

could be the way to request that non-standard linkage. This "directive might not, in general, affect code optimization unless, for example, there were a parameter value that would indicate to the compiler that two "actual:input:parameters of the procedure could be passed in one word. 1a7a11

.9 The "frequency:directive has two purposes. When placed between the introductory clause of a "conditional:statement and its first

"controlled:statement, this "directive allows the compiler to favor the most frequent direction of evaluation. When placed between a "for:clause and its "controlled:statement, the "frequency:directive can provide the compiler with an expected repetition count (or perhaps a minimum count and a maximum count) to aid the compiler in determining whether certain optimizations that have set-up cost will pay off. In both cases the parameters given in the "character string are implementation defined. Ignoring a "frequency:directive has no effect on the validity of the object program. 1a7a12

(J30371) 1-APR-74 05:22; Title: Author(s): Duane L. Stone/DLS;
Distribution: /RJC; Sub-Collections: RADC; Clerk: DLS;

NJN 1-APR-74 13:09 30372

INFORMAN Report draft

INFORMAN group--
The deadline for the INFORMAN draft is today. The response from you all has not been overwhelming. Therefore I am preparing a draft based on the little I have received; it is truly a draft in that some sentences and paragraphs are not even complete. As of now, the first part is available in NLS form in <USING>INFO-DRAFT.NLS (using, info-draft, 1:w); as I finish more I will add it to the same file, and create a text copy when it is all complete. I hope you will generate alternatives or at least help revise it.
Nancy

1

INFORMAN Report draft

(J30372) 1-APR-74 13:09; Title: Author(s): Nancy J. Neigus/NJN;
Distribution: /INFORMAN; Sub-Collections: NIC INFORMAN; Clerk: NJN;

Versions of the TPO's that are in the journal

(TPO) TECHNOLOGY PLANNING OBJECTIVES 1

mdp 11-may-72 8:22 10412 tpo-14 for fy-73
location(jjournal,10412, 1:w) 1a

jlm 18-jul-73 08:48 17860
tpo no 11 software sciences technology
location: (ljournal, 17860, 1:w) 1b

jlm 13-jul-73 12:02 17785
tpo brief
location: (kjournal, 17785, 1:w) 1c

jlm 10-aug-73 07:24 18355
fy-74 program for section
location: (mjournal, 18355, 1:w) 1d

jlm 10-aug-73 07:21 18354
misp
location: (mjournal, 18354, 1:w) 1e

fjt 9-aug-73 10:25 18334
fy-75 tpo summary (8 page version)
location: (mjournal, 18334, 1:w) 1f

fjt 9-aug-73 10:21 18333
fy-75 tpo summary (six page version)
location: (mjournal, 18333, 1:w) 1g

fjt 23-jul-73 11:29 17975
form 30a's prepared july 1973 for fy-74
location: (ljournal, 17975, 1:w) 1h

ejk 6-aug-73 14:38 18226
format for tpo
location: (mjournal, 18226, 1:w) 1i

dls 23-aug-73 09:22 18620
tpo 11-final format
location: (mjournal, 18620, 1:w) 1j

EJK 1-APR-74 15:12 30378

Versions of the TPO's that are in the journal

(J30378) 1-APR-74 15:12; Title: Author(s): Edmund J. Kennedy/EJK; Distribution: /JLM; Sub-Collections: RADC; Clerk: EJK;

Tickler for Month of March 1974

(mf1) 1 March - Friday 1

1055 - 1125 - Visit of General Hudson 1a

1000 hrs, IG Exit Briefing 1b

Due Date - Course on "Effective Presentation" - Submit nomination (Name only) to ISM NLT 22 Mar 74 - Completed 1c

Timecards due today 1d

News Brief items due into Becky Today. 1e

Bobbie: Travel figures due by noon. 1f

Bobbie: Personnel Strength Rpt, due. - Completed 1g

(mm2) 4 March - Monday 2

0830 hrs, Branch Chief's Meeting - Cancelled 2a

(mt2) 5 March - Tuesday 3

Due Date - ISIS/McLean in response to DOT/D. Craig letter subject RADC Support to DAIS - ASAP - Completed 3a

Due Date - ISI/FJT - Review & Provide Comments for D. Craig on AFSC/XRF/ACD ltr - Exchange of Computer Sciences Info - Completed 3b

(mw2) 6 March - Wednesday 4

ISC Confessions 0830 hrs. 4a

F. Tomaini & R. Nelson - TDY 4b

(mth2) 7 March - Thursday 5

0830 hrs, Branch Chief's Meeting 5a

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 5b

(mf2) 8 March - Friday 6

Bobbie: Travel figures due by noon. 6a

Due Date - ISIM/ISIS/ISC - IR&D McDonnell Douglas - Completed 6b

Tickler for Month of March 1974

Due Date - ISIM/W. Rzepka - PR-B-4-3250 - Secure Data Management Systems - Westinghouse Proposals - Completed 6c

(mm3) 11 March - Monday 7

0830 hrs. Branch Chief's Meeting 7a

(mt3) 12 March - Tuesday 8

Due Date - ISIS - Names Submitted for those interested in attending General Electric IR&D Review of Proposed FY-74 Program to be held 21 March. John Palaimo only one! 8a

(mw3) 13 March - Wednesday 9

Reception for Col Geisy - Evening - Section and Branch Chiefs should go, and Officers. 9a

Due Date - LaForge & Liuzzi - TWX - WWMCCS Standard Software Impact 9b

ISF Confessions 0830 hrs. 9c

FY-75 D&F Submission - ISIS/D. Nelson - AF Form 111 w/AF Form 725 and RADC Form 7...due in DORP NLT 15 Mar 9d

1330 hrs. - GE - H. Nye & F. Tomaini - Meeting w/Al Barnum 9e

(mth3) 14 March - Thursday 10

0830 hrs. Branch Chief's Meeting 10a

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 10b

Jim Bair visits today!! 10c

(mf3) 15 March - Friday 11

Jim Bair visits today again!!! 11a

Timecards due today 11b

Bobbie: Travel figures due by noon. 11c

Due Date - ISIM/ISIS/ISI - Projct Engineers Bimonthly Review of Tech Completions - ISIS Completed 11d

(mm4) 18 March - Monday 12

Tickler for Month of March 1974

(J30379) 2-APR-74 07:15; Title: Author(s): Roberta J. Carrier/RJC;
Distribution: /RJC; Sub-Collections: NIC; Clerk: RJC;

Tickler for Month of March 1974

Col Thayer will be here as of late afternoon permanently (?) so we start back with his Signature Block 12a

John McNamara is Acting Branch Chief this week. 12b

Sam DiNitto is Acting Chief for Section Chief 12c

0830 hrs. Branch Chief's Meeting 12d

WWMCCS ADP Requirements inputs on paper to be reviewed & commented on by all participants(cy ea member)from AFDSDC Gunter AFB 12e

On or about TODAY - Mr. Robert Majors (AFDSDC) will visit RADC/ISI in regards to WWDMS and RADC/ISI commitment 12f

F. Tomaini & R. Nelson - TDY 12g

Presentation to be held on "Advanced Techniques in Structured Programming" given by James Culp - RCA - Bldg. 3 - Conference Room 1a at 1400 hrs. 12h

(mt4) 19 March - Tuesday 13

F. Tomaini & R. Nelson - TDY 13a

Collect topic write-ups today by noon for confessions. 13b

(mw4) 20 March - Wednesday 14

Due Date - ISI/ISIS/ISIM - Forward Nominations to ISM - Remedial Education Courses (For GS-7 and below) - Completed 14a

F. Tomaini & R. Nelson - TDY 14b

ISI Confessions 0830 hrs. 14c

R & T Selection of the Month is due in ISM. 14d

(mth4) 21 March - Thursday 15

F. Tomaini & R. Nelson - TDY 15a

Commander's Supervisors Call - 10:00 hrs. - Bldg 106 - Auditorium 15b

General Electric IR&D Review of Proposed FY-74 Program - Bldg. 106, Room A119 - 0830 hrs. 15c

0830 hrs. Branch Chief's Meeting 15d

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 15e

(mf4) 22 March - Friday 16

F. Tomaini & R. Nelson - TDY 16a

Bobbie: Travel figures due by noon. 16b

Due Date - Course on "Effective Presentation Sumbit Names only to ISM NLT 22 March - Completed 16c

(mm5) 25 March - Monday 17

0830 hrs. Branch Chief's Meeting 17a

Scheduled visit of the Bloodmobile is 28 March - Must submit donor cards by 25 March 17b

(mt5) 26 March - Tuesday 18

(mw5) 27 March - Wednesday 19

Due Date - ALL DOCUMENTATION CLERKS - Emergency Change to AFM 12-50 - Completed 19a

(mth5) 28 March - Thursday 20

0830 hrs. Branch Chief's Meeting 20a

After BCM - SADPR-85 Meeting (Mac & Morreale) 20b

Officer's Commander's Call (Officers Club) 1600 hrs. 20c

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 20d

(mf5) 29 March - Friday 21

Bobbie: Travel figures due by noon. 21a

Form 2's (employee time expenditures) are due today. 21b

Form 6's (projected manpower) are due today. 21c

Due Date - ISIS/R. Robinson - Unsol Prop 139-74, Addition of FORTRAN Processing Capability to JOVIAL Automated Verification System 21d

RJC 2-APR-74 07:53 30380

Tickler for Week of 1 Apr - 5 Apr 74

TITLE:
COMMENT:
AUTHOR(S):RJC
DISTRIBUTION:
SUBCOLLECTION:
CLERK:RJC
GO. 1

(am1) 1 April - Monday 2

0830 hrs. Branch Chief's Meeting 2a

Frank J. Tomaini - JURY DUTY - ALL WEEK 2b

Due Date - ISI/Tom - TUMSE Letter in regards to Electronic Pocket Size Calculators - Completed 2c

News Brief items due into Becky Today.(KJOURNAL,19533,1:w) 2d

PMP requested in Form 56 - Forward to ESD for Coordination 2e

Due Date - ISI/Tom - Forward Financing - Qrtly Report Input Due ISM - Completed 2f

Bobbie: Personnel Strength Rpt. due. 2g

(at1) 2 April - Tuesday 3

(aw1) 3 April - Wednesday 4

Due Date - ISI/Tom - Due 3 Apr ISM - Coordination of AFSCR 11-3/RADC Sup 1 - Re: Management of Trip Report - Completed 4a

Due Date - ISI/Tom - Contract Maintenance Reports - FY-75 Office Machine & Appliances - Completed 4b

ISC Confessions 0830 hrs. 4c

(ath1) 4 April - Thursday 5

0830 hrs. Branch Chief's Meeting 5a

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 5b

Due Date - ISIM/W. Rzepka - PR-B-4-3250 - Secure Data Mgt Sys 5c

RJC 2-APR-74 07:53 30380

Tickler for Week of 1 Apr - 5 Apr 74

(J30380) 2-APR-74 07:53; Title: Author(s): Roberta J. Carrier/RJC;
Distribution: /RADC; Sub-Collections: NIC RADC; Clerk: RJC;

JI 2-APR-74 07:57 30381

Administrative change for MITRE-TIP

Marcia - Please turn of the NIC online delivery to MITRE-TIP for JI, I generally service my initial file frequently and also sending it to the MITRE-TIP directory is an annoyance to the other users,

Thank you for your kind and prompt response.....Jean 1

JI 2-APR-74 07:57 30381

Administrative change for MITRE-TIP

(J30381) 2-APR-74 07:57; Title: Author(s): Jean Iseli/JI;
Distribution: /MLK JBP(hope you don't mind) SSP; Keywords: ident record
change; Sub-Collections: MITRE-TIP; Clerk: JI;

dictation

Meeting of February 15, 1974. 1

Attendees: 2

EPAC-West: 2a

Brown, Rodden, Black, Kruzic, Walters, Van Nouhoys,Whitby, Schmidt 2b

EPAC-East 2c

Capps, Neitzel, Meyers, Rodrigues 2d

Capps: Running over our activities of yesterday, Dave did you have any contact with Bob Daly on the Autoden and other DoD Telecommunications. 3

Brown: Yes I had a telephone conversation with Bob Daly yesterday. He wasn't able to add very much. He corraborated what we have learned about Autoden 2 or whatever it is. I told him of our interest and he thought we were doing the right thing. 4

Capps: Did he have any ideas of contacts other than Ben Erdman, because I feel that may be kind of a sensitive contact for us to use. 5

Brown: Yes, I had a longer telephone conversation with George Hagn about it. He urged us to get in touch with JCS people. They've got a Wimex man, and in that Wimex branch there is a standard. Ed Rodrigues in our Washington office would be talking to George about this. 6

Capps: OK we've got that. I have reviewed the Secret Autodin paper that you mentioned a month or so ago. And Ed Rodrigues has it in his hands right now and is looking it over. My first impression is that it is unfortunate that only 2 to 5% of it is classified, because there is much general information in it that we could use. But the whole document is Secret. What are your plans for getting with George Hagn Ed? 7

Ed: He wants me to complete the reading of the Classified study which I have almost done. When I have completed that, we are going to get together and pursue this in more detail. 8

Capps: Dr. Moore just joined our conference. Would you care to say a word on our contacts with DCA Ernie? 9

Moore: The Autodin, is that what you are talking about? 10

Capps: Yes, we had a contact that Dave Brown suggested we use, his

name is Ben Erdman, it was our impression that he was on some other subject, and had a sensitive assignment at the White House level, I was looking for contacts that wouldn't get us politically involved. 11

Moore: I think the guy totalk to is George Hagn, He is known in Reston, in fact I'm going to Reston with him in about half an hour. There is a group there, under a guy by the name of Raffensburger who's in charge of survivability of that system, I don't know who is in charge of the operation of that system, but I think the operational end isn't in Reston anyway. 12

Moore: George is the one who knows all these guys and I think the best way for you to get into that agency is through George. 13

Capps: Fine We will let Ed Rodrigues pursue this with George Hagn and we will keep you informed Dave. 14

Brown: Good. 15

Capps: The next item. Carroll called and we had a fairly long discussion and I want to bring up my impressions on his activities and where we might be going a little later when I call for the new items of business. 16

Dean: How's Martin doing on the Delta Datas? 17

Dirk: He is working on them, I haven't talked to him in the last couple of days, I know I don't have any more information than when I put delivery schedule in the Calendar. 18

Dean: Do you know if he is talking about shipping next week? 19

Dirk: I...must be. Let me check back on him later today. 20

Capps: OK the next item ithe EPAC communication circular. Dean and I have worked that over and he has put it into the network now. Is that correct Dean? 21

Dean: Yes, is Eileen there? OK I just finished updating this file. It is in the Directory as <Capps>, it's title is Communication. You might want to print out a copy there. 22

Capps: Next item. We have the February 14, DEIS report and it looks the same as the one we sent you last week. John Icraman will be bringing it to Menlo this afternoon, he will give it to Dick Schmidt. Also, I believe we have made arrangements for getting tapes, can you comments on that Ed? 23

dictation

Ed: I talked to Larry Smith this morning and he was going to check. I had expected a call back from him by now about getting the two weeks that bracket the tape, that we sent back to you but he hasn't gotten back to me. 24

Capps: It looks like there is no problem as far as Copans and Capps are concerned as far as getting us these two more tapes that give us a three week sequence so we are hopeful on that subject. Now I would like to get into some of the new items, but we will wait for you to discuss some of your old items. 25

Schmidt: I have one old item. I talked the other day about scheduling and I would like to bring you up-to-date on where I stand with that. I had Lyle go through the PSR's and pick out charges since December 1st on the various subs, and plot that out over time so we will have a historical record and I'll be making copies of these available to Arlie, Dave and Bob and the next thing I won't to do is to go ahead for the X? weeks for between now and the end of the project and we can itereate that several times. I'll let you know that we are moving on that and we will have something fairly completed by the end of the business day on Monday. 26

Capps: OK, Bob I have not yet received those inputs from Dick Goen, but as soon as I do I will try to give more specific instructions if you could help Dave Brown in the meantime fine, I will give him some instructions as soon as I get your input. 27

Bob: Yeh, I'll talk to Dave and tell him what to do. 28

Schmidt: Another thing along that line Arlie and that is I talked briefly with Jim Norton yesterday afternoon and he has delegated Dirk the scheduling possibilities and I'll be talking with Dirk about getting details on the schedule as it pertains to contributions by ARC. There are several different elements of their contribution that I think we need to understand throughly as well as a complete program description. 29

Capps: Right, I'm particulaly interested in the interaction between the three pieces that are ARC support the 130 KPiece, the 38 KPiece and the new 25 KPiece I would like to see how those things interact and support our activities . 30

Schmidt: Right, the direction we are trying to move in obviously, is to have an over all little program schedule between now and the end of June so we can see where we are headed. 31

dictation

Capps: I agree. Let's talk about some new business items now, very quickly, Dr. Moore is probably going to leave soon and I would like for him to get at least an idea of the general overall effort we try on these conferences. I have on the top of my new business items here, some information concerning Carrol's effort in MIT. As you had reported yesterday Dave, it appears Carrol has run into a bunch of small problems with Dr. Markowitz's system but I think if I understood him correctly things are going along better today and he was to call me back if my suggestion as to a meeting date here in Washington would be a error. I suggested Thrusday of next week, was probably as early as we could meet with Christension and Russell. I have not heard from him so I'm still waiting and I intend to call Col. Russell in about an hour and let him know that this is about our best estimate of when we could meet in the general subject of multics and ARPA net and so forth. I'm putting this out now because I do feel there is considerable amount of intergration still required between Dick Schmidt, Pam Kruzic,Carrol Kerns, and perhaps others because there seems to be some gap in Carrol's understanding of the generalized menu that we are proposing. I hope that that can be straightened out later on because it seems very critical that when we propose something to Christenson and to Russell that it is a durable thing and that if we have any doubts about it I think we should withdraw it from our menu. 32

Brown: Thrusday sounds fine , I'll will plan on being there. I assume Dick Schmidt will also. 33

Capps: Do you want to comment on that menu Ed, you made some notes on it when you were talking with Carrol. 34

Ed: It sounded to me that he felt very confident about doing the parts of the menu that required only one weeks worth of data and not confident at all about the problems dealing with more than one weeks worth of data. His confidence was contingent on ... 35

Bob: The changes over time are going to be increasingly important to them I think 36

Capps: Yes I think that is true, when we get these extra tapes, we can decide the schedule when we would show these trend analysis and that sort of thing. 37

Ed: Again, just to get back and clarify what I said about what Carrol said he said that he was confident based on assumption of some fulltime help from Project Cambridge personnel. He wasn't confident about having to do it all by himself. 38

dictation

Capps: Yes one of the problems seems to be that when Col. Russell did not get ahold of Markowitz or Markowitz's boss and to be sure that what Carrol is doing is an ARPA authorized support activity. I got the impression that he feels that they are being nice to him but that we are kind of riding on their goodwill rather than on a directive from ARPA so I'll talk to the Col. about that 39

Dick: I understand Jim Norton will be there on Tuesday. 40

Capps: Norton will be here partime on Tuesday, but Dean tells me that he is going to Montreal or somewhere and probably can't make it back here to be with us on the Thrusday meeting if it takes place I'm very anxious that when we get into a discussion with Russell and Christenson that we don't leave out the interest of anyone like the ARC group because they would obviously have to participate in a very real way and in planned dates that we might set for demonstrations in the East Coast. 41

Dean: Jim might be able to make it back here early the following week if you choose to postpone it. 42

Capps: Well I'm not anxious to postpone it as you know I feel that this postponement from Tuesday to Thrusday, might not sit well with Co l. Russell but that is what I consider to be our best guess so I am going to give it to him. That's all the business items I have for today. Did you have any out there? 43

Bob: Arlie what's that proposal, that 74-18, have you seen the print-out copies of that? 44

Capps: The official printout copy of it? 45

Bob: More specifically has Russell seen it, has he commented on it? 46

Capps: I'm not really clear on which proposal you are talking about. He had the draft proposal of our support for the DEO if that's the one you are referring to. I don't know if he has the official copy or not. 47

Dirk: Well here is the official copy which should be got off the net 48

Dean: You put that in the Journal a couple of days ago? 49

Capps: We will look for it, I have not heard from Col. Russell that he has received that official draft but I will check with him this afternoon. 50

dictation

Whitby: Dirk is sending a message saying it was in the Journal and gave him the Journal numbers. 51

Capps: He has not commented on it so I don't know, but he said he was going to process the draft proposal anyway unless they were subject to changes in it then I assume we are still on ' course. 52

Bob: OK Arlie, remember the CERL meeting here and he asked for the minutes on the 30 January meeting here. What is the status of that? 53

Capps: I haven't done anything on that I guess we can say that that is a gap. The minutes that were held on the meeting out there, some of the minutes were put in a memo by , was it Dirk? No I'm wrong I don't have any notes on that January 30 meeting. 54

Bob: Well that is something we are compelled to respond to , he has the authority to ask for it and he asked for it. 55

Schmidt: One thing we can do is send him a copy of the viewgraphs that were presented and there is something existing we can check on and we can send him a copy of that so I wasn't aware that he has. 56

Capps: I can assume Dick that you can finish that out there. I'll be glad to participate, but I think you probably have the viewgraphs and things like that in your hands there. 57

Schmidt: Did he talk to you Bob? 58

Bob: I talked to him before the meeting and wrote a memorandum , he has a copy. 59

dictation

(J30383) 2-APR-74 10:24; Title: Author(s): Rita Jordan/RJ;
Distribution: /RJ; Sub-Collections: DEIS; Clerk: RJ;
Origin: <JORDAN>DICTATION.NLS;10, 27-FEB-74 06:20 RJ ;

Dictation2-20

Meeting of February 20, 1974 1

Attendees: 2

EPAC West: 3

Brown, Black, Kern, Vannouhuys, Whitby, Schmidt, Rodden, Krusic, Strope 3a

EPAC East: 4

Rodrigues, Neitzel, Meyer, Capps 4a

Capps: I want to have a short conference today for a couple of reasons. The air in here is full of paint fumes and we are all kind of drowsy. Also Ed and Betty are going to have to leave in about a half an hour so I want to take up some of the old business items that they are interested in first and get them out of the way. First one is Ed has been pursuing the Autodin story with Larry Smith out at DSA and I would like him to make a short report on what he has found out. Especially some of the problems they have with the current DEIS I report. 5

Ed: Smith was, told me that the overwhelming bulk of the problems he was having with the report was the inputs errors and re-editing and whatever and they had some people that had to spend 2 or 3 days fulltime just fixing cards that came in from the field, and that the overwhelming source of the problems were the terminals that did not have card terminals and plus the fact that in order to have a standard input format they were having everybody send everything in message format rather than card format. With regard to Autodin he thought it was a very good way of doing bulk data transfers but it can only transfer card images. It works in terms of either cards, as far as bulk data transfer, either cards or 80 character card images, unblocked on tape. It can handle a maximum of 498 cards in a block. I'm trying to pursue this a little further and another thing I'm trying to do is look into the possible improved ways of getting input in. 6

Capps: My question to you Dave is, is this activity of Ed's meaningful from your point of view. 7

Brown: I am inclined to doubt it off hand. I would like to talk to you about it tomorrow when I'm there. It gets us into an area where we are probably unable to be very affective. 8

Ed: Which part of it, looking into improvements? 9

Brown: Yes, improvements of the sending in. 10

Capps: I don't know. If the big problem is there, it would seem to me that if we have any ideas or suggestions it would be the first thing they might be able to implement. 11

Brown: Sure, it is worth a look but I wouldn't send any of our sources in doing it. It is something we can perceive after apparently a brief look at it fine but we want to avoid getting bogged down in. 12

Capps: Well, let me give you an idea of what I have in mind. Ed and I have talked about this. We don't know how many of the reporting activities don't have the Autodin card capability. We don't know to what extent or what percentage of the inventory is held by these people. It may very well be that the errors are not significant from the DEO point of view. We could even suggest dropping those people out if they have say only a couple of the product. 13

Brown: Sure if you can discover that fine. 14

Capps: Well that is the sort of thing I think we ought to find out from a systems point of view, don't you? 15

Brown: Yes, I agree. 16

Ed: And another problem he had was that he had a strong feeling that the instructions that the field activities were getting were either incorrect, incomplete or contradictory or whatever, that a lot of people either just flat didn't read the instructions on how to send the input in or the instructions were bad. 17

Capps: That problem I would back off from. We can mention it perhaps to Christensen but that is a problem I don't want to get tangled up with. 18

Brown: The problem I was thinking of a few minutes ago when I was commenting. 19

Ed: With respect, Carrol Kern asked me a question about a little problem on the DEIS tape the other day about finding a plus sign in the Stock on Hand field. And that plus sign according to Larry Smith is meaningless and it is left over from a numerical calculation that they performed and it should be ignored. Any time you hit it, just don't print it. Supprress it. 20

Capps: OK I want to talk about the tapes, I assume you have them Dave, that is the additional tapes we sent you. 21

Brown: Yes we do, we got them about Saturday or Sunday, I don't know when. 22

Capps: Are you going to make any use of them that I can report to anyone here. 23

Brown: Yes, we are copying them now and we had a meeting with Markowitz's yesterday in which we agreed we would mail copies to MIT where they would be loaded on Multics and we could ?? some of the experiments with analysis requiring data in two consecutive weeks. 24

Capps: OK well that leads into the next comment, How do we view the menu after our dicussion with Markowitz and Carrol Kern's visit? How do we view the DEO menu? 25

Brown: We of course were unable to do any of those that required more than one tape but I think we have now sent for, been through test analyses, that demonstrated our ability to do everything in the menu. Yesterday afternoon, sat down with Markowitz and this friend of his at Stanford University who is familiar with this system, Carrol Kern's and I and we did these things and I intend to bring with me the things that we did. Some of them are tables,cross tabulations,scattered ?, curves, a lot of different things that make it very clear that we have that capability, and it does however require a peson who has some knowledge of this system and 2 weeks to acquire. 26

Capps: Fine, well does Dick Schmidt know what you were able to accomplish and what is his view toward the published menu that persumably Russell has? 27

Schmidt: Carrol and I are going to sit together this afternoon Arlie and look at that. Quite frankly I have been focused on the R&D report this morning and have not had a chance yet to sit down with either Dave or Carrol and look at that but we plan to do so this afternoon. 28

Brown: Let me add Arlie that Markowitz plans to put similar demonstrations for Russell on Thrusday if a trained person were present on Friday at our meeting and had a portable terminal with him he could do a similar demonstration. We do not plan to do such a demonstration. 29

Capps: That is correct. I don't think the purpose of the meeting on Friday is to demonstrate anything, but I think it is to use the menu that we have already sent to Russell or a substitute menu as a trial balloon with Sonenschien's groups probably afternoon Friday. 30

Brown: I think, my opinion is we are being more rigid that we have

to be after we have seen what this system can do, a person like this can rapidily see the kinds of questions he can ask and we can give him a response as fast as we want to. You have a skilled person there, you can ask a question and the person can sit down at the terminal and give him the answer. I don't think we have to be quite as rigid as we are. 31

Capps: Well when you say ask a question, give him an answer doesn't that infer that you have to have something specific as a menu that would outline the kind of questions and the kind of answer you can give. 32

Brown: It is called JANUS manual, users manual, if you are on your way back 33

Ed: I think I have a copy of it. 34

Brown: Some of us have to become , you know the kind of questions you can ask, the kind of things you can do, the kind of curves you can plot, the kind of tabulations you can get and so on. 35

Capps: Well, you are suggesting then, is that we just walk over to Christensen and tell him he can do the JANUS system? 36

Brown: Well, something like that. Let me give you an example of the things we were doing yesterday afternoon. We were interested in looking in short falls, and short falls we defined, I don't know what the official definitions is, but a positive short falls means that you have plenty of fuel, negative short fall means that you are going to have less fall, less fuel than you are going to need. So we said, let's look at the reporting activities, that have, first of all, greater than 30% of their stock on hand. We began to get an enormous list out. We didn't want to see that so we cut that off, so let's look at negative short fall, we got a very short list and about 5 reporting activities and one of them was -39,000 barrels or something and it began to be interesting to do this kind of one question leading to another. You don't know what you want sometimes and I think that is the thing that makes this system so useful. 37

Ed: It is a good general analytic tool and it is not restrictive to a specific set of questions, right? 38

Brown: Right. 39

Whitby: I think the point that came out Arlie in this whole discussions, I participated in the beginning part of it, not so much in the demonstration that Dave is talked about, is that it had to be coupled with appropriate use of the DFSC capability, to turn out formatted reports, In other words the formatted report pursumablyis

to cover the regular routine allocation of fuels and that you only use the JANUS system in orderto spot the difficulties and to attempt to find out what it is you should do about them, in other words, Markowitz was clear to point out that the JANUS system is not intended to turn out massive reports in the same format, in with the same figures, week after week. That is not its purpose. 40

Ed: Exactly. It practically can't do that, 41

Capps: In fact, nobody wants it to do that. 42

Ed: OK, it is an anlysis support tool right. 43

Whitby: Yes, let me make it quite clear so that they don't ask you questions about that, essentially it would be better answered by changing the directives to DSA. As far as the DEIS report is concerned, 44

Ed: I think what you could do if you can view your menu as sa samples of things you can do that can be expanded upon, in other words, it is not restrictive. 45

Whitby: That is exactly right. 46

Capps: OK well we can talk about this more when you get here Dave,, What time do you expect to arrive. 47

Brown: Tomorrow morning. I'm talking the afternoon plane and I'll land in Baltimore this evening around nine o'clock. 48

Capps: OK then we will see you tomorrow morning. We can talk about this in more detail when we see you. 49

Schmidt: Arlie, Bob and Jerry Strobe and Pam have joined us, 50

Capps: OK Fine. OK well those are the items that I had flagged to get out of the way quickly of the old business, however, there is one item of the new business that I want Betty to talk about a little bit here before she leaves. Go ahead Betty. 51

Betty: I have started checking all the Senate and House bills that have to do with Energy which is a huge thing of 20 some Senate Bills and 60 some House bills right now, that have been presented in the 93rd Congress. I'm going back to January 1973 to find what they are, where they stand, the ones that are going forward, the ones that we would be interested in and so far I've ordered over 20 Senate Bills and about 60 House bills and I realize that not all of these will be pertinent but I have to go through them to find out which ones are and which ones aren't. So if there is anything that you

really are interested in, let me know if it is not included in this huge list of copies I'll be glad to include it. 52

Schmit: There is one bill by Senators Elton and Jackson in the Senate for the creation of a National Energy Information System in the Department of Commerce. 53

Betty: There is about ten of those in the Senate and about 30 in the House. And I'm getting all of them to find out what the differences are and which ones are going to be ... 54

Schmidt: Are you making a table that compares the alien features of these several pieces of legislation. 55

Betty: Well some of them, there is no action so I can if you want, if you think it is important, but some of them have just been presented and nothing will ever happen to them. 56

Capps: Yes, the important of this activity, that I'm responsible for having Betty look into this is it is very confusing when you get all these different circulars and different information, what the realy environment is, the critical environment for the energy problems and information systems and so forth. So I have asked Betty to start pulling these things together, now the amount of research or analysis that is done on these bills, we haven't defined that yet, but at least we are starting to get things in our hands. 57

Schmidt: I was just going to say that at least a simple table that airs the main features of each of those different bills might be . 58

Capps: Well, maybe we can figure out a simple table to do that, right now I don't have anything in mind, but we will work on that, perhaps you have some ideas on how we could simplify it. Because usually it is kind of like that analysis we made of all those DoD forms. Every entry is different and you can come up with a sheet that will cover the sides of the White House. 59

Schmidt: That would be alright. 60

Capps: No it won't be. 61

Betty: It will protect it from Helicopters. 62

Capps: OK well that finishes the items that I think Ed and Betty were particularly interested in so now I want to talk about a couple of old items here. Do we know when the Delta Data will be shipped? 63

Schmidt: I do not know, Dirk was here but I believe he left the

room to make a copy of the latest version of the R&D report so we will have to flag that and get him to give you an answer. 64

Capps: OK well I, that was the next question I had. What is the status from your point of view, from your end of the R&D paper, is it ready to be reeceived here. 65

Schmidt: My understanding is that Dirk has informed either Dean or Rita that they can get the R&D paper through the system. I wish you wouldn't do that because we have just gone over this morning the, what was in the sytem and we had to reorder things, they got into the wrong places, but is you attempted to pick something out of it now , you would be throughly confused I'm convinced,for your endeavoring to have a complete copy of everything, handcarried and Dave Brown so you will be able to look at it tomorrow. I truly think that it will not help you very much with the system because there is lots that needs to be done to what is in there yet. 66

Capps: OK we will try to get what we can but we won't pay much attention to it until I get the copy from Dave Brown tomorrow. 67

Schmidt: I think that is the thing to do . It should be done this afternoon so that when I leave tomorrow I'll bring some additional copies that will be fully completed at that time. 68

Dean: Dick, this is Dean Meyer here. How is Dave going to get his copy. Are you cutting and pasting is he you going to get it off the computer? 69

Schmidt: As you know the computerhas crashed a couple of times. It's up again now. Dirk just came back with sheets of papers that I presume were copies off the printer, however there are 1) several tables that have not yet been typed. 2) there are a number of typographical corrections that need to be made that have not yet been accomplished 3) there is technical material that has not yet been submitted to the system 4) the figures are not on there. 70

Dean: Does he intend to have that drawn up by hand and sent out with Dave? 71

Schmidt: We are going to have to manually put together a copy for Dave to take with him and we have approximately 35 minutes to do that. 72

Dean: Thank you. 73

Capps: OK well I'll report quickly a couple of items then so you can get on with that work. The DEO, GSA standoff that I reported last week is still occuring I checked with Copans and he is keeping me

informed. The memo, the Chris, memo has not yet been received so he is not sure of what is happenning, but he says he will pull together anything that they are able to get to help us possibly understand better the Christensen position before we go over there on Friday. 74

Schmidt: Can you say another sentence or two about that, what are you talking about? 75

Capps: Well, you missed the meeting. 76

Schmidt: Well I'll get somebody to fill me in here. 77

Capps: Yes, I was expecting to get some element plans in the mail pouch this week, I haven't received anything on that, does it mean that they weren't sent or didn't get in the proper mail or what? 78

Schmidt: There is an envelope from me that Dave is carrying back, it is a first discussion draft of it that is ther, so we can go from there. 79

Brown: I am going to ?? with me. 80

Capps: OK good, next item our quarterly reports I'm working on them now and if Bob is there, I called Pollack and informed him to expect the ? letter report and the quarterly report next week and he seemed to be happy about that. 81

Schmidt: Bob left the room unfortunately, but I'll relay that information to him. 82

Capps: Yes, I called Pollack and he is aware that we are preparing them now. Next, item is the EPAC communication circular, I would appreciate comments on that as soon as we can I want to release something like this to the outside community if we start working more closely with Col. Russell on the Communication net. 83

Schmidt: I've got a number of comments I want to talk to you about with you in length. 84

Capps: Next item, who plans to attend the DEO meeting, the Friday meeting? 85

Brown: I do, Dave Brown, and Schmidt, I presume you do also. 86

Capps: I plan to be there and I plan to bring Ed Rodrigues too. Now who is prepared to represent the ARC possible interests, do you plan to do that Dave? 87

Dave: Yes. 88

Capps: OK and there is a kind of new business item but it is kind of related to the old business of the R&D plan, do you have any idea of what date we might propose to Rudy Black that we get this R&D community together. 89

Schmidt: Let's talk about that after we have a chance to read the document and get some ideas from Rudy. I think it is going to have to be in March, it is just a question of when in March. 90

Capps: I am very anxious that we don't wait too long because of the general environment here so I think that we have got to keep accelerating. We promised them 3 weeks, it has been roughly that already. 91

Schmidt: We will talk about that. I don't see how we can do that in February. 92

Capps: Well I would guess that we ought to give Rudy Black at least a weeks notice after we think we are satisfied. We ought to give him at least a weeks notice to get the word out to whoever he wants to attend, OK well that is the list of the items that I have. Do you have anything that you want to talk about there? 93

Brown: There is one item that Carrol Kern's got 94

Kern: ??Multics system,?? I looked at the users on the sytem, somebody logged in from the Pentagon, in Maj. Adams shop said he is a Spc. Capps in JANUS analysis from the Pentagon and they have, (?) 95

Capps: Don't know anything about it, interesting. 96

Kern: Must have a twin down there. 97

Capps: Well I find out that we have several guys down there by my name that are holding pretty good positions maybe better than mine. 98

Schmidt: Anything else there? 99

Capps: I have nothing else here. 100

Schmidt: We are busily putting together your report. 101

Capps: How does it look? 102

Schmidt: Oh, you would have to ask that question. 103

Capps: Well, I think we have got to get comments back from ARPA on the two volumes so we can decide whether we want to publish, or scrap, or whatever we want to do with it, so I'm anxious to force

some issues on that subject, that is the reason I want to have a copy here. 104

Schmidt: We also need your comments on it as well. 105

Schmidt:: Well, anyway we ae working on it. 106

Capps: OK, well that is all I have here. 107

Schmidt: A pleasure to talk to you always. 108

Capps: See you tomorrow. 109

Schmidt: See Dave tomorrow. 110

Capps: I'll see you on the telephone tomorrow. That's it. 111

Dictation2-20

(J30384) 2-APR-74 10:28; Title: Author(s): Rita Jordan/RJ;
Distribution: /RJ; Sub-Collections: DEIS; Clerk: RJ;
Origin: <JORDAN>DICTATION2-19.NLS;9, 4-MAR-74 06:02 RJ ;

Dictation2-22

Meeting of February 22, 1974 1

Attendees: 2

EPAC WEST: 2a

Vannouhuys, Whitby, Kerns, Kruzic 2a1

EPAC EAST: 2b

Schmidt, Brown, Capps, Meyer, Rodrigues 2b1

Capps: We are going to have a very short meeting, in fact we are in the midst of a rug laying competition going on, we are making good progress in the physical set-up here in EPAC-East. By certainly early next week we will have all of the electrical,telephone, rug, everything else we need to make this a pretty ship-shape looking place. The folding door is still missing but I understand it is supposed to go in Monday so in terms of housekeeping arrangements and so forth we are in good shape, so now we are very anxious to get a fix on the equipment that would enable us to put on a first-class demonstration so for very high-level, somewhat critical audiences, we don't want to test and try things that have a high chance of exploding in our face or anything of that sort, We did have a good meeting this morning and I won't go into the details of it because some of the details are a little sensitive but I would just say for Oliver's benefit primarily that the concern that you express in your net mail to me which I just received, forget about that for the moment at least for it looks like we are in business. I would guess that our visa at Sonenshiens office is in excellent shape as a result of our meeting today, 3

Whitby: Good, fine, 4

Brown: I might add that the list of things in our proposal, the famous menu, was read to Christensen and he said that was just exactly right. He needed to do everyone of those things, those were the things on his list too and that was very encouraging I thought, 5

Schmidt: Also Oliver you will be happy to know that the calculations that we put together for the meeting in Menlo in January were also described to Christensen and he says that that is exactly what "I got to have," 6

Whitby: That is encouraging that he is thinking along those lines, 7

Capps: I think it is encouraging we are too. OK Well I won't give you anymore detail on our meeting today, as I say there were some somewhat sensitive features of it that can be discussed by Dick and

Dave when they get out there next week. We are shifting into high gear now on the R&D plan and Dick, Dave, and I are working that over. Back on the subject of the DEO. They have their terminals now for your information, and I guess they are going to begin to wonder what to do with them. It also appears that we will be successful in getting a terminal out at DSA. Which will be of real interest to Ed Rodrigues and myself at least. So I would say as of noon at least, 12:30 when we left the Pentagon, things were in excellent shape as far as what we are want to do, in fact maybe too good a shape in terms of our being able to do all of them, but we will be working carefully on scoping our effort at this point on. 8

Brown: I might say Carrol, that we do want to go ahead and get those other tapes into MULTICS and we will be getting more tapes and probably be running fairly current. Col. Russell would like us to take them up to Cambridge the same day they are released here. I don't know whether we will ever be doing that or not but we certainly need to go ahead with those two tapes that I left in my office. 9

Kern: That's a 6700 now Dave. 10

Brown: Good. We are going to airmail them to Cambridge? 11

Kern: We can. 12

Capps: Well, I would say let's wait until we hear from Col. Rtrrdll&r lddthnf, @ftdr ntr RRH lddthnf vhth Russell and Christensen we left and he continued his discussion, so all I'm giving you is a preview of what happened and I think the final score will have to be decided sometime next week. Because they went into a government type discussion after we left. I'm not so sure we want to try to get those tapes up there quite yet...Do you think we should? 13

Brown: I think we should go ahead and mail them Arlie. 14

Capps: OK, mail the tapes when you can. 15

Kern: OK fine. 16

Capps: I'm worried about how much support and so forth. 17

Schmidt: We will gain a couple of days if we do it today, than wait until monday,I would just as soon have them at MIT Monday, we can stop them then if we want to. 18

Capps: OK 19

Ed: Remember, how sensitive the DSA people were about getting

their tapes back so they should have already mailed the DSA tapes back to Cameron Station. Have they? 20

Capps: Yes, the question that Ed is asking is have you mailed back the tapes we got from DSA. In other words the copies that we copied? 21

Kern: What is the time constrain on that Ed? 22

Capps: They want them back. 23

Ed: They are asking about their tapes, believe it or not. 24

Capps: They may not be after today but at least I think we got them in good faith and we said we would send them back as soon as we could so I think we should try to do that. 25

Brown: Send them back Airmail then. That is all we did before. 26

Ed: Yes, they were very happy about the speed with which they received them back last time. Believe it or not that got us a plus points. I would like to talk to Carrol Kern's later, just me and him, I've got a lot of questions to ask him and I don't think any of it would have to be part of the general meeting. If later I could call him on the WATTS line. 27

Capps: Sure. We will call Kern for a technical discussion, Rodrigues will at about 2:00 PM your time. I have nothing else here. I think we will get back to our review of the R&D plan. Do you have anything you want to talk about from that end. 28

Pam: I do have one question for Dick Schmidt, Is he there? 29

Schmidt: He is. 30

Kruzic: Hi Dick. ?? is calling again about that technology assessment system at Engineering. Is that something you wrote? 31

Schmidt: He has copies that they can duplicate from I think. 32

Kruzic: The problem is evidently he has one copy he has written over and he wants another copy so he can duplicate. 33

Schmidt: I'll give it to him Monday morning. 34

Dirk: I have a question. We are talking about revising the R&D plan and what we should expect to have happen is Dick and Dave will come back with marked up copies that we will change in this system. In other words I am considering the question of whether any changes are going to go in from your end or will they be put in here. 35

Schmidt: I will bring back a copy with me which will be marked up literally and we will put the changes in at Menlo Park. 36

Dirk: Fine. 37

Capps: This document is going to receive first priority as of next week to get it back here in some form, because we have been asked questions as to when it will be available and I have told them as early as possible. We are reviewing the draft document now. I haven't given them a date but I'm sure that they are anxious to get it. 38

Dirk: Fine 39

Schmidt: One of the reasons they are interested in that Oliver is that their informal working group on energy R&D matters is convening, I believe it to be next Thrusday, here in Washington, and Rudy Black is interested in knowing what our status is and when we are going to be ready to talk to him in some detail. 40

Whitby: In other words they want to discuss it at that meeting. 41

Schmidt: Or at least Rudy wants to be able to announce at that meeting that SRI is working at it and on such and such a date SRI thll 'd pd'dx tl t'lj 'bntt ht 'nd rn fnrth 'nd rn nn. 42

Whitby: Well I mean depending on the extent of your changes, it seems to me that mechanically we ought to be able to get something out, it is a question of what form it has to be delivered to Washington, whether ithas to be a printed copy or if this printer output is satisfactory, or what. 43

Schmidt: I think it might even be satisfactory just for Rudy to be able to announce, "Yes SRI is working on it" and that he will gave a date when we will have something, and like that, that will probably be enough. 44

Capps: That might be enough, it would be very nice, of course, if we could give them a relatively clean copy and I think it is probably a duable job, I don't know, I can't speak for the procedure out there, but I don't anticipate that it will come back over the wire to me. 45

Whitby: Well would you give thought to the following. If there are diagrams, that could be cleaned up here and then sent to Washington over the week-end by mail, perhaps you'd consider giving us a release on them, one at a time or something of that sort, because the text can obviously go over the wire. I wish we could get that cleaned up. 46

Schmidt: Well Oliver, I think if we could sit together first thing

monday morning and go over the whole thing you and I could sit down and whip it up pretty quick and I'd like to keep it as an integral document so that we can have a better opportunity at making an early schedule on it. 47

Whitby: OK fine. 48

Capps: OK that is all I have from here. 49

Whitby: Alright, very good, EPAC-West signing off. 50

Capps: OK we will give you a call then and plan to have a conference on monday. 51

Dictation2-22

(J30385) 2-APR-74 10:30; Title: Author(s): Rita Jordan/RJ;
Distribution: /RJ; Sub-Collections: DEIS; Clerk: RJ;
Origin: <JORDAN>DICTATION2-22,NLS;7, 5-MAR-74 07:29 RJ ;

Dictation2-26

Meeting of February 26, 1974 1

Attendees: 2

EPAC-West: 2a

Brown, Vannouhuys, Kerns, Rodden, Whitby, Schmidt 2a1

EPAC-East: 2b

Capps, Neitzel, Meyer, Rodrigues, Jordan 2b1

Capps: I don't have a lot to discuss today, I didn't want to keep the momentum of these conferences going. I wanted to talk a little about the R&D plan draft but not a great deal. I feel it is definitely moving in the direction that I would like to see it go. I would like to hear from Bob Rodden, his comments on it. 3

Rodden: I will get to you with my comments at the first opportunity. 4

Capps: I took the draft to Rudy Black, as I told Dick earlier and I told him that it was an unedited draft and we would be making an improvement in it very soon to get him a smoother draft I have read it in detail since I took it over there and I think it will serve the purpose of letting Black and Russell know the type of plan that we are talking about so I think it will serve its immediate purpose well. The confusion still exists a little bit in the so called eventual or ultimate R&D design and the initial module. That was the part that was sort of confusing to me there is still a little bit of it, the second half of the proposal but I will take that up in detail with you when I see you on Thrusday. 5

Whitby: I agree entirely with you Arlie and I spent last trying to remove all those ambiquities. 6

Schmidt: We have a revised version that we are going to turn loose to the typists immediately. 7

Capps: OK well I'm not sure that we need to respond to get an improved copy back to Black before I come back next monday, but I certainly think we ought to have a better copy by that time. Rudy indicated that he would be reading it and would get in touch with us if he didn't understand what we are trying to do. I have not heard from him so I don't know whether he plans to read it today before he has his meeting tomorrow or when but anyway I told him that we would be in a response mode. He could reach us at any time if he wanted to discuss it and I have not heard from him. We have no additional information from Russell concerning the DEO support. I talked with him briefly this morning when I was at ARPA and he indicated that

contractually he is moving ahead with the 25K to support that additional effort. It is not quite clear to me where the 40K is that was to support the EPAC equipment but at least he identifies that as a ball that is in his court. He didn't have his contract papers in front of him when I talked to him this morning. He did inform me that there is no more money for fiscal '74 so we have to make do with what we have. 8

Rodden: We don't get the 25K this year. 9

Capps: I understand that he is proceeding with the 25K but that is it. 10

Brown: We have a question here of whether we should be going ahead with the analysis. Should we ? tapes we could mail to MIT now. How hard should we push on this. Should we handcarry them back. Should we do it just as fast as we can and get up-to-date or should we just fade or do something in the middle. 11

Capps: My recommendation is that we minimize the expenses, travel and so forth for the next week until we find out the direction that this DEO thing is going for sure. I know that it takes a while for the monies to get under contract. I'm sure there will have to be a contract modification and things of that sort so in view of the financial situation on the contract it is my belief that we should not rush people to MIT or anything of that sort for at least another week, I do think that mailing the tape copies there as we had discussed on Friday is a worthwhile thing as long as we don't incurr any expenses on our contract I don't particulaly care what happens at MIT. 12

Brown: Well the major expense is going to be the programming that's involved in getting data from tapes into the DATA ? so we can do analysis on it and I'd like the MIT people to do that programming. 13

Capps: Yes, well that is up to them we are not going to pay them for that in any case. That's up to them to work it out with Russell or whoever their program manager is because we are not going to pay for that on our contract. 14

Brown: I'd like to ask Carrol is he'd care to comment . 15

Carrol: Fine. 16

Brown: OK well thatis the way we are going to do it then. That means we probably won't be doing any analysis on consecutive weekly data for quite sometime. 17

Capps: I don't know what that means. 18

Kerns: It means there is going to be lag time, 19

Capps: I think the proper position for us would be for us to tell Russell that we have sent the tapes up there and if they ase not going ahead with them then we will keep him informed and he can find out why they are not going ahead, 20

Kerns: I think the definition of what needs to be done, probably ought to come from us, to work with them, 21

Brown: I think we will continue to work Arlie on the specifications for that programming that has to be done, Really we have got the ball right now, MIT can't do anything because they don't know what to do, We have to tell them, 22

Capps: Is your question, should we go ahead and assume that it is going to go through or should we stop, I would say let's assume its going to go through, 23

Brown: OK, 24

Capps: The next item that I wanted to discuss very briefly is the scheduling crunch that seems to be developing here, the 15th of March looks like it is going to be a critical time for a number of activities that we have on the calendar, As I informed Dick Schmidt this morning, Rudy Black wants to advertise tomorrow that there will be an R&D community conference hopefully in my plan at last in our EPAC-East on the 15th, We also have a tentative understanding to prepare the 3 sample scenarios for the 3 interest groups in DEO by roughly that time, I would assume that if Christensen continues in the enthusiac style that he presented when we saw him on Friday, that he will be wanting some conferences very quickly too, as soon as he gets some duable menu, I would think that the operational part the operational group, the CINCPAC, JSC group is probably the first one he wants to demonstrate for, So I'm not doing any more than flagging what appears to be a critical time in our program which is going to occur about the 15th of March, 25

Rodden: Also, our proposal for FY75 is do about then, 26

Capps: Well I'm not so sure that we need to have it ready to submit, although we have that in the calendar, submit on the 15th of March, I do think it should be well underway in drafting form but I think possibly if these meetings occur on the 15th of March, or thereabouts why it will give us some ideas on what to include in that FY75 proposal so I would guess that we should have a rough draft perhaps or at least some outline with the material drafted, But I think that probably submitting it on the 15th of March would be premature, 27

Dirk:: I have a question really for everybody about teminals, Dean let me explain where the situation stands on Delta Datas. We have had at ARC now, 2 Delta Datas. We are using them to debug the line processor. To give up one of them and continue debigging , now we may find the bug today or tomorrow and this problem disappears, but assuming that it goes on for a few days, if we wanted to give an EPAC one Delta Data that would go here or in Washington. 28

Capps: I think the next show and tell will take place here in Washington Dirk, and I certainly don't want to bring a Delta Data that will break down here prematurely. I do think though as I have explained to Dean that to get our equipment here physically, even though we may not be using it to any extent in say the March 15th conferences, I think it would be a good idea to start thinking in terms of completing our set up because it may well be that after these conferences we are going to have considerable pressure to put on demonstrations, including delta data, tv monitors and so forth and so it is one of the things that I'm very anxios to do is to get a reasonably firm schedule for when equipment will be installed and operating. I'm of the opinion that to have it physically here before it starts operating is still a good idea. 29

Dirk: Let me say at this moment that there is not anything wrong with the Delta Data. They will work at , but the problem is in the interfacer between the delta data and line processors. But if you had a Delta Data there, the first line, NLS and it would also work on I assume ??. But it would not be able to run play in NLS, until the problem was fixed. It would not be able to run after the 309 to get your high speed line. 30

Dean: Dirk, I'm not in a big rush to have the Delta Data until we have either the monitor or the high speed line and I'm not really clear as to when or what the state of those procurements are. Are they both on order? 31

Dirk: Both on order and the ball is in the court of the telephone company, and they have hinted that it might be as soon as two weeks from lasst Friday, but I wouldn't count on that. The usual time is a month, they said that perhaps they can... 32

Dean: The order went through last Friday 33

Dirk: Last Friday they said something to Martin about two weeks, but I wouldn't count on that. 34

Dean: When did they receive the order was it the 22nd. When did we send in the order for that, was it last week? 35

Dirk: Sometime prior to that. 36

Dean: Now what is the state of the monitor that we are supposed to be getting, what is the state of that and how are we supposed to get that. Is that being shipped directly here? 37

Dirk: It will be shipped directly there and I don't know the state, I haven't heard anything about it because I didn't think it was too useful until I'd seen line printing. 38

Dean: We might even put on a demo with TNLS if we had that without the high spped line. Either without the other would be useful, leave it that way. 39

Dirk: Play NLS ?? 40

Capps: My view on it is slightly different from Dean's although I do generally agree from an operational or operating point of view that it doesn't make much sense to have the non-operating equipment here but from the overall project point of view, it does give me leverage when I have equipment that is not being used I can call whatever agency is responsible for the hold-up and say "look I have it here and I'm not able to use it because you guys are dragging your feet." So that is one of the reasons I'm anxious to get equipment here as long as it is checked out and have it available so I can use it as leverage. 41

Dirk: When it comes down to this week,shipping the Delta Data or bringing it up here. 42

Schmidt: my opinion is that if it comes to the question of shipping it to Washington, we ought to do that, because if we need to have the play capability up here we can always /?? . We would like to have the Delta Data, but I think is most impowrtant to get it back East. 43

Capps: I think the action is going to be on this end as far as demonstations are concerned in the immediate future. So I would give equiping EPAC-East priority. 44

Dean: I don't think we have to rush shipping the Delta Data if it means it is going to slow you up on debugging the line processor. 45

Dirk: We have the other Delta Data. 46

Dean: Can you manage without the 2nd, will that slow you up? 47

Dirk: I don't think so. 48

Dean: OK, the Delta Data would be particularly useful if we got either the monitor or the line so if either of those come through then we will push even a little bit harder. 49

Dirk: I have no new information on the monitor I will check up on it. 50

Brown: I agree with Arlie though, if the machine is sitting there in the EPAC-East office and it can't be used to its full capabilities because there isn't any line in there, that represents a rather powerful incentive to get that line in. I think it is a good idea to get it back. 51

Dirk: ?? The line, telephone company to get a terminal in,.? 52

Capps: OK well you have got my views on it and obviously I don't feel that we ought to rush precipitately into this business, but I do think that we are getting brownie points for looking alive and I'm pretty sure that if we can continue with the momemtum that we have right now that we will be in reasonable position to put on demonstrations that are meaningful certainly by the end of March. Don't you concur Dirk? 53

Dirk: Yes, I concur. 54

Capps: OK so anything that you can firm up for us in the way of equipment schedules, the whole system, pieces and so forth, I'd appreciate it. I don't have much else to discuss at this time, I will plan to be in Menlo park on Thrusday and Friday returning here for Monday and I've informed everyone to that, concerning that plan. Ed Rodrigues will pick up the DEIS I report which I think is going to possibly be a DEIS II report this week, but anyway he'll be pursuing that. Do we want to ask for an additional tape? 55

Kerns: On these tapes, ?ESSP, if they could put that on. 56

Capps: We have some funny cross talk on the line, what was it? 57

Kerns: You bought tapes back there and took them to DSSC and had them record that data on hard tapes, would that make them happier? 58

Ed: It would probably make them a little less happier. Because it is out of the ordinary and they would have to do it as a special process as a matter of fact. 59

Capps: I don't think that is the problem at all. I think it is more a question of it takes a little bit of their time, maybe ten minutes or so to run us a copy and they seem to be pretty busy. 60

Ed: If we sent them our tape they would have to do it on an exception basis, and that is a pain. 61

Brown: You mentioned before that they were anxious about the tapes, and I thought maybe they were worried about the physical tape. 62

d:: Yes, they are. 63

Capps: I think they are worried about it, but I don't think it is very high on their priority list. 64

Ed: As long as we ship them back in a timely fashion they are happy. 65

Rodden: I think we should get the tapes, I don't think we should make a big issue out of it and demand it because we need it urgently I think we test it a tell them we need it on a early basis. We are going to go ahead and mail the tapes to MIT and relay the data there so we can do these demonstrations later. So I think we should go ahead and request the tapes. 66

Capps: OK we will request all the tapes we can get our hands on. 67

Brown: Also Ed, I'm getting the JCL you can transfer from the 370 to the 180. 68

Ed: Ok, you are getting? How soon do you think you'll have that? 69

Brown: Well part of it is in the manual I have and the rest of it Markowitz is going to send. 70

Ed: OK. Do you want me to wait to get all these tape copies until I get that JCL so maybe I can give it to Lary Smith 71

Brown: No because if they are concerned about making an exceptional run that would be, an exceptional run. 72

Ed: OK 73

Brown: We can handle the tapes the way we are now. 74

Capps: OK well those are the items of interests on this end. Do you have aything you want to discuss out there? 75

Schmidt: I can't think of anything. 76

Capps: Bob, you are pretty quiet, do you have any comments. 77

Rodden: I'm preoccupied, I have a problem. As far as your being here Thrusday and Friday, I think we can get a lot done then. We are interested in the budget projections and all kinds of things. 78

Capps: OK then that's all from this end, and we will be talking with you tomorrow. 79

Dictation2-26

(J30386) 2-APR-74 10:37; Title: Author(s): Rita Jordan/RJ;
Distribution: /RJ; Sub-Collections: DEIS; Clerk: RJ;
Origin: <JORDAN>DICTATION2-26.NLS;5, 6-MAR-74 07:28 RJ ;

JBP 2-APR-74 13:18 30388

A change link number or byte size feature

please let me know what you think of this wild thought,

A change link number or byte size feature

Jon Postel(MITRE)

2 April 1974

Change Link Number or Byte Size

While discussing the Initial Connection Protocol with Bernie Cosell we came to the realization that while the receipt of an RTS host to host protocol command which exactly matched in the local and foreign socket fields (and from the same foreign host) of an open connection could be viewed as an error, such an event might be viewed as a request to change the link number associated with this connection to the value indicated in the just received RTS.

Applying this reasoning to the STR we see that a matching STR to an open connection could be interpreted as a request to change the byte size on the connection.

Should such requests to change byte size or link number be acknowledged? The only command available to acknowledge this type of command is the complementary STR or RTS, and using these for acknowledgements leads to an infinite sequence, thus there can be no acknowledgement.

What happens to data flowing on the connection at the time of such a change? This is clearly a problem and the parties must act to prevent this. A receiver should never send a change-link-number-RTS while there is a greater than zero allocation to the sender. A sender must never send a change-byte-size-STR while there is an unacknowledged message (a message for which a RFNM has not been returned) pending.

What happens to host to host commands which refer to the data connection by link number? The commands ALL GVB RET INR INS refer to a link number. If any of these commands cross a change-link-number-RTS in the network the result may be confusion. The receiver controls ALL and GVB and through GVB the RET, so the allocation related commands are not a problem. The receiver controls the link associated with the INS, so it is not a problem. An INR and a change-link-number-RTS refering to the same connection may flow in opposite directions asynchronously, this will cause problems.

JBP 2-APR-74 13:18 30388

A change link number or byte size feature

(J30388) 2-APR-74 13:18; Title: Author(s): Jonathan B. Postel/JBP;
Distribution: /CSK VGC DCW3 SDC2 BPC JDB DHC MAP AAM; Sub-Collections:
NIC; Clerk: JBP;

MIKE 2-APR-74 13:53 30389

form letter to readers of ARPAnet news

if this looks okay, I'll get about 50 copies printed up.

form letter to readers of ARPAnet news

ARPAnet News readers - A Form Reply 1

On behalf of the other members of Bell Canada's Business Planning Group, I would like to thank you for you interest in the work of the department (as overviewed in the ARPAnet News for the month of March). 1a

The papers abstracted in the newsletter represent a few of the volumes in the aperiodic series, Business Planning Papers. This series was initiated primarily for the presentation of working papers to our senior management on an informal basis. As such, they are not normally available to the general public. It is not the confidentiality of the information that imposes theses restrictions, but rather our limited budget for printing expenses. (The references in the ARPAnet News would have pointed this out if we had known about them prior to their appearance.) 1b

We recognize that the information contained in the Business Planning Papers may be of value to other individuals or groups or individuals doing similar research in these areas. In fact we have have adopted the policy of trading them freely with other groups who have similar trading data available. 1c

If you are involved in research similar to our interests in the "wired city", in travel/communications substitutability, or in technology assessment and corporate social responsibility, we would be most interested in hearing about your work. 1d

I regret that we are unable to supply the information you requested, but I look forward to our continuing communications in these subjects. 1e

(Id)
Yours sincerely,

Michael T. Bedford
Supervisor - Business Planning 1f

MIKE 2-APR-74 13:53 30389

form letter to readers of ARPAnet news

(J30389) 2-APR-74 13:53; Title: Author(s): Michael T. Bedford/MIKE;
Distribution: /LHD MIKE; Sub-Collections: NIC; Clerk: MIKE;

EJK 2-APR-74 14:38 30390

Meeting Notes - Today

These are some very rough notes on a meeting I had with JLM 2 April. 1

THERE WILL BE A MEETING ON 3 APRIL 1500 TO 1700 TO DISCUSS THESE AND OTHER MATTERS RELATED TO WHERE WE ARE GOING IN 1975-6. 2

There will be a visit from our old buddy Geo. Heilmeier on 14-15 May. It is unclear who or what it involves as far as briefings go. However, if NLS is briefed it will be in the context of aid to software production and documentation. 3

The use of NLS as an aid in the production and documentation of software is considered to be the best program to keep and expand our AKW efforts. FJT visited TRW and they briefed him on some of the things that they are proposing for ESD. One of the major things they kept hitting was a text-processing capability for software support. 4

In this context Mac asked me to get with Tom Bucciero to establish a Job Order Number linked with a title like: Aids to Software Documentation. 5

DLS and RJC should charge time on what they have been doing on Nelson's Project to Nelson's Project. 6

DLS already has I found out later. 6a

Problem areas in defining our plans: 7

Frank's 'Office', - automation of. Question who is the focal point?? RBP suggested. 7a

MIS - What is its future - based on the trip that Roc and D. Craig made to WPAFB, it would seem that they have a slightly glorified FEMIS. Since it does not look as though RADC is willing to toss in a couple of bucks the best solution may be to glorify our FEMIS by adding a manpower and persnnel file. 7b

WWMCCS - we need a man to interface with Roc and the WWMCCS troops on the best utilization of the NLS in hnadling the WWMCCS etc. JPC suggested. 7c

Other users - for now will be limited to: 8

WWMCCS 8a

Other Branches 8b

Nelson - in that order. 8c

Some consideration must also be given to the Comm people who are getting three TI's shortly. 8d

I will do the initial training for the Branches and Nelson's office. 9

We are going to move now to establish a PSO. We now have some pretty good talent in the form of Bobbie, Anne Caf, Donna, Sharon, and of course Duayna has some training (mostly by Joe). The problem at this instant is shoving people around, where and when etc. 10

The Use of the TYCOMS has come up. Right now, it looks like Bobbie, Marcelle, Becky, and possible the other two Branches, but this is still open. 11

Programming & programmers 12

Some consideration should be paid to breaking in Don Van Alstine as an L-10 programmer. Mac seems to think that we have travel money left and maybe we might ship Don to Calif. for a couple of weeks. 12a

In addition to this DLS has been trying to induce some young woman (seduce some broad) into coming over here as a programmer. MAC WANTS TO BE REMINDED TO TALK TO HER!!! 12b

Time ie. Working Hours. Col Giesy (our Commander) has expressed some interest in working hours. Col. T and A1. B. acting as non-linear amplifiers have decreed that people work their normal shifts. There have been and will be head counts in the AM, PM and at noon. The feeling in Div. is that you can slip on one of these once in awhile but not all in the same day and not the same one all the time. This specifically includes me. You have been warned, if you slip it is now YOUR ass. 13

Get the ELF more involved: 14

Terminals? 14a

ARPA Orders? 14b

REMIND MAC TO TALK TO SYLVIA MAYER ABOUT HER EFFORTS ON CAI, MONEY, AND THE TERMINAL SHE HAS. 15

EJK 2-APR-74 14:38 30390

Meeting Notes - Today

(J30390) 2-APR-74 14:38; Title: Author(s): Edmund J. Kennedy/EJK;
Distribution: /DLS RBP ELF JPC RJC JLM(info) AAC(info) TFL(info)
RFI(info); Sub-Collections: RADC; Clerk: EJK;

CSK 2-APR-74 19:53 30391

reply to your message

There are a few problems with the suggestion. First, the byte size is a mutually agreed upon issue. If the sender sends an rts with a byte size the other party doesn't like, that party can close the connection. The same is still true. But, it sounds to me that the use of this feature would be to allow optional changes of byte sizes. Thus I would recommend a new protocol command change byte size which either side could initiate and the other side could refuse (without closing connection). As far as data synchronization, I am sure that can be worked out (like making sure no data in transmit by the sender when he requests or acknowledges change in byte size). 1

As far as I am concerned, links should "go away". I am against adding a change link option as I can see no use for it. With the current protocol, only receivers can specify links and (since the imp ignores them anyway), what difference does it make what link is being used? A change link option would only add more crap to a protocol which is crappy enough already and I really am against adding stuff which has no value. Someone will implement it, use it, need it, and not be able to talk to anybody else. If you can show me a use for it, then maybe I might agree. 2

I hope the tone of this doesn't sound wrong. I am not saying that I am against all changes (allthough, I think it would be better to build a new protolcol). Rather, I am saying, I don't see the usefulness of these changes. In any case, I think they should be options so that we don't require changes of this sort (like we did telnet). Speaking of which, what sites are using the new telnet? are the tips? 3

CSK 2-APR-74 19:53 30391

reply to your message

(J30391) 2-APR-74 19:53; Title: Author(s): Chuck S. Kline/CSK;
Distribution: /JBP; Sub-Collections: NIC; Clerk: CSK;

csk:
The suggestions i made were made mostly in fun, i had no intent to add them to the specifications. The ideas were constrained to stay inside the current environment -- that is no new commands and the use of existing features (links). The possible usefulness might be in getting things going again after a service interruption where the ready lines were flapped but the host kept the ncp tables intact.
as far as links going away see the new (march74) 1822.
as far as what sites are using new telnet -- i thought ucla-nmc was the measurement center?
--jon.

(J30392) 3-APR-74 07:57; Title: Author(s): Jonathan B. Postel/JBP;
Distribution: /CSK; Sub-Collections: NIC; Clerk: JBP;

JBP 3-APR-74 09:18 30393

lynn:
thanks for the measurement notes, and for theinfo on my
thesis/report, do you think it would be asking too much to have a
copy sent to me?
--jon.

1

(J30393) 3-APR-74 09:18; Title: Author(s): Jonathan B. Postel/JBP;
Distribution: /LYNN; Sub-Collections: NIC; Clerk: JBP;

JBP 3-APR-74 09:25 30394

Marcia:
Add me to the Network Measurement Group,
--jon,

1

(J30394) 3-APR-74 09:25; Title: Author(s): Jonathan B. Postel/JBP;
Distribution: /MLK; Sub-Collections: NIC; Clerk: JBP;

DLS 3-APR-74 09:32 30395

Request for Additional RADC Directories

JCN----I have been "asked" by Frank Tomaini to create additional directories. First priority is the WWMCCS support people, since this effort is assuming greater importance everyday within the Division. The second catagory of directories is Branch chiefs. The main traffic here is anticipated to be messages, and perhaps some occasional use by the branch administrators to collaborate on funds, procurements etc. The third category is the other section chief under Tomaini.,Dick Nelson,...we will not attempt to bring up the rest of his section for some time...at least until the new command language is firm..,maybe not even then if system load remains the way it is. The last category is the Communication division...only one person for the time being..,we are pushing them to buy a slot, but need to whet their appetite first...they have purchased three terminals, but understand that use of the system will be limited during normal working hours. This effort evolved out of mutual interests between the SADPR group and its predessessor, the Base Comm Study. Kenyon is a good man and could be a candidate architect if they become serious. 1

Would you please create directories and ident entries for the following individuals, (they should also be added to the RADC group ident list): 1a

Additional WWMCCS support people 1a1

Murry L Kesselman 1a1a

Computer Architect Section (ISCA)
Rome Air Development Center
Griffiss AFB, NY 13441 1a1a1

Phone: 315 330-3461 1a1a1a

John B McLean 1a1b

Software Sciences Section (ISIS)
Rome Air Development Center
Griffiss AFB, NY 13441 1a1b1

Phone: 315 330-7010 1a1b1a

Additional Branch Chiefs 1a2

Daniel R Loreto 1a2a

Computer Technology Branch (ISC)
Rome Air Development Center
Griffiss AFB, NY 13441 1a2a1

Request for Additional RADC Directories

Phone: 315 330-2014 1a2a1a

William F Stinson 1a2b

Performance Evaluaton Branch (ISF)
Rome Air Development Center
Griffiss AFB, NY 13441 1a2b1

Phone: 315 330-7009 1a2b1a

Additional Section Chief 1a3

Richard Nelson,,,(no middle initial) 1a3a

Software Sciences Section (ISIS)
Rome Air Development Center
Griffiss AFB, NY 13441 1a3a1

Phone: 315 330-3851 1a3a1a

Comm Division 1a4

Robert J Kenyon 1a4a

Transmission Branch (DCC)
Rome Air Development Center
Griffiss AFB, NY 13441 1a4a1

Phone: 315 330-3041 1a4a1a

Would you please create a group ident called WWMCCS to include the following RADC individual idents: 1b

rfi, arb, fjt, jlm, jpc, tfl, ral, dld2, dfb, maw, wer, fsl and Mssers Kesselman and McLean above, 1b1

Request for Additional RADC Directories

(J30395) 3-APR-74 09:32; Title: Author(s): Duane L. Stone/DLS;
Distribution: /JCN JHB EJK RFI JLM FJT ARB; Sub-Collections: RADC;
Clerk: DLS;
Origin: <STONE>DIRS.NLS;1, 3-APR-74 09:26 DLS ;

FEED 3-APR-74 11:20 30396

Problems with Group File Protection and Possible solutions

Action required by Bell-Canada, other inputs welcome.

Problems with Group File Protection and Possible solutions

"The Great Security Gap" or Problems with Group File Protection 1

First it is necessary to describe the way that non-group protections work, and then we'll deal with the protection scheme changes that occur between members of the same group. 1a

Non-group membership 1b

After you load another person's file or jump to link such that you are reading part of it, if you try to change (edit) that file the system will tell you, "no write access...." In addition, passwords are required to permit you to CONNECT to another's directory, after which you can edit any of their files regardless of protection. 1b1

When you change the protection of any file to permit writing by any user, they may make changes in that file BUT they create a partial copy of that file in their directory! If they list their directory level, they will see the Partial Copy to your file. IF they fail to Update, that PC will remain in their directory and the owner (you) of the file will get, "File locked by so-and-so", when you are refused write permission (the solution is simply to have the other person load the file and update). 1b2

When groups are set up 1c

Individuals who are members of the same group can connect to each other's directory without the password and any operation that the directory owner can perform. File editing creates a partial copy of the connectee's file in the connector's directory, as above 1c1

The file protection codes for the group will take effect between members of the group as specified. However, when there is read only protection on a file and you load and edit it, it will allow you to create a PC but vill NOT allow you to Update. Thus, you will be stuck with a PC and the person who owns the file will not be able to write on it becuase it is "locked". 1c2

Problem and Solutions 1d

The later is a bug, and we are in the process of fixing it so that when you load a group member's file with no write permission it will tell you "no write access" when you try to edit it , and will not create a Partial Copy. 1d1

The connect command was set up to permit people to share files on a programming level when there was little concern for

security as there might be in a business environment. The current no password connect has been deamed unsatisfactory for many of the Utility users, and thus must changed in one of three ways: 1d2

1. Eliminate the CONNECT command for those users who desire individual privacy within their group; 1d2a

2. Eliminate the group definition, which will also render the group file protection codes null; 1d2b

3. Change the Tenex operating system so that passwords are required to connect within groups. 1d2c

Option 1 is most desirable from an effort standpoint; it will solve the problem with the least amount of manpower (1/2 hr.). Option 2 is the least desirable because there are special applications where users want to share files only within their group. Option 3 will take two to three days of programming effort, but will retain the connect command. It depends on how important each group thinks the connect command is. 1d2d

Please send your considerations to FEEDBACK. 1d2e

FEED 3-APR-74 11:20 30396

Problems with Group File Protection and Possible solutions

(J30396) 3-APR-74 11:20; Title: Author(s): Special Jhb Feedback/FEED; Distribution: /KWAC(for your information and desemination) MIKE WRF DVN NDM(energy coordination); Sub-Collections: SRI-ARC KWAC; Clerk: FEED;
Origin: <FEEDBACK>SECURITY.NLS;6, 3-APR-74 11:08 FEED ;

To KSH, From PF.....The following is a draft letter on incasting from KSH to GHM. Depending on the extent of changes desired, you may find it more convenient either for me to work on a marked up version of the hard copy or for Mary to directly edit the draft on the computer.(April 2, 1974)

G. H. Mellen, General Manager

(Government and Computer Communications)

I have recently seen the audio-visual on incasting and thought that you might like to be briefed on some of my reactions. Steve Naisby and Moe Love also saw the same presentation a few days ago and so I will only describe the system briefly. BNR in SER 131 has described a domestic polling network that uses existing subscriber loops. The telephones can be in an on or off hook position and the network is not adversely affected by the introduction of pulses emitted to a central counter.

Though many of the ultimate uses will only become apparent in field trial stages, we can identify two basic types of applications at the present. First, incasting can be used to infer reactions, feelings, and general responses from a viewing audience. Second, incasting can be used to stimulate the sense of particiation of a viewing audience. Two examples of audience participative programs are: Quiz (home versus studio panel); and, Entertainment (results interpreted as applause). Two specific examples which could conceivably be popular are selection of the best player in a hockey or football game and selection of winners of awards that are typified by the annual Oscar presentations.

From what we have determined, there is an interesting potential for possible new types of service offerings but because of the commitment that would have to be made, much more groundwork remains to be done. We are currently funding more research at BNR to look into behavioural and technical considerations with a view to having sufficient information on which to base a field trial prospectus within a year. In addition, however, we think it would be valuable to sound out people in the broadcast industry to see whether they think organizations would be willing to pay for one minute incast para-commercials and indeed, whole programs that are based on audience feedback. These people could also provide other important feedback as to potential required service features for incasting-type offerings.

Of course, it should be pointed out that the possibility of an offering is still tentative and would take several years at the least

for widespread availability. We do think, however, that such discussions would help us since there are a few basic questions which still must be answered. Because of the visibility and potential misuse of incasting, we would have to be assured that the system was not subject to tampering, either physically or by biased phrasing of questions by the renters of broadcast time. We would also have to decide if the cost of going from a random small sample to a possible blanket configuration would be justified or made necessary by government intervention. Finally, since this is one of the first cases of "wired city" services that could be offered by Bell, we would want to examine the interrelationships of automatic meter reading, smoke and fire detection, USP, incasting and other associated services to see whether common technology and hence some costs could be spread out over two or more potential offerings. 8

To conclude, analysis of the potential of this business opportunity would be greatly improved by broadcasting industry reactions. I would appreciate any inputs from your staff; in addition, if you are able to see the incasting audio-visual, I would be interested in your preliminary reactions to the service concept. 9

(J30397) 3-APR-74 11:42; Title: Author(s): Phil Feldman/PF;
Sub-Collections: NIC; Clerk: PF;
Origin: <FELDMAN>KEN.NLS;1, 3-APR-74 09:05 PF ;

incasting

To KSH, From PF.....The following is a draft letter on incasting from KSH to GHM, Depending on the extent of changes desired, you may find it more convenient either for me to work on a marked up version of the hard copy or for Mary to directly edit the draft on the computer.(April 2, 1974)

G. H. Mellen, General Manager

(Government and Computer Communications)

I have recently seen the audio-visual on incasting and thought that you might like to be briefed on some of my reactions. Steve Naisby and Moe Love also saw the same presentation a few days ago and so I will only describe the system briefly. BNR in SER 131 has described a domestic polling network that uses existing subscriber loops. The telephones can be in an on or off hook position and the network is not adversely affected by the introduction of pulses emitted to a central counter.

Though many of the ultimate uses will only become apparent in field trial stages, we can identify two basic types of applications at the present. First, incasting can be used to infer reactions, feelings, and general responses from a viewing audience. Second, incasting can be used to stimulate the sense of particiation of a viewing audience. Two examples of audience participative programs are: Quiz (home versus studio panel); and, Entertainment (results interpreted as applause). Two specific examples which could conceivably be popular are selection of the best player in a hockey or football game and selection of winners of awards that are typified by the annual Oscar presentations.

From what we have determined, there is an interesting potential for possible new types of service offerings but because of the commitment that would have to be made, much more groundwork remains to be done. We are currently funding more research at BNR to look into behavioural and technical considerations with a view to having sufficient information on which to base a field trial prospectus within a year. In addition, however, we think it would be valuable to sound out people in the broadcast industry to see whether they think organizations would be willing to pay for one minute incast para-commercials and indeed, whole programs that are based on audience feedback. These people could also provide other important feedback as to potential required service features for incasting-type offerings.

Of course, it should be pointed out that the possibility of an offering is still tentative and would take several years at the least

for widespread availability. We do think, however, that such discussions would help us since there are a few basic questions which still must be answered. Because of the visibility and potential misuse of incasting, we would have to be assured that the system was not subject to tampering, either physically or by biased phrasing of questions by the renters of broadcast time. We would also have to decide if the cost of going from a random small sample to a possible blanket configuration would be justified or made necessary by government intervention. Finally, since this is one of the first cases of "wired city" services that could be offered by Bell, we would want to examine the interrelationships of automatic meter reading, smoke and fire detection, USP, incasting and other associated services to see whether common technology and hence some costs could be spread out over two or more potential offerings. 8

To conclude, analysis of the potential of this business opportunity would be greatly improved by broadcasting industry reactions. I would appreciate any inputs from your staff; in addition, if you are able to see the incasting audio-visual, I would be interested in your preliminary reactions to the service concept. 9

incasting

(J30398) 3-APR-74 12:24; Title: Author(s): Phil Feldman/PF;
Distribution: /KSH LHD; Sub-Collections: NIC; Clerk: PF;
Origin: <FELDMAN>KEN.NLS;1, 3-APR-74 09:05 PF ;

LYNN 3-APR-74 13:44 30399

Message to Jon

Will have to look into the process for sending a copy to you. Not asking too much. You are there I am her, right? Lynn 1

LYNN 3-APR-74 13:44 30399

Message to Jon

(J30399) 3-APR-74 13:44; Title: Author(s): Lynn A. Rossiter/LYNN;
Distribution: /JBP; Sub-Collections: NIC; Clerk: LYNN;

ALC 3-APR-74 13:57 30400

Additions to nmg

Please add the following to the nmg,
Jon Postel (jbp)

Dr. W. L. Price
Division of Computer Science
National Physical Laboratory
Teddington, Middlesex
01-977 322
England

and

Robert Chen
Department of Computer and Information Science
Moore School D2
University of Pennsylvania
Philadelphia, Pennsylvania 19174
(215) 594-7745

Thanks,
Bill

1

ALC 3-APR-74 13:57 30400

Additions to nmg

(J30400) 3-APR-74 13:57; Title: Author(s): Anita L. Coley/ALC;
Distribution: /MLK; Sub-Collections: NIC; Clerk: ALC;

numbers for my speed calling list -

oI would like to add these numbers to the standard list for the group. I think my SXFD No. will continue to be 10791.

numbers for my speed calling list -

speed calling numbers 1

(514) 877-8462 1a

(514) 264-4317 1b

(613) 238-2030 1c

(514) 845-5233 1d

(514) 866-7403 1e

(514) 829-2331 1f

(416) 482-3434 1g

(514) 842-2703 1h

numbers for my speed calling list -

(J30401) 3-APR-74 15:00; Title: Author(s): Michael T. Bedford/MIKE;
Distribution: /IMM MIKE; Sub-Collections: NIC; Clerk: MIKE;

WEN 3-APR-74 15:14 30402

more additions and corrections

Please add Ralph Alter (ra2) and Lawrence G. Roberts (lgr)
to the nmg. Also, my address should read as follows

William E. Naylor
.
.
3804-A Boelter Hall
.
(213) 825-4864 or 825-2368

Thanks,
Bill

1

WEN 3-APR-74 15:14 30402

more additions and corrections

(J30402) 3-APR-74 15:14; Title: Author(s): William E. Naylor/WEN;
Distribution: /MLK; Sub-Collections: NIC; Clerk: WEN;

DLS 4-APR-74 05:20 30403

Privacy, Protection, Whats the problem?

In response to (JJOURNAL, 30396, 1:w), where the following three options were offered: 1

1. Eliminate the CONNECT command for those users who desire individual privacy within their group; 1a

2. Eliminate the group definition, which will also render the group file protection codes null; 1b

3. Change the Tenex operating system so that passwords are required to connect within groups. 1c

1. A number of our PSO procedures are based on the ability to CONNECT. Without this we would have to cut back considerably on services the PSO can give the less sophisticated NLS user. I cast as many NAY votes for this option as I am allowed. 2

2. To date, we have not made great use of the group definition, except to create open files. However, with the WWMCCS support group gaining momentum, I can see that group protection will be desired. One NAY vote. 3

3. A little bothersome, but the least objectionable of the three. 4

4. Personnaly, the whole idea of protection, privacy, etc. has never loomed in my mind as a great problem. I can't think of one statement that I have entered into NLS in the past three years that I would try to hide from the public. Besides, didn't the gov't pass a Freedom of Information act to open up gov't documentation to the public? I might be doing something illegal by putting a protection code on my file. 5

DLS 4-APR-74 05:20 30403

Privacy, Protection, Whats the problem?

(J30403) 4-APR-74 05:20; Title: Author(s): Duane L. Stone/DLS;
Distribution: /FEED; Sub-Collections: RADC; Clerk: DLS;

DLS 4-APR-74 05:35 30404

Where have all the stats gone?

Susan, I get the Superwatch graphs each week....good deal because I like to keep track of how the ARC system is being used (now that the troublesome RADC guys are gone). Will we be getting the equivalent graphs and/or the BAH Week in review report from Office-1. I have accumlated stats from BAH's report for the past year, and am interested in making comparisons between them and our current use. 1

DLS 4-APR-74 05:35 30404

Where have all the stats gone?

(J30404) 4-APR-74 05:35; Title: Author(s): Duane L. Stone/DLS;
Distribution: /SRL FEED EJK; Sub-Collections: RADC; Clerk: DLS;

title this is a test 1

trying to see if things still work 2

sent 4 mar at 1054 3

(J30405) 4-APR-74 07:58; Title: Author(s): Herb S. Hughes/HSH;
Distribution: /HSH ; Sub-Collections: NIC; Clerk: HSH;