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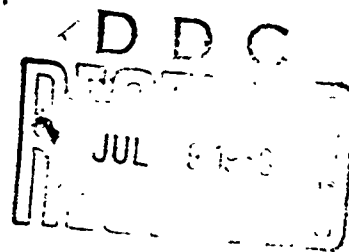
ORDER
A COMPUTER PROGRAM FOR THE
ORGANIZATION and
RETRIEVAL of
DATA for
EFFICIENT
RESEARCH

USER'S MANUAL

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ABSTRACT

This user's manual describes ORDER, a computer program for the management of general information. The program is controlled by commands in English. The data-base or individual data items can be displayed as required. The data-base can be manipulated, increased, or decreased by simple commands from the user. A record of all changes made in the data-base may be displayed when required.

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I. INTRODUCTION

An automated information-management system, based on a changing user requirement, calls for a computer program which is simple to use, but which controls a system complete enough and complex enough that it can accommodate change. ORDER is a general information-management system which takes a major step toward providing such a "user-oriented" computer program.

In the design of ORDER, it was assumed that the user of information knows best how he wants to use, manipulate, organize, and think (and change his mind) about his data base. All too often, it seems, computer-based systems are designed in such a fashion that the computer specialist and the programmer are interposed between the system user and his data. But the source language designed for ORDER is a step away from that philosophy: the ORDER language is short, simple, and straightforward, so that the user can accomplish his tasks accurately, quickly, and without shifting mental gears from the problem viewpoint to the machine viewpoint.

In general, and in brief, ORDER has the following characteristics and capabilities:

1. The program is activated by COMMANDS which are written in stylized, but plain English.
2. New items of data can be added to the data-base with or without significant structural complexity--i.e., data need only minimum editing before they can be added, since the "fine structure" may be built later automatically, upon COMMAND.
3. The data-base and individual data items can be displayed, in whole or in parts, on COMMAND, as the user requires.

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4. Manipulation of, changes in, additions to, and deletions from the data-base are all accomplished by the simple COMMANDS from the user.
5. An automatic record is kept of all changes made in the data-base--this history may be displayed upon COMMAND.

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II. SYSTEM DESCRIPTION

A. GENERAL DESCRIPTION

The ORDER system places the user in an iterative man-machine process in which he acts as the adaptive mechanism for the system. He (the user) not only uses the machine as a storage and retrieval device, but also as an organizing device.

Figure 1 is a functional flow diagram which shows the iterative loop created in the ORDER system. The user acquires new data and informational requirements. Based upon his knowledge of the current data-base organization and general content, he then formulates commands to the ORDER program to add the new data and/or to change and display existing data to meet new informational requirements. The computer responds with useful information from the data-base and, also, useful information regarding the status and organizational change produced by the user's commands. This computer response is now evaluated by the user, which may prompt him to formulate additional commands to incorporate new data, or to reorganize the existing data-base so as to improve the response.

In summary, ORDER has been designed to encourage the user to avoid a priori and fixed judgments about the organization and interpretation of his data-base. ORDER, thus, minimizes the time and effort necessary to prepare program data for input to the computer, where it can then be manipulated. The ORDER program philosophy is in this regard motivated by the belief that initial organization and editing should be minimized. This is particularly true when the task of the user is one of discovering relations within the data and when the structure of the data today will most likely be unsuited for tomorrow's problem.

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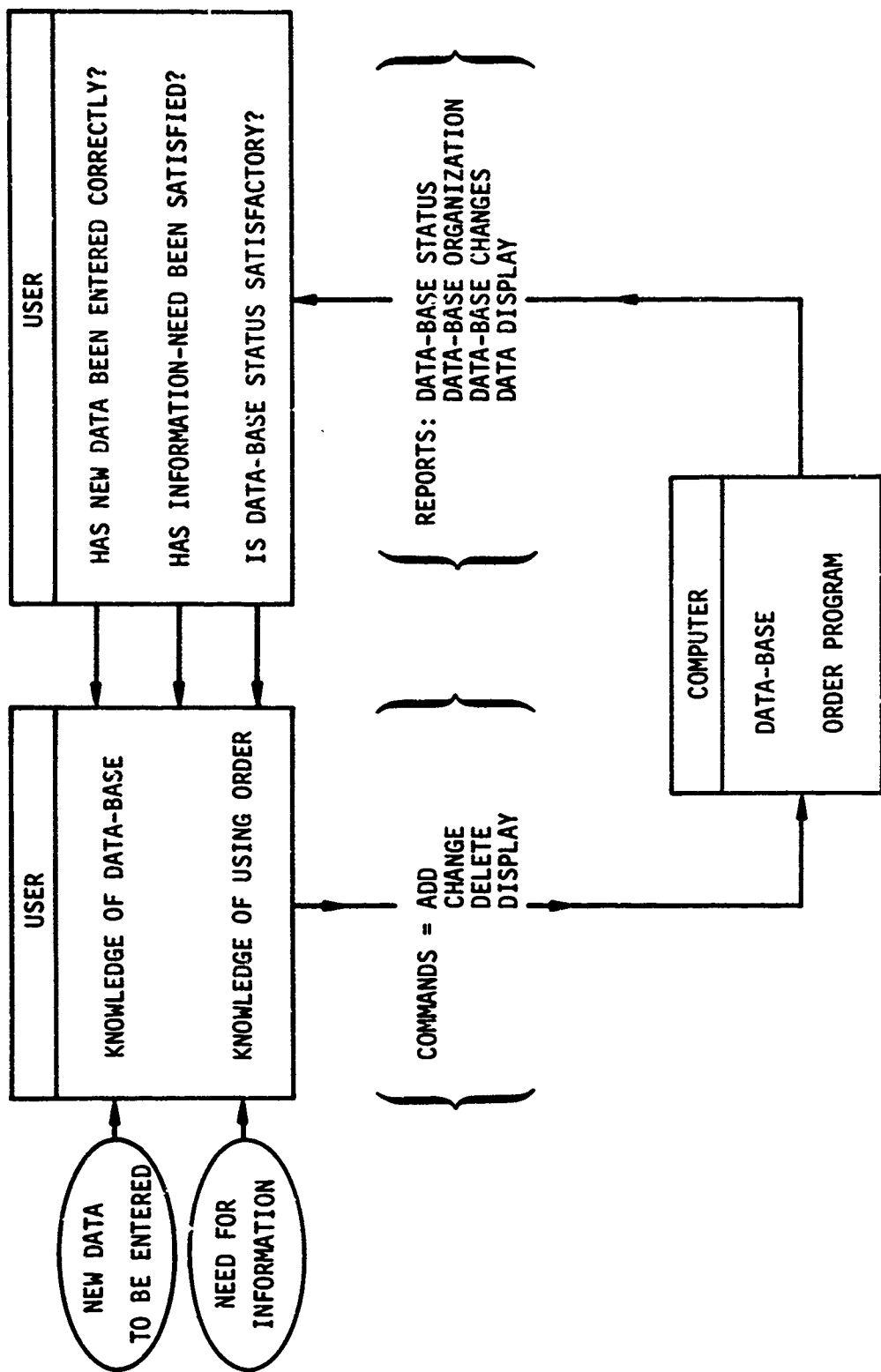


Figure 1. Flow Diagram

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B. DATA STRUCTURE

1. General Structure

The data-base consists of a file of items. All items entered by the user are called PROJECT ITEMS, and those created by the system, in its record keeping functions, are called SYSTEM ITEMS. All items in the file, PROJECT ITEMS and SYSTEM ITEMS, have a basic structure which is shown at the top of the figure inside the back cover. Each has: a NAME: an ABSTRACT: and a TEXT.

a. ITEM NAME

The ITEM NAME is a single term or phrase which identifies the particular item. More than one item within a file may have the same ITEM NAME (uniqueness of ITEM NAMES is not necessary to the functioning of ORDER), but it is usually desirable that the names of PROJECT ITEMS be unique.

b. ITEM ABSTRACT

The ABSTRACT is a set of DESCRIPTORS which the user wishes to use in characterizing a particular item. These DESCRIPTORS might be keywords or phrases, as used in conventional library-abstracting procedures. They may be interpreted as--i.e., ORDER treats them as--qualities that a given ITEM either possesses or lacks. In the example shown in Appendix III, the ITEMS have been given DESCRIPTORS like these two:

AVIATION WEEK (name of the source magazine)

MICROELECTRONICS (indicating the ITEMS which relate to this topic)

The total list of DESCRIPTORS is maintained by the system. As a new descriptor term is introduced to the system by its occurrence in a new ITEM, it is added to the DESCRIPTOR POOL. The matching of descriptor terms in individual abstracts with those present within a user COMMAND is used to facilitate retrieval in some cases. The effectiveness of the

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system depends, in part, upon the ability of the user to assign an appropriate set of DESCRIPTORS for each ITEM of data--either initially or after the ITEM is in the data-base.

c. TEXT

The TEXT of the ITEM is the categorized or organized body of data for that ITEM. This body of data is organized into a set of ATTRIBUTES. Each ATTRIBUTE consists of a NAME-VALUE pair. Within a particular TEXT, all ATTRIBUTE NAMES should be unique terms. The ATTRIBUTE VALUE corresponding to a particular ATTRIBUTE NAME may consist of a string of permissible symbols of indefinite length. The ATTRIBUTE VALUES within the TEXT usually constitute the bulk of the item.

To summarize, an analogy may be drawn between the ITEM of data and a book. The title of the book corresponds to the ITEM NAME. The table of contents corresponds roughly to the ABSTRACT, the individual DESCRIPTORS being implied by the topics mentioned there. Each chapter corresponds to an ATTRIBUTE, its title being the ATTRIBUTE NAME and its text being the ATTRIBUTE VALUE.

2. Project Data

Consistent with the design philosophy of ORDER, the specific content of each structural part of the PROJECT ITEM is determined completely by the user. At the time a PROJECT ITEM is added to the data-base, it must have, as a minimum: a NAME, at least one DESCRIPTOR in the ABSTRACT, and at least one ATTRIBUTE in the TEXT.

3. System Data

In support of the user's role as an evaluator, a second type of ITEM is created and retained by ORDER for the purpose of system optimization, called SYSTEM ITEMS. SYSTEM ITEMS provide:

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information about system utilization
information about data configuration
information about configuration change

When ORDER processes a command that results in a modification of the file (this excludes the addition of PROJECT ITEMS) a SYSTEM ITEM is automatically created. SYSTEM ITEMS have the same basic structure as PROJECT ITEMS, i.e., a NAME, ABSTRACT, and TEXT. The contents of these parts, however, are not totally determined by the user.*

Since it is assumed that the ability to account for change is of major importance to the user, SYSTEM ITEMS are then incorporated as a part of the data-base. The SYSTEM ITEM contains the following information:

The actual COMMAND which produced the file change;
Narrative information about why the change was instituted;
The part of the file that was influenced by the change;
The date the change was made.

With this data available, the user can restore the file to some previous state, if an error in judgment was made or previously-deleted information is now important.

In order to describe system utilization and configuration, ORDER provides reports concerning DESCRIPTOR usage. When the command to (DISPLAY)(DESCRIPTOR POOL) is executed, an alphabetical list is produced, showing all DESCRIPTORS in the file which have been used to date. The SYSTEM ITEM DESCRIPTORS are listed separately from the PROJECT ITEM DESCRIPTORS. Also, a tally of Uses (how many times the DESCRIPTOR appears in the file) and References (how many times the DESCRIPTOR has

* See Appendix I for complete description of SYSTEM ITEM format.

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appeared in the CONDITIONS part of previously-processed commands) is printed for each DESCRIPTOR. This data gives the user some measure of how the DESCRIPTOR is being used, its frequency of use, and its occurrence in the file.

C. COMMANDS

1. General Description

The user works with his data by COMMANDs to the ORDER program. The COMMAND consists of two logical functions:

Select certain ITEMS.

Do something to the selected ITEMS.

Each COMMAND is a self-contained and independent statement to the system. It results in action on the data file. Thus a later COMMAND may refer to the results produced by an earlier COMMAND.

While the COMMAND is best considered as having two independent logical functions (SELECT and DO), it is composed by the user and interpreted by the ORDER program in five parts:

DO SELECT
_____ _____
(DATE) (FUNCTION) (OBJECT) (VALUES) (CONDITIONS)\$\$

(This COMMAND format is also shown on the foldout inside the back cover.)

Here is an example:

(1/20/66) (ADD) (DESCRIPTOR) (VENEZUELA) (D(CARACAS))\$\$

Here is an equivalent example:

(1/20/66)(ADD) THE (DESCRIPTOR)(VENEZUELA) TO ALL ITEMS THAT
HAVE THE DESCRIPTOR (D(CARACAS)) THIS DESCRIPTOR WAS ADDED BY
J. HONES \$\$

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Notice that the two COMMANDs will produce identical results. However, the second one is easier to interpret by the user and contains more information, namely the narrative information following the CONDITIONS. Since the whole COMMAND will be included as part of a SYSTEM ITEM, this may be an additional source of data for the user in his role as a system evaluator.

2. FUNCTIONs

Four different FUNCTIONs are provided to establish and maintain the data base as well as to retrieve selected information from it. Only one of the following four terms may appear within the FUNCTION part of the command:

ADD
DELETE
CHANGE
DISPLAY

DISPLAY causes the selection and output of certain ITEMS or parts of ITEMS of data, depending upon the content of the remaining three parts of the COMMAND. This FUNCTION also will output the contents of the DESCRIPTOR POOL, as well as the complete data file.

ADD is the FUNCTION which permits new data to be added to the file. Complete ITEMS may be added to the file, or new ATTRIBUTES or DESCRIPTORS may be added to existing ITEMS. This function allows new interpretation and broadening of the data-base.

DELETE is the FUNCTION which allows deletion of unwanted ITEMS or parts of ITEMS from the file.

CHANGE is the FUNCTION which permits the substitution of a new term or value to part of an ITEM in the place of an already existing term or value. This function also permits new interpretation of the data.

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3. OBJECTS

The terms which appear in the OBJECT part of the COMMAND identify for the ORDER program the part of the data structure to which the FUNCTION is to be applied. Not every FUNCTION/OBJECT combination is a legal one-- or even a sane one. Thus, the user may ADD and DELETE only whole ITEMS, DESCRIPTORS, and ATTRIBUTES; he may CHANGE only ITEM NAME, DESCRIPTOR, ATTRIBUTE NAME, and ATTRIBUTE VALUE; he can DISPLAY almost everything.

The following table shows the permissible FUNCTION/OBJECT combinations (the /s denotes that multiple object terms are allowed):

FUNCTIONS OBJECTS	FUNCTIONS			
	ADD	CHANGE	DELETE	DISPLAY
ITEM/S	X		X	X
ITEM NAME/S		X		X
ABSTRACT/S				X
DESCRIPTOR/S	X	X	X	
TEXT/S				X
ATTRIBUTE/S	X		X	X
ATTRIBUTE NAME/S		X		
ATTRIBUTE VALUE/S		X		
DESCRIPTOR POOL				X

4. VALUES

The VALUES part of the COMMAND contains, literally, the VALUES which the user wishes to associate with the OBJECT for purposes of changing the data-base. In the case of the ADD FUNCTION, the VALUES part of the COMMAND will contain, literally, the new ITEM, or the new DESCRIPTOR or ATTRIBUTE. In the case of DELETE or CHANGE FUNCTIONS, the VALUES part of the COMMAND mentions those structural elements of an ITEM (e.g., ITEM NAME, DESCRIPTOR, ATTRIBUTE) which are to be deleted or changed.

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Finally, in the case of a DISPLAY FUNCTION, the VALUES part of the COMMAND mentions the NAMES of those ATTRIBUTES to be displayed.*

5. CONDITIONS

It is through the interpretation of CONDITIONS that certain ITEMS of data are selected from the file to be operated upon according to the FUNCTION/OBJECT pair. The terms appearing in the CONDITIONS part of the COMMAND serve to define for the program ITEMS of data to which the COMMAND is to be applied. The CONDITIONS, therefore, allow the user to specify that set of data ITEMS having certain common structural elements or data content which are to be selected. Items not having the specified commonality are undisturbed. The elements appearing in the CONDITIONS part of the COMMAND constitute a Boolean expression of terms. These terms may involve ITEM NAMES, DESCRIPTORS, ATTRIBUTE NAMES, ATTRIBUTE VALUES, or STRINGS of CHARACTERS. The Boolean expression which constitutes CONDITIONS is made up of one to five Boolean subexpression types connected by logical "and", represented by the asterisk(*).

All of the sub-expression types except TV demand that the selection of an ITEM be made within the context of ITEM structure e.g., ITEM NAME, DESCRIPTOR, ATTRIBUTE etc. However, TV conditions permit the selection of ITEMS simply on the occurrence of a specified string of characters anywhere within the TEXT part of an ITEM. This feature then allows the user to discover by the complete search of the contents of the TEXT part of an ITEM whether or not specified words or phrases are present. This TV condition is one of the more important aids that ORDER offers to the user for organizing and structuring data which was originally unedited or formless.

* See ORDER LANGUAGE SUMMARY TABLE.

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SUBEXPRESSION TYPES

(BIN) = :IN (\oplus in.₁ \oplus in.₂ \oplus ... \oplus in._j)

a Boolean expression of ITEM NAMEs.

(BAN) = :AN (\oplus an.₁ \oplus an.₂ \oplus ... \oplus an._j)

a Boolean expression of Atttribute NAMEs.

(BD) = :D (\oplus d.₁ \oplus d.₂ \oplus ... \oplus d._j)

a Boolean expression of Descriptors.

(BAV) = :AV (\oplus an. .R. val.)₁ \oplus (an. .R. val.)₂
 \oplus ... \oplus (an. .R. val.)_j)

a Boolean expression of ATTRIBUTE NAMEs and VALUE bounds

(BTV) = :TV (\oplus (str.) \oplus (str.) \oplus
 \oplus (str.))

a Boolean expression of TEXT (ATTRIBUTE) VALUE

Where:

(\oplus) = : (*, -) logical "and" and "and not" respectively

(an.) = : (ATTRIBUTE NAME)

(in.) = : (ITEM NAME)

(d) = : (DESCRIPTOR)

(.R.) = : (one of the relations, .LESS., .GREATER., .EQUAL., . BETWEEN..) Note that if .BETWEEN. is used val.₁ and val.₂ will appear separated by a comma: (an. .BETWEEN. val.₁, val.₂)

(val.) = : (a term in the conditions which is a value to be compared to the ATTRIBUTE VALUE mentioned, according to the relation .R.)

(str.) = : an arbitrary string of characters.

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Boolean subexpressions of type BIN allow selection of ITEMS by ITEM NAME. Subexpressions of type BAN allow selection of ITEMS by the existence of ATTRIBUTE NAMES within the TEXT. Likewise, expressions of type BD permit selection of ITEMS based upon occurrence of certain DESCRIPTOR terms within the ABSTRACT. Finally, subexpressions of type BAV permit selection of ITEMS whose ATTRIBUTES are equal to a certain VALUE, or lie within an open or closed interval. By compounding these five subexpression types into the complete Boolean expression in the CONDITIONS part of the COMMAND, an extremely specific COMMAND may be constructed. The COMMAND then selects ITEMS based upon VALUE considerations as well as NAMES.

Symbolically:

$$(\text{conditions}) = :((\text{BIN}) (\text{BD})(\text{BAN}) (\text{BAV})(\text{BTV}))$$

where any one or more subexpression types may be absent. Empty conditions are interpreted as "all" or the whole file.

6. Summary

The following table summarizes all possible COMMAND forms which the user may execute with ORDER.

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ORDER LANGUAGE SUMMARY TABLE
(COMMAND) = : (date)(function)(object)(values)(conditions) \$\$

FUNCTION	OBJECT	VALUES	CONDITIONS	INTERPRETATION
ADD	ATTRIBUTE/S	(en. = ev.)	B(IN,D,AN,AV,TV)	Add attribute in (values) to texts of items satisfying (conditions). **
	ITEM	(in./objt./text)	Empty	Add item specified in (values) to the file.
	DESCRIPTOR/S	(descriptor)	B(IN,D,AN,AV,TV)	Add descriptors which appear in (values) to the abstracts of items satisfying (conditions). **
DELETE	ITEM/S	Empty	B(IN,D,AN,AV,TV)	Delete items satisfying (conditions) from the file.
	DESCRIPTOR/S	(descriptors)	B(IN,D,AN,AV,TV)	Delete the descriptors in (values) from items satisfying (conditions). **
	ATTRIBUTE/S	(en.)	B(IN,D,AN,AV,TV)	Delete the attributes named in (values) from items satisfying (conditions). **
CHANGE	ITEM NAME	(in.)	B(IN,D,AN,AV,TV)	Change the name of the item satisfying (conditions) to term in (values).
	DESCRIPTOR	(d * TO * d')	B(IN,D,AN,AV,TV)	Change the descriptors in items satisfying (conditions) to those specified in (values).
	ATTRIBUTE NAME	(en. * TO * en.')	B(IN,D,AN,AV,TV)	Change the attribute names of items satisfying (conditions) to those specified in (values).
DISPLAY	ATTRIBUTE VALUE	(en. = ev.)	B(IN,D,AN,AV,TV)	Change the attribute values of items satisfying (conditions) to those specified in (values).
	ITEM NAME/S	Empty	B(D,AN,AV,TV)	Display the item name of those items satisfying (conditions).
	ITEM/S	Empty	B(IN,D,AN,AV,TV)	Display the complete item of those items satisfying (conditions).
DISPLAY	ABSTRACT/S	Empty	B(IN,D,AN,AV,TV)	Display the item name and abstract of those items satisfying (conditions).
	TEXT/S	Empty	B(IN,D,AN,AV,TV)	Display the item name and text of those items satisfying (conditions).
	ATTRIBUTE/S	(en)	B(IN,D,AN,AV,TV)	Display the item name and attributes named in (values) of items satisfying (conditions). **
DESCRIPTOR POOL	Empty	Empty	Display the complete list of descriptors in the pool.	

** Multiple sets of values may be mentioned by separating each with an asterisk.

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APPENDIX I

SYSTEM ITEM FORMAT

Since it is assumed that CHANGE is a major activity, a set of items called SYSTEM ITEMS is generated whenever the file is modified. Each CHANGE or DELETE COMMAND, and certain ADD COMMANDs, will automatically generate a new SYSTEM ITEM and add it to the file.

The ITEM NAME for all SYSTEM ITEMS is the same--namely, SYSTEM ITEM. The ABSTRACT consists of one term which is the change identifier and is a concatenation of the FUNCTION/OBJECT part of the COMMAND which produced the change. For example, ITEM NAME CHANGED would be the ABSTRACT for the SYSTEM ITEM generated as a result of (CHANGE)(ITEM NAME).

The TEXT of SYSTEM ITEMS consists of the COMMAND which caused the change and of the old values that existed prior to the change. In addition, the date of the COMMAND issuing the change is included in the TEXT, as a separate ATTRIBUTE. The construction of this new ITEM is shown in Fig. 2. These pieces of information are generated as a part of the normal COMMAND processing and require no additional action on the part of the user. It will be noted that change records are generated as a result of all COMMANDs which cause changes to either PROJECT data or SYSTEM data in the file. This is true except in the case of (DELETE) (ITEM) where the item selected is a SYSTEM ITEM. The deletion of a SYSTEM ITEM does not generate a SYSTEM ITEM. The DISPLAY function only exposes the stored data and in no way changes its configuration--therefore it does not generate SYSTEM ITEMS. The ADD function also causes a file change and is included as a SYSTEM ITEM generator under the condition of (ADD)(ATTRIBUTE). It may prove useful to include other ADD commands in the category in the future.

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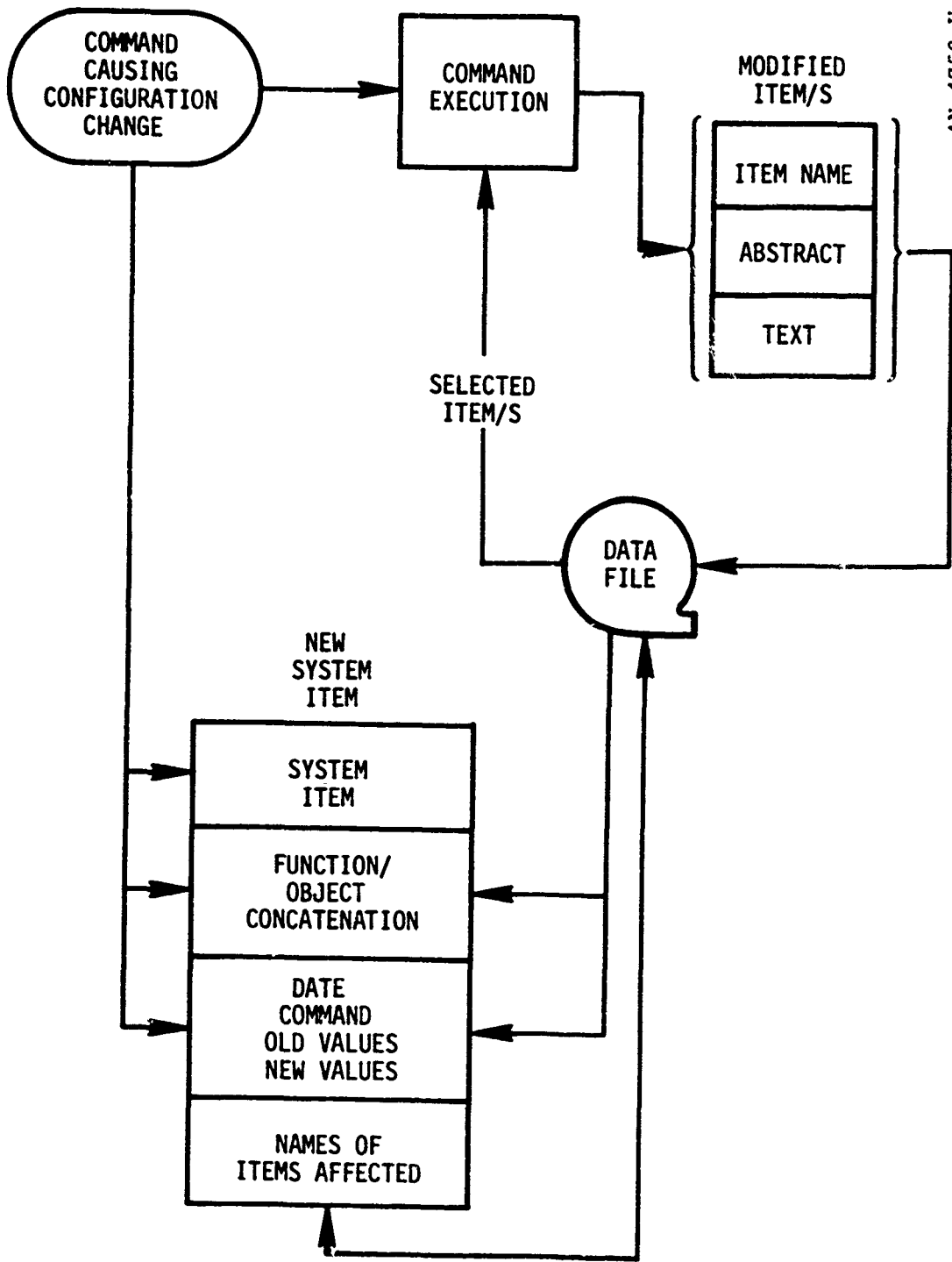


Figure 2. System Item Generation

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So that the user may take advantage of the information contained in the SYSTEM ITEMS, the details of each type are listed on the following pages.

(CHANGE) SYSTEM ITEMS:

The four SYSTEM ITEMS resulting from the CHANGE function are:

1. (CHANGE) (DESCRIPTOR)

(ITEM NAME)	=	SYSTEM ITEM
(ABSTRACT)	=	DESCRIPTOR CHANGED
(TEXT)	=	: The following attributes

DATE = (date of command)

COMMAND = (complete command generating the change)

ITEM = (name of first item affected)

CHANGE = *FROM* d_1 *TO* d_2

CHANGE = *FROM* d_m *TO* d_n

.

.

ITEM = (name of second item affected)

CHANGE = *FROM* d_i *TO* d_j

CHANGE = *FROM* d_k *TO* d_l

(etc. for all items affected)

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2. (CHANGE) (ITEM NAME)

```
(ITEM NAME) = SYSTEM ITEM
(ABSTRACT) = ITEM NAME CHANGED
(TEXT) = : The following attributes:

DATE = (date of command)
COMMAND = (complete command generating the change)
ITEM = (in1)
ITEM = (in2)
ITEM = (inn)
CHANGE = *FROM* in.1 *TO* in.n
CHANGE = *FROM* in.2 *TO* in.n
:
:
(etc. if more than one item is changed)
```

3. (CHANGE) (ATTRIBUTE NAME)

```
(ITEM NAME) = SYSTEM ITEM
(ABSTRACT) = ATTRIBUTE NAME CHANGED
(TEXT) = : The following attributes:

DATE = (date of command)
COMMAND = (complete command generating the change)
ITEM = (name of first item changed)
CHANGE = *FROM* an.1 *TO* an.n
:
:
ITEM = (name of second item changed)
CHANGE = *FROM* an.1 *TO* an.n
:
:
(etc. for all items affected)
```

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4. (CHANGE) (ATTRIBUTE VALUE)

```
(ITEM NAME) = SYSTEM ITEM
(ABSTRACT)  = ATTRIBUTE VALUE CHANGED
(TEXT)      = : The following attributes:

        DATE = (date of command)
        COMMAND = (complete command generating the change)
        ITEM = (name of first item changed)
        ATTRIBUTE NAME = (name of first attribute changed)
        CHANGE = *FROM* av.1 *TO* av.n
        ATTRIBUTE NAME = (name of second attribute changed)
        CHANGE = *FROM* av.1 *TO* av.n
        :
        :
        (etc. for multiple attribute change)
        ITEM = (name of second item changed)
        :
        :
        etc.
```

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(DELETE) SYSTEM ITEMS

Three SYSTEM ITEMS are generated by the DELETE function:

1. (DELETE) (DESCRIPTOR)

(ITEM NAME)	=	SYSTEM ITEM
(ABSTRACT)	=	DESCRIPTOR DELETED
(TEXT)	=	: The following attributes:
DATE	=	(date of command)
COMMAND	=	(complete command generating the deletion)
ITEM	=	(the name of first descriptor deleted)
DESCRIPTOR DELETED	=	(the first descriptor deleted from first item)
:		
:		
:		
		(etc. for multiple descriptors)
ITEM	=	(name of second descriptor deleted)
DESCRIPTOR DELETED	=	(first descriptor deleted from second item)
DESCRIPTOR DELETED	=	(etc.)
:		
:		
:		
		(etc. for multiple items involved)

2. (DELETE) (ITEM)

(ITEM NAME)	=	SYSTEM ITEM
(ABSTRACT)	=	ITEM DELETED
(TEXT)	=	: The following attributes:
DATE	=	(date of the command)
COMMAND	=	(complete command generating the deletion)
ITEM	=	(name of item deleted)
DELETION	=	ITEM TOTALLY DELETED

In addition to the above SYSTEM ITEM which is generated as a result of deleting an ITEM, the complete ITEM is automatically displayed. This is for purposes of manual record-keeping, so that the information is not totally lost.

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3. (DELETE) (ATTRIBUTE)

(ITEM NAME)	=	SYSTEM ITEM
(ABSTRACT)	=	ATTRIBUTE DELETED
(TEXT)	=	: The following attributes:
DATE	=	(date of command)
COMMAND	=	(complete command generating the deletion)
ITEM	=	(name of first item modified)
		(attribute deleted)
		:
		(etc. for multiple attributes deleted)
ITEM	=	(name of second item modified)
		:
		(etc. for multiple items affected)

(ADD) SYSTEM ITEMS

The SYSTEM ITEMS generated by the ADD function are the following:

1. (ADD) (ATTRIBUTE)

(ITEM NAME)	=	SYSTEM ITEM
(ABSTRACT)	=	ATTRIBUTE ADDED
(TEXT)	=	: The following attributes:
DATE	=	(date of command)
COMMAND	=	(complete command specifying the attribute to be added)
ITEM	=	(name of item affected)
		(Attribute added)
		(etc. for multiple attribute additions)

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2. (ADD) (DESCRIPTOR)

(ITEM NAME) = SYSTEM ITEM
(ABSTRACT) = DESCRIPTOR ADDED
(TEXT) = : The following attributes

DATE = (date of command)

COMMAND = (complete command specifying the descriptors to be added)

ITEM = (name of item affected)

ITEM = etc. for multiple affected items

DESCRIPTOR ADDED = (d_1)

DESCRIPTOR ADDED = (d_2)

⋮

(etc. for addition of more than one descriptor)

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APPENDIX II

INTERNAL DATA ORGANIZATION

So that the user may have a better understanding of the freedom allowed him in structuring data within the organizational bounds of the ITEM, details of the formatting rules within ORDER will be discussed.

The TERM

A TERM is a string of admissible characters, not including any blanks, which the user chooses to concatenate. A sequence of TERMS, each separated by blanks, forms a PHRASE. The admissible characters for a TERM are:

- integers, 0 through 9
- alphabetic characters, A through Z
- special characters include
 - + plus sign
 - . period
 - \$ single dollar sign
 - / single slash
 - , comma
 - dash or minus sign

The characters which the user may not use as part of his data are those reserved for special meaning to ORDER. They include:

-) , (right and left parenthesis for separating parts of the command
- * asterisk used for Boolean "and"
- dash or minus signs are prohibited within ATTRIBUTE NAMES, DESCRIPTORS, or ITEM NAMES

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\$\$ two or more contiguous dollar signs are reserved to indicate "end of command"

// two contiguous slashes are used to separate the ITEM NAME, ABSTRACT, and TEXT within the VALUES part of a command to (ADD)(ITEM)

+0, -0,RM the plus and minus zeros as well as the record mark are used for internal formatting purposes

= the equal sign is reserved to separate an Attribute Name from its value

Since "+", ".", and both "-" signs have meaning with numeric characters, they may not appear as unassociated characters, i.e., preceded and followed by blanks.

Examples of permissible TERMS are:

BEETHOVEN
GERMAN
1770

Examples of a PHRASE are:

LUDWIG VAN BEETHOVEN
LIVED 1770 TO 1827

Examples of nonpermissible TERMS and PHRASES are:

1770 - 1827
LUDWIG *VAN* BEETHOVEN

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NAMES

ITEM NAMES, DESCRIPTORS and ATTRIBUTE NAMES are all treated alike in regard to internal formatting. These are considered phrases.

ATTRIBUTE VALUES however are treated as strings of PHRASES separated by specially formatted numbers or dates. If a PHRASE is keypunched into a card with contiguous blanks between terms, the string of blanks is collapsed into a single blank. This formatting function conserves machine storage and relieves the user of worrying about counting blanks.

VALUES

As mentioned above, ATTRIBUTE VALUES are treated in a special way by the formatting routine. This special treatment is for the purpose of providing a selection mechanism for the AV () part of (CONDITIONS).

When ATTRIBUTES are input in the raw state, the VALUES part of the ATTRIBUTE is scanned for the occurrence of a date or a number. When a date or number is encountered, it is converted to a floating-point number and embedded within the ATTRIBUTE VALUE next to its antecedent. The rules of recognition are as follows for dates and numbers:

- Date: XX/XX/XX. The occurrence of two slashes separated by either one or two integers. One-or two-digit integers must appear before and after the slash-integer-slash triplet.
- Numbers: A string of integers concatenated with or without an algebraic sign (+ or -) or period (for decimal point) is interpreted as an algebraic number provided that it is flanked on each side by at least one blank. The exponent form of a number is also a permissible form: 1.234E + 05.

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APPENDIX III

EXAMPLES

The following pages are reproductions of the computer printout from an exercise which was designed to illustrate the operation of ORDER. Many of the COMMANDs shown are ones which would actually be used in building up and editing a data-file; others have been included simply for illustration. The steps shown on the following pages are:

Step	COMMAND	Comments
1.	(ADD)(ITEM)	The text of a magazine article
2.	(ADD)(ITEM)	Another article
3.	(ADD)(ITEM)	Another article
4.	(ADD)(ITEM)	Another article
5.	(ADD)(ITEM)	Another article
6.	(ADD)(ITEM)	Another article
7.	(DISPLAY)(DESCRIPTOR POOL)	These descriptors were defined when the ITEMS were inserted
8.	(ADD)(ATTRIBUTE)(PAGE = 83)	
9.	(ADD)(DESCRIPTOR)	Every ITEM whose text contains the word "microcircuit" is given MICROELECTRONICS as a DESCRIPTOR
10.	(DISPLAY)(ABSTRACTs)	
11.	(CHANGE)(ATTRIBUTE VALUE) (PAGE = 84)	For three of the magazine articles
12.	(CHANGE)(ATTRIBUTE NAME)	Abbreviate "date of publication" to "DOP"
13.	(CHANGE)(ITEM NAME)	
14.	(DISPLAY)(ITEM NAMEs)	
15.	(CHANGE)(DESCRIPTOR)	Abbreviate "Filter Center" to "F.C."

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Step	COMMAND	Comments [*]
16.	(DELETE)(DESCRIPTOR)	
17.	(DISPLAY)(DESCRIPTOR POOL)	
18.	(DELETE)(ITEMs)	Delete all SYSTEM ITEMs
19.	(DELETE)(ATTRIBUTE)(PAGE)	For all magazine articles whose PAGE value equals 83.
20.	(DISPLAY)(ATTRIBUTE)(ARTICLE)	For all articles which contain the word "/MOL/"
21.	(DISPLAY)(DESCRIPTOR POOL)	

- There are no more COMMANDs at this point, so ORDER does some internal housekeeping and reports on the status of the data-file and the activity during the run just completed.

* There are further comments included in the COMMANDs on the following pages.

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COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-37-30
(2/2/66) (ADD)(ITEM)(MILLIMETER COMMUNICATIONS FROM MOL
// FILTER CENTER* AVIATION WEEK// ARTICLE = THE FEASIBIL
ITY OF USING A MILLIMETER WAVE COMMUNICATIONS LINK BETWE
EN USAF PROJECTED MANNED ORBITING LABORATORY /MOL/ AND A
SATELLITE IN EARTH ORBIT IS UNDER STUDY BY MARTIN ORLAN
DO FOR AIR FORCE RESEARCH AND TECHNOLOGY DIV. MILLIMETER
WAVES OFFER A COMBINATION OF POTENTIAL ADVANTAGES OVER
LOWER FREQUENCY MICROWAVE COMMUNICATIONS INCLUDING GREAT
ER INFORMATION CAPACITY, LIGHTER WEIGHT AND GREATER SECUR
ITY. MENAWHILE, DEFENSE COMMUNICATIONS AGENCY PLANS TO
SEEK INDUSTRY PROPOSALS FOR EVALUATION A GROUND BASED MI
LLIMETER WAVE COMMUNICATIONS SYSTEM TO BE USED BETWEEN L
OCATIONS IN THE WASHINGTON, D.C. AREA. *DATE OF PUBLICAT
ION=1/17/66)().
.....
..... NOTICE THAT THE ADD ITEM COMMAND PROD
UCES TWO DISPLAYS OF THE ITEM, THE FIRST IS SIMPLY THE T
HE NORMAL DISPLAY OF THE COMMAND BEING PROCESSED. THE SE
COND IS THE ITEM IN THE FORMAT GIVEN IT BY THE ORDER PRO
GRAM.\$S

THE NEW ITEM HAS BEEN ADDED TO THE FILE.(ADITM)

*

*** ITEM NAME ***

* MILLIMETER COMMUNICATIONS FROM MOL

*** ABSTRACT ***

* FILTER CENTER

* AVIATION WEEK

*** TEXT ***

* ARTICLE = THE FEASIBILITY OF USING A MILLI
METER WAVE COMMUNICATIONS LINK BETWEEN USAF PROJECTED MA
NNED ORBITING LABORATORY /MOL/ AND A SATELLITE IN EARTH
ORBIT IS UNDER STUDY BY MARTIN ORLANDO FOR AIR FORCE RES
EARCH AND TECHNOLOGY DIV. MILLIMETER WAVES OFFER A COMBI
NATION OF POTENTIAL ADVANTAGES OVER LOWER FREQUENCY MICR
OWAVE COMMUNICATIONS INCLUDING GREATER INFORMATION CAPAC
ITY, LIGHTER WEIGHT AND GREATER SECURITY. MENAWHILE, DEF
ENSE COMMUNICATIONS AGENCY PLANS TO SEEK INDUSTRY PROPOS
ALS FOR EVALUATION A GROUND BASED MILLIMETER WAVE COMMUN
ICATIONS SYSTEM TO BE USED BETWEEN LOCATIONS IN THE WASH
INGTON, D.C. AREA.

* DATE OF PUBLICATION = 1/17/66

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COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-37-35
(2/2/66) (ADU) (ITEM) (MOL CHECKOUT EQUIPMENT// FILTER CE
NTER* AVIATION WEEK// ARTICLE = DOUGLAS AIRCRAFT CO., US
AF PRIME CONTRACTOR FOR THE MANNED ORBITING LABORATORY /
MOL/ RECENTLY BRIEFED PROSPECTIVE BIDDERS FOR GROUND CHE
CKOUT EQUIPMENT FOR THE SPACE LABORATORY. PROPOSAL REQUE
STS WILL BE ISSUED SOON. *DATE OF PUBLICATION=1/17/66)
()SS \$\$\$

THE NEW ITEM HAS BEEN ADDED TO THE FILE.(ADITM)

*

*** I T E M N A M E ***
* MOL CHECKOUT EQUIPMENT

*** A B S T R A C T ***
* FILTER CENTER
* AVIATION WEEK

*** T E X T ***
* ARTICLE = DOUGLAS AIRCRAFT CO., USAF PRIME
CONTRACTOR FOR THE MANNED ORBITING LABORATORY /MOL/ REC
ENTLY BRIEFED PROSPECTIVE BIDDERS FOR GROUND CHECKOUT EQ
UIPMENT FOR THE SPACE LABORATORY. PROPOSAL REQUESTS WILL
BE ISSUED SOON.
* DATE OF PUBLICATION = 1/17/66

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COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME# 09-37-37
(2/2/66) (ADD) (ITEM) (ARMY SEEKS LASER DISPLAY// FILTER
CENTER* AVIATION WEEK// ARTICLE = LATE THIS MONTH ARMY E
LECTRONICS COMMAND WILL ASK AVIONICS COMPANIES TO BID ON
A DEVELOPMENT MODEL OF A DISPLAY DEVICE WHICH USES A LA
SER AS A HIGH-INTENSITY SOURCE FOR DATA DISPLAY AND PRIN
TING. EARLIER WORK ON LASER DISPLAYS HAS BEEN DONE BY IN
TERNATIONAL BUSINESS MACHINES AND TEXAS INSTRUMENTS UNDE
R MILITARY SPONSORSHIP. *DATE OF PUBLICATION=1/17/66) (

)SS SSSS

THE NEW ITEM HAS BEEN ADDED TO THE FILE.(ADITM)

*

*** I T E M N A M E ***
* ARMY SEEKS LASER DISPLAY

*** A B S T R A C T ***
* FILTER CENTER
* AVIATION WEEK

*** T E X T ***
* ARTICLE = LATE THIS MONTH ARMY ELECTRONICS
COMMAND WILL ASK AVIONICS COMPANIES TO BID ON A DEVELOP
MENT MODEL OF A DISPLAY DEVICE WHICH USES A LASER AS A H
IGH-INTENSITY SOURCE FOR DATA DISPLAY AND PRINTING. EARL
IER WORK ON LASER DISPLAYS HAS BEEN DONE BY INTERNATIONA
L BUSINESS MACHINES AND TEXAS INSTRUMENTS UNDER MILITARY
SPONSORSHIP.
* DATE OF PUBLICATION = 1/17/66

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COMMAND BEING PROCESSED IS AS FOLLOWS (HUCOM) TIME= 09-37-41
(2/2/66) (ADD) (ITEM) (WIDEBAND MICROCIRCUIT // FILTER CE
NTER* AVIATION WEEK// ARTICLE =THIN FILM LINEAR AMPLIFIE
R, WHICH GIVES 15 DB. INSERTION GAIN OVER A 1 GC. BANDWI
DTH, FROM 400 TO 1400 MC. USING LUMPED PASSIVE THIN FILM
COMPONENTS AND TRANSISTOR CHIPS, HAS BEEN DEVELOPED BY
BELL TELEPHONE LABORATORIES. CIRCUIT DESIGN AND LAYOUT W
ERE DEVELOPED USING A COMPUTER PROGRAM WHICH OPTIMIZED C
IRCUIT PERFORMANCE AND ACHIEVES OPERATION ALMOST UP TO T
HEORETICAL LIMIT OF TRANSISTOR PERFORMANCE. THE MICROCI
RUIT AMPLIFIER, FABRICATED ON A 1.5 X 3 IN. GLASS SUBSTR
ATE, USES DEPOSITED TANTALUM NITRIDE RESISTORS WITH CAPA
CITORS AND INDUCTORS FABRICATED FROM A SANDWICH OF NICHR
OME, COPPER AND PALLADIUM FILM. PASSIVE COMPONENTS CAN B
E TRIMMED TO WITHIN 0.02 PERCENT OF DESIRED VALUES. *DAT
E OF PUBLICATION=1/17/66) () \$ \$ \$
THE NEW ITEM HAS BEEN ADDED TO THE FILE. (ADITM)

*

*** ITEM NAME ***
* WIDEBAND MICROCIRCUIT

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK

*** TEXT ***
* ARTICLE = THIN FILM LINEAR AMPLIFIER, WHIC
H GIVES 15 DB. INSERTION GAIN OVER A 1 GC. BAND
WIDTH, FROM 400 TO 1400 MC. USING LUMPED PASSIVE THIN FI
LM COMPONENTS AND TRANSISTOR CHIPS. HAS BEEN DEVELOPED B
Y BELL TELEPHONE LABORATORIES. CIRCUIT DESIGN AND LAYOUT
WERE DEVELOPED USING A COMPUTER PROGRAM WHICH OPTIMIZED
CIRCUIT PERFORMANCE AND ACHIEVES OPERATION ALMOST UP TO
THEORETICAL LIMIT OF TRANSISTOR PERFORMANCE. THE MICROCI
RUIT AMPLIFIER, FABRICATED ON A 1.5 X 3 IN. GLAS
S SUBSTRATE, USES DEPOSITED TANTALUM NITRIDE RESISTORS W
ITH CAPACITORS AND INDUCTORS FABRICATED FROM A SANDWICH
OF NICHROME, COPPER AND PALLADIUM FILM. PASSIVE COMPONEN
TS CAN BE TRIMMED TO WITHIN 0.02 PERCENT OF DESIR
ED VALUES.
* DATE OF PUBLICATION = 1/17/66

UNCLASSIFIED

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COMMAND BEING PROCESSED IS AS FOLLOWS (RUCOM) TIME# 09-37-45
(2/2/66) (ADD) (ITEM) (SUN PUMPED LASER PROGRESS// FILTER
CENTER* AVIATION WEEK// ARTICLE =SUNPOWERED LASER USING
A DOUBLE-DOPE YTTTRIUM ALUMINUM GARNET /YAG/ CRYSTAL,EX
CITED BY 400 W. OF SOLAR ENERGY, HAS PRODUCED A CONTINUO
US-WAVE OUTPUT OF 0.5 TO 1.0 W. AT RADIO CORP. OF AMERIC
AS APPLIED RESEARCH ORGANIZATION. LASER OUTPUT WAS MODUL
ATED TO TRANSMIT A TELEVISION SIGNAL IN RECENT TESTS THA
T USED A 3 IN. DIA. MIRROR TO FOCUS SOLAR ENERGY ON THE
CRYSTAL. THREE YEARS AGO RCA ANNOUNCED IT HAD FIRST ACHI
EVED SOLAR PUMPING USING A CALCIUM-FLUORIDE CRYSTAL. CUR
RENT PHUGRAM IS SPONSORED BY NATIONAL AERONAUTICS AND SP
ACE ADMINISTRATION'S MANNED SPACECRAFT CENTER. *DATE OF P
UBLICATION=1/17/66) ()\$\$ \$\$\$\$\$\$
THE NEW ITEM HAS BEEN ADDED TO THE FILE. (ADITM)

*

* * * I T E M N A M E * * *

* SUN PUMPED LASER PROGRESS

* * * A B S T R A C T * * *

* FILTER CENTER

* AVIATION WEEK

* * * T E X T * * *

* ARTICLE = SUNPOWERED LASER USING A DOUBLE-
DOPE YTTTRIUM ALUMINUM (GARNET /YAG/ CRYSTAL,EXCITED BY 4
00 W. OF SOLAR ENERGY, HAS PRODUCED A CONTINUOUS-WA
VE OUTPUT OF 0.5 TO 1.0 W. AT RADIO CORP. OF AME
RICAS APPLIED RESEARCH ORGANIZATION. LASER OUTPUT WAS MO
DULATED TO TRANSMIT A TELEVISION SIGNAL IN RECENT TESTS
THAT USED A 3 IN. DIA. MIRROR TO FOCUS SOLAR ENERGY ON
THE CRYSTAL. THREE YEARS AGO RCA ANNOUNCED IT HAD FIRST
ACHIEVED SOLAR PUMPING USING A CALCIUM-FLUORIDE CRYSTAL
. CURRENT PROGRAM IS SPONSORED BY NATIONAL AERONAUTICS A
ND SPACE ADMINISTRATION'S MANNED SPACECRAFT CENTER.

* DATE OF PUBLICATION = 1/17/66
.....

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COMMAND BEING PROCESSED IS AS FOLLOWS (PDCOM) TIME= 09-37-50
(2/2/66) (ADD) (ITEM) (IMPROVED FIELD EFFECT DEVICES // F
ILTER CENTER* AVIATION WEEK// ARTICLE = USE OF SILICON N
ITRIDE FILM INSTEAD OF SILICON OXIDE FOR INSULATION IN F
IELD-EFFECT TRANSISTORS AND MICROCIRCUITS PROMISES GREAT
LY IMPROVED STABILITY AND RELIABILITY, ACCORDING TO SPER
RY HAND RESEARCH CENTER SCIENTISTS. THE COMPANY PREDICTS
THAT SILICON NITRIDE WILL FIND USE AS A DIFFUSION MASK,
AS A PASSIVATING LAYER OVER P-N JUNCTIONS AND AS AN INS
ULATING DIELECTRIC, WHERE SILICON OXIDE NOW IS EMPLOYED.
SPERRY REPORTS IT HAS PRODUCED METAL OXIDE SEMICONDUCTO
R /MOS/ FIELD-EFFECT TRANSISTORS USING SILICON NITRIDE F
OR INSULATION WHICH HAVE SHOWN NO MEASURABLE CHANGE IN P
ERFORMANCE CHARACTERISTICS AFTER EXTENDED STORAGE AT A T
EMPERATURE OF 150 C WITH AN APPLIED BIAS VOLTAGE. CONVEN
TIONAL MOS TRANSISTORS, USING SILICON OXIDE, OFTEN UNDER
GO CHANGE DURING SUCH CONDITIONS. *DATE OF PUBLICATION=1
/17/66) () \$ \$ \$ \$ \$

THE NEW ITEM HAS BEEN ADDED TO THE FILE. (ADITM)

*

*** ITEM NAME ***

* IMPROVED FIELD EFFECT DEVICES

*** ABSTRACT ***

* FILTER CENTER
* AVIATION WEEK

*** TEXT ***

* ARTICLE = USE OF SILICON NITRIDE FILM INSTEAD OF SILICON OXIDE FOR INSULATION IN FIELD-EFFECT TRANSISTORS AND MICROCIRCUITS PROMISES GREATLY IMPROVED STABILITY AND RELIABILITY, ACCORDING TO SPERRY HAND RESEARCH CENTER SCIENTISTS. THE COMPANY PREDICTS THAT SILICON NITRIDE WILL FIND USE AS A DIFFUSION MASK, AS A PASSIVATING LAYER OVER P-N JUNCTIONS AND AS AN INSULATING DIELECTRIC, WHERE SILICON OXIDE NOW IS EMPLOYED. SPERRY REPORTS IT HAS PRODUCED METAL OXIDE SEMICONDUCTOR /MOS/ FIELD-EFFECT TRANSISTORS USING SILICON NITRIDE FOR INSULATION WHICH HAVE SHOWN NO MEASURABLE STORAGE CHANGE IN PERFORMANCE CHARACTERISTICS AFTER EXTENDED STORAGE AT A TEMPERATURE OF 150 C WITH AN APPLIED BIAS VOLTAGE. CONVENTIONAL MOS TRANSISTORS, USING SILICON OXIDE, OFTEN UNDERGO CHANGE DURING SUCH CONDITIONS.

* DATE OF PUBLICATION = 1/17/66

UNCLASSIFIED

UNCLASSIFIED

COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-37-54
(2/2/66) (DISPLAY)THE (DESCRIPTOR POOL)()().....
..... NOTICE THAT BOTH THE VALU
ES AND THE CONDITIONS PART OF THE COMMAND ARE EMPTY . NU
TICE ALSO THAT THE REFERENCES TO ALL DESCRIPTORS ARE ZEH
0.55 \$\$\$

*** D E S C R I P T O R P O O L ***

CL	USES	REFS	DESCRIPTOR
		A	
PROJ	6	0	AVIATION WEEK
		F	
PROJ	6	0	FILTER CENTER

DESCRIPTOR POOL CONTAINS 2 DESCRIPTORS

*

COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-37-55
(2/2/66) (ADD) THE(ATTRIBUTE)(PAGE=83) TO ALL ITEMS WHIC
H MEET THE CONDITIONS THAT (D(FILTER CENTER)AV((DATE OF
PUBLICATION*GT* 1/1/66)))
..... THIS COMMAND ILLUSTRATES THE USE OF A
COMPOUND SET OF CONDITIONS AND THAT NARRATIVE INFORMATI
ON MAY BE ADDED TO THE COMMAND FOR CLARIFICATION AND REC
ORD KEEPING PURPOSES\$\$\$ \$

*** I T E M N A M E ***
* MILLIMETER COMMUNICATIONS FROM MOL
ATTRIBUTE(S) BELOW ADDED....(ADATT)
* PAGE = 83

*** I T E M N A M E ***
* MOL CHECKOUT EQUIPMENT
ATTRIBUTE(S) BELOW ADDED....(ADATT)
* PAGE = 83

*** I T E M N A M E ***
* ARMY SEEKS LASER DISPLAY
ATTRIBUTE(S) BELOW ADDED....(ADATT)
* PAGE = 83

*** I T E M N A M E ***
* WIDEBAND MICROCIRCUIT
ATTRIBUTE(S) BELOW ADDED....(ADATT)
* PAGE = 83

*** I T E M N A M E ***
* SUN PUMPED LASER PROGRESS
ATTRIBUTE(S) BELOW ADDED....(ADATT)
* PAGE = 83

*** I T E M N A M E ***
* IMPROVED FIELD EFFECT DEVICES
ATTRIBUTE(S) BELOW ADDED....(ADATT)
* PAGE = 83

CURRENT COMMAND HAS BEEN PROCESSED.
6 ITEMS WERE FOUND TO SATISFY COMMAND.(MAIN)

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COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-02
(2/2/66) (ADD) (DESCRIPTOR) (MICROELECTRONICS) (TV((MICROCI
RCUII)))..... THIS COMMAND ILLUSTRATES HOW STRUCTURE MAY BE GIVEN TO AN
ITEM DEPENDING UPON ITS CONTENTS\$ \$\$\$\$

*** ITEM NAME ***
* WIDEBAND MICROCIRCUIT
DESCRIPTORS(S) ADDED TO ITEM AS FOLLOWS (ADDES)
* DESCRIPTOR ADDED = MICROELECTRONICS
.....

*** ITEM NAME ***
* IMPROVED FIELD EFFECT DEVICES
DESCRIPTORS(S) ADDED TO ITEM AS FOLLOWS (ADDES)
* DESCRIPTOR ADDED = MICROELECTRONICS
.....

*** ITEM NAME ***
* SYSTEM ITEM
DESCRIPTORS(S) ADDED TO ITEM AS FOLLOWS (ADDES)
* DESCRIPTOR ADDED = MICROELECTRONICS
.....

CURRENT COMMAND HAS BEEN PROCESSED.
3 ITEMS WERE FOUND TO SATISFY COMMAND.(MAIN)



COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-07
(2/2/66) (DISPLAY) (ABSTRACTS) (1) (IN(-SYSTEM ITEM)).....
..... THIS COMMAND ILLUSTRATE
S THE USE OF THE BOOLEAN OPERATOR-NOT \$\$\$ \$\$\$\$\$



*** ITEM NAME ***
* MILLIMETER COMMUNICATIONS FROM MUL

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK



*** ITEM NAME ***
* MUL CHECKOUT EQUIPMENT

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK

UNCLASSIFIED

*** ITEM NAME ***
* ARMY SEEKS LASER DISPLAY

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK

*

*** ITEM NAME ***
* WIDEBAND MICROCIRCUIT

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK
* MICROELECTRONICS

*

*** ITEM NAME ***
* SUN PUMPED LASER PROGRESS

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK

*

*** ITEM NAME ***
* IMPROVED FIELD EFFECT DEVICES

*** ABSTRACT ***
* FILTER CENTER
* AVIATION WEEK
* MICROELECTRONICS

CURRENT COMMAND HAS BEEN PROCESSED.
6 ITEMS WERE FOUND TO SATISFY COMMAND.(MAIN)

*

UNCLASSIFIED

COMMAND BEING PROCESSED IS AS FOLLOWS (RUCOM) TIME= 09-30-06
(2/2/66) (CHANGE) (ATTRIBUTE VALUE) (PAGE=84) (IN (IMPROVED
FIELD EFFECT DEVICES *MILLIMETER COMMUNICATIONS FROM MOL *
MOL CHECKOUT EQUIPMENT)) \$\$ \$\$\$

*** ITEM NAME ***
* MILLIMETER COMMUNICATIONS FROM MOL
ATTRIBUTE VALUE(S) CHANGED AS FOLLOWS. (CHGAV)
* ATTRIBUTE NAME = PAGE
* CHANGE = *FROM* 83 *TO* 84

*** ITEM NAME ***
* MOL CHECKOUT EQUIPMENT
ATTRIBUTE VALUE(S) CHANGED AS FOLLOWS. (CHGAV)
* ATTRIBUTE NAME = PAGE
* CHANGE = *FROM* 83 *TO* 84

*** ITEM NAME ***
* IMPROVED FIELD EFFECT DEVICES
ATTRIBUTE VALUE(S) CHANGED AS FOLLOWS. (CHGAV)
* ATTRIBUTE NAME = PAGE
* CHANGE = *FROM* 83 *TO* 84

CURRENT COMMAND HAS BEEN PROCESSED.
3 ITEMS WERE FOUND TO SATISFY COMMAND. (MAIN)

*

UNCLASSIFIED

UNCLASSIFIED

COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-14
(2/2/66) (CHANGE) (ATTRIBUTE NAME) (DATE OF PUBLICATION *T
0* DOP) (AN(DATE OF PUBLICATION))\$S \$\$\$\$

* * * I T E M N A M E * * *
* ARMY SEEKS LASER DISPLAY
ATTRIBUTE NAME(S) CHANGED AS FOLLOWS.(CHGAN)
* CHANGE = *FROM* DATE OF PUBLICATION
TO DOP

* * * I T E M N A M E * * *
* WIDEBAND MICROCIRCUIT
ATTRIBUTE NAME(S) CHANGED AS FOLLOWS.(CHGAN)
* CHANGE = *FROM* DATE OF PUBLICATION
TO DOP

* * * I T E M N A M E * * *
* SUN PUMPED LASER PROGRESS
ATTRIBUTE NAME(S) CHANGED AS FOLLOWS.(CHGAN)
* CHANGE = *FROM* DATE OF PUBLICATION
TO DOP

* * * I T E M N A M E * * *
* MILLIMETER COMMUNICATIONS FROM MOL
ATTRIBUTE NAME(S) CHANGED AS FOLLOWS.(CHGAN)
* CHANGE = *FROM* DATE OF PUBLICATION
TO DOP

* * * I T E M N A M E * * *
* MOL CHECKOUT EQUIPMENT
ATTRIBUTE NAME(S) CHANGED AS FOLLOWS.(CHGAN)
* CHANGE = *FROM* DATE OF PUBLICATION
TO DOP

* * * I T E M N A M E * * *
* IMPROVED FIELD EFFECT DEVICES
ATTRIBUTE NAME(S) CHANGED AS FOLLOWS.(CHGAN)
* CHANGE = *FROM* DATE OF PUBLICATION
TO DOP

CURRENT COMMAND HAS BEEN PROCESSED.
6 ITEMS WERE FOUND TO SATISFY COMMAND.(MAIN)

UNCLASSIFIED

COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-20
(2/2/66) (CHANGE) THE (ITEM NAME) TO (COMMUNICATIONS) IN THE
ITEM WHICH NOW HAS THE NAME (IN (MILLIMETER COMMUNICATIONS
FROM MOL)) \$\$ \$\$\$\$\$\$
ITEM NAME CHANGED AS FOLLOWS. (CHGIN)
* CHANGE = *FROM* MILLIMETER COMMUNICATION
S FROM MOL *TO* COMMUNICATIONS
CURRENT COMMAND HAS BEEN PROCESSED.
11 ITEMS WERE FOUND TO SATISFY COMMAND. (MAIN)



COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-23
(2/2/66) (DISPLAY) (ITEM NAMES) () ()
..... THIS COMMAND ILLUSTRATE
S THAT EMPTY CONDITIONS MEANS ALL. \$\$\$\$ \$
* * * I T E M N A M E * * *
* SYSTEM ITEM
* SYSTEM ITEM
* SYSTEM ITEM
* ARMY SEEKS LASER DISPLAY
* WIDEBAND MICROCIRCUIT
* SUN PUMPED LASER PROGRESS
* COMMUNICATIONS
* MUL CHECKOUT EQUIPMENT
* IMPROVED FIELD EFFECT DEVICES
* SYSTEM ITEM
* SYSTEM ITEM
CURRENT COMMAND HAS BEEN PROCESSED.
11 ITEMS WERE FOUND TO SATISFY COMMAND. (MAIN)

UNCLASSIFIED

COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-3A-24
(2/2/66) (CHANGE) (DESCRIPTOR) (FILTER CENTER *TO* F.C.) (O
(FILTER CENTER))..... THIS COMMAND I
LLUSTRATES THAT THE VALUES PART OF THE COMMAND MUST CONT
AIN THE OLD AS WELL AS THE NEW VALUE OF THE OBJECT \$\$ \$\$

*** ITEM NAME ***
* ARMY SEEKS LASER DISPLAY
DESCRIPTOR(S) CHANGED AS FOLLOWS. (CHGDES)
* CHANGE = *FROM* FILTER CENTER *TO*
F.C.

*** ITEM NAME ***
* WIDEBAND MICROCIRCUIT
DESCRIPTOR(S) CHANGED AS FOLLOWS. (CHGDES)
* CHANGE = *FROM* FILTER CENTER *TO*
F.C.

*** ITEM NAME ***
* SUN PUMPED LASER PROGRESS
DESCRIPTOR(S) CHANGED AS FOLLOWS. (CHGDES)
* CHANGE = *FROM* FILTER CENTER *TO*
F.C.

*** ITEM NAME ***
* COMMUNICATIONS
DESCRIPTOR(S) CHANGED AS FOLLOWS. (CHGDES)
* CHANGE = *FROM* FILTER CENTER *TO*
F.C.

*** ITEM NAME ***
* MUL CHECKOUT EQUIPMENT
DESCRIPTOR(S) CHANGED AS FOLLOWS. (CHGDES)
* CHANGE = *FROM* FILTER CENTER *TO*
F.C.

*** ITEM NAME ***
* IMPROVED FIELD EFFECT DEVICES
DESCRIPTOR(S) CHANGED AS FOLLOWS. (CHGDES)
* CHANGE = *FROM* FILTER CENTER *TO*
F.C.

CURRENT COMMAND HAS BEEN PROCESSED.
6 ITEMS WERE FOUND TO SATISFY COMMAND.(MAIN)

*

UNCLASSIFIED

COMMAND BEING PROCESSED IS AS FOLLOWS (RUCOM) TIME = 09-38-28
(2/2/66) (DELETE) (DESCRIPTOR) (F.C.) (D(F.C.)) %

```
*** I T E M   N A M E   ***
*   ARMY SEEKS LASER DISPLAY
DESCRIPTOR(S) BELOW DELETED FROM ABSTRACT. (DELDES)
*   DESCRIPTOR DELETED           =   F.C.   .....

*** I T E M   N A M E   ***
*   WIDEBAND MICROCIRCUIT
DESCRIPTOR(S) BELOW DELETED FROM ABSTRACT. (DELDES)
*   DESCRIPTOR DELETED           =   F.C.   .....

*** I T E M   N A M E   ***
*   SUN PUMPED LASER PROGRESS
DESCRIPTOR(S) BELOW DELETED FROM ABSTRACT. (DELDES)
*   DESCRIPTOR DELETED           =   F.C.   .....

*** I T E M   N A M E   ***
*   COMMUNICATIONS
DESCRIPTOR(S) BELOW DELETED FROM ABSTRACT. (DELDES)
*   DESCRIPTOR DELETED           =   F.C.   .....

*** I T E M   N A M E   ***
*   MOL CHECKOUT EQUIPMENT
DESCRIPTOR(S) BELOW DELETED FROM ABSTRACT. (DELDES)
*   DESCRIPTOR DELETED           =   F.C.   .....

*** I T E M   N A M E   ***
*   IMPROVED FIELD EFFECT DEVICES
DESCRIPTOR(S) BELOW DELETED FROM ABSTRACT. (DELDES)
*   DESCRIPTOR DELETED           =   F.C.   .....

CURRENT COMMAND HAS BEEN PROCESSED.
6 ITEMS WERE FOUND TO SATISFY COMMAND. (MAIN)
```

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COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-31
(2/2/66) (DISPLAY)THE (DESCRIPTOR POOL)()()
..... NOTICE THAT THE USES AND REF
ERENCES OF SOME OF THE DESCRIPTORS HAVE CHANGED AS A RES
ULT OF THE PREVIOUS COMMANDS. NOTICE ALSO THAT THE DESCH
IPTORS BELONGING TO SYSTEM ITEMS ARE LISTED SEPARATELY.S
S \$\$\$\$\$\$

*** D E S C R I P T O R P O O L ***
CL USES REFS DESCRIPTOR

		A	
PROJ	0	0	AVIATION WEEK
		F	
PROJ	0	2	FILTER CENTER
PROJ	0	1	F.C.
		M	
PROJ	3	0	MICROELECTRONICS
		Δ	
SYST	1	0	ATTRIBUTE ADDED
SYST	1	0	ATTRIBUTE VALUE CHANGED
SYST	1	0	ATTRIBUTE NAME CHANGED
		D	
SYST	1	0	DESCRIPTOR ADDED
SYST	1	0	DESCRIPTOR CHANGED
SYST	1	0	DESCRIPTOR DELETED
		I	
SYST	1	0	ITEM NAME CHANGED

DESCRIPTOR POOL CONTAINS 11 DESCRIPTORS

*

COMMAND BEING PROCESSED IS AS FOLLOWS(RUCOM) TIME= 09-38-33
(2/2/66) (DELETE)(ITEMS)()(IN(SYSTEM ITEM)).....
..... THIS COMMAND ILLUSTRATES THAT
WHEN ITEMS ARE DELETED FROM THE DATA BASE THEY ARE DISPL
AYED. NOTICE ALSO THE TYPES OF SYSTEM ITEMS WHICH WERE C
REATED BY THE PRECEDING COMMANDS WHICH CHANGED THE DATA
BASE SS \$\$\$\$\$\$
ITEM BELOW DELETED...(DELITM)

UNCLASSIFIED

*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* ATTRIBUTE ADDED
* MICROELECTRONICS

*** TEXT ***
* DATE = 7/2/66
* COMMAND = (2/2/66) (ADD) THE (ATTRIBUTE) (PAGE=83) TO ALL ITEMS WHICH MEET THE CONDITIONS THAT (FILTER CENTER)AV((DATE OF PUBLICATION*GT* 1/1/66))
..... THIS COMMAND ILLUSTRATES THE USE OF A COMPOUND SET OF CONDITIONS AND THAT NARRATIVE INFORMATION MAY BE ADDED TO THE COMMAND FOR CLARIFICATION AND RECORD KEEPING PURPOSES**
* ITEM = MILLIMETER COMMUNICATIONS FROM M
UL
* PAGE = R3
* ITEM = MUL CHECKOUT EQUIPMENT
* PAGE = R3
* ITEM = ARMY SEEKS LASER DISPLAY
* PAGE = R3
* ITEM = WIDEBAND MICROCIRCUIT
* PAGE = R3
* ITEM = SUN PUMPED LASER PROGRESS
* PAGE = R3
* ITEM = IMPROVED FIELD EFFECT DEVICES
* PAGE = R3

ITEM BELOW DELETED... (DELITM)

*

UNCLASSIFIED

*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* DESCRIPTOR ADDED

*** TEXT ***
* DATE = 2/2/66
* COMMAND = (2/2/66) (ADD) (DESCRIPTOR) (MICRO
ELECTRONICS) (TV ((MICROCIRCUIT))).....
..... THIS COMMAND ILLUSTRATES HOW STRU
CTURE MAY BE GIVEN TO AN ITEM DEPENDING UPON ITS CONTENT
\$\$ \$\$\$
* ITEM = WIDEBAND MICROCIRCUIT
* DESCRIPTOR ADDED = MICROELECTRONICS

* ITEM = IMPROVED FIELD EFFECT DEVICES
* DESCRIPTOR ADDED = MICROELECTRONICS

* ITEM = SYSTEM ITEM
* DESCRIPTOR ADDED = MICROELECTRONICS

ITEM BELOW DELETED... (DELITM)

UNCLASSIFIED

*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* ATTRIBUTE VALUE CHANGED

*** TEXT ***
* DATE = 2/2/66
* COMMAND = (2/2/66) (CHANGE) (ATTRIBUTE VALUE)
(PAGE=84) (IN IMPROVED FIELD EFFECT DEVICES * MILLIMETER
COMMUNICATIONS FROM MOL * MOL CHECKOUT EQUIPMENT) \$\$\$ \$\$\$
* ITEM = MILLIMETER COMMUNICATIONS FROM M
OL
* ATTRIBUTE NAME = PAGE
* CHANGE = *FROM* 83 *TO* 84
* ITEM = MOL CHECKOUT EQUIPMENT
* ATTRIBUTE NAME = PAGE
* CHANGE = *FROM* 83 *TO* 84
* ITEM = IMPROVED FIELD EFFECT DEVICES
* ATTRIBUTE NAME = PAGE
* CHANGE = *FROM* 83 *TO* 84

ITEM BELOW DELETED... (DELITM)

*

UNCLASSIFIED

UNCLASSIFIED

*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* ATTRIBUTE NAME CHANGED

*** TEXT ***
* DATE = 2/2/66
* COMMAND = (2/2/66) (CHANGE) (ATTRIBUTE NAME
) (DATE OF PUBLICATION *TO* DOP) (AN (DATE OF PUBLICATION)
) \$ \$ \$ \$ \$
* ITEM = ARMY SEEKS LASER DISPLAY
* CHANGE = *FROM* DATE OF PUBLICATION
TU DOP
* ITEM = WIDEBAND MICROCIRCUIT
* CHANGE = *FROM* DATE OF PUBLICATION
TU DOP
* ITEM = SUN PUMPED LASER PROGRESS
* CHANGE = *FROM* DATE OF PUBLICATION
TU DOP
* ITEM = MILLIMETER COMMUNICATIONS FROM M
OL
* CHANGE = *FROM* DATE OF PUBLICATION
TU DOP
* ITEM = MOL CHECKOUT EQUIPMENT
* CHANGE = *FROM* DATE OF PUBLICATION
TU DOP
* ITEM = IMPROVED FIELD EFFECT DEVICES
* CHANGE = *FROM* DATE OF PUBLICATION
TU DOP

ITEM BELOW DELETED... (DELITM)

UNCLASSIFIED

*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* ITEM NAME CHANGED

*** TEXT ***
* DATE = 2/2/66
* COMMAND = (2/2/66) (CHANGE) THE (ITEM NAME) T
O (COMMUNICATIONS) IN THAT ITEM WHICH NOW HAS THE NAME (I
NIMILLIMETER COMMUNICATIONS FROM MOL) \$\$ \$\$\$\$\$
* ITEM = MILLIMETER COMMUNICATIONS FROM M
OL
* ITEM = COMMUNICATIONS
* CHANGE = *FROM* MILLIMETER COMMUNICATION
S FROM MOL *TO* COMMUNICATIONS
ITEM BELOW DELETED... (DELITM)

*

UNCLASSIFIED

UNCLASSIFIED

*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* DESCRIPTOR CHANGED

*** TEXT ***

* DATE = 2/2/66
* COMMAND = (2/2/66) (CHANGE) (DESCRIPTOR) (FILTER CENTER *TO* F.C.) (D(FILTER CENTER)).....
..... THIS COMMAND ILLUSTRATES THAT THE VALUES PART OF THE COMMAND MUST CONTAIN THE OLD AS WELL AS THE NEW VALUE OF THE OBJECTS

* ITEM = ARMY SEEKS LASER DISPLAY
* CHANGE = *FROM* FILTER CENTER *TO*

F.C.

* ITEM = WIDEBAND MICROCIRCUIT
* CHANGE = *FROM* FILTER CENTER *TO*

F.C.

* ITEM = SUN PUMPED LASER PROGRESS
* CHANGE = *FROM* FILTER CENTER *TO*

F.C.

* ITEM = COMMUNICATIONS
* CHANGE = *FROM* FILTER CENTER *TO*

F.C.

* ITEM = MOL CHECKOUT EQUIPMENT
* CHANGE = *FROM* FILTER CENTER *TO*

F.C.

* ITEM = IMPROVED FIELD EFFECT DEVICES
* CHANGE = *FROM* FILTER CENTER *TO*

F.C.

.....
ITEM BELOW DELETED...(DELITM)

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*** ITEM NAME ***
* SYSTEM ITEM

*** ABSTRACT ***
* DESCRIPTOR DELETED

*** TEXT ***
* DATE = 2/2/66
* COMMAND = (2/2/66) (DELETE) (DESCRIPTOR) (F.
C.) (U(F.C.))\$\$
* ITEM = ARMY SEEKS LASER DISPLAY
* DESCRIPTOR DELETED = F.C.
* ITEM = WIDEBAND MICROCIRCUIT
* DESCRIPTOR DELETED = F.C.
* ITEM = SUN PUMPED LASER PROGRESS
* DESCRIPTOR DELETED = F.C.
* ITEM = COMMUNICATIONS
* DESCRIPTOR DELETED = F.C.
* ITEM = MOL CHECKOUT EQUIPMENT
* DESCRIPTOR DELETED = F.C.
* ITEM = IMPROVED FIELD EFFECT DEVICES
* DESCRIPTOR DELETED = F.C.

CURRENT COMMAND HAS BEEN PROCESSED.
7 ITEMS WERE FOUND TO SATISFY COMMAND. (MAIN)

*

COMMAND BEING PROCESSED IS AS FOLLOWS (HUCOM) TIME= 09-38-38
(2/2/66) (DELETE) (ATTRIBUTE) (PAGE) (AV((PAGE#EQ#83)))\$\$

*** ITEM NAME ***
* ARMY SEEKS LASER DISPLAY
ATTRIBUTE(S) BELOW DELETED. (DELATT)
* PAGE = 83

*** ITEM NAME ***
* WIDEBAND MICROCIRCUIT
ATTRIBUTE(S) BELOW DELETED. (DELATT)
* PAGE = 83

*** ITEM NAME ***
* SUN PUMPED LASER PROGRESS
ATTRIBUTE(S) BELOW DELETED. (DELATT)
* PAGE = 83

CURRENT COMMAND HAS BEEN PROCESSED.
3 ITEMS WERE FOUND TO SATISFY COMMAND. (MAIN)

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COMMAND BEING PROCESSED IS AS FOLLOWS (RUCOM) TIME= 09-38-44
(2/2/66) (DISPLAY) (ATTRIBUTE) (ARTICLE) (TV((/MOL/)))\$\$

*

*** ITEM NAME ***

* COMMUNICATIONS

*** ATTRIBUTE ***

* ARTICLE = THE FEASIBILITY OF USING A MILLI
METER WAVE COMMUNICATIONS LINK BETWEEN USAF PROJECTED MA
NNED ORBITING LABORATORY /MOL/ AND A SATELLITE IN EARTH
ORBIT IS UNDER STUDY BY MARTIN ORLANDO FOR AIR FORCE RES
EARCH AND TECHNOLOGY DIV. MILLIMETER WAVES OFFER A COMBI
NATION OF POTENTIAL ADVANTAGES OVER LOWER FREQUENCY MICR
OWAVE COMMUNICATIONS INCLUDING GREATER INFORMATION CAPAC
ITY, LIGHTER WEIGHT AND GREATER SECURITY. MENAWHILE, DEF
ENSE COMMUNICATIONS AGENCY PLANS TO SEEK INDUSTRY PROPOS
ALS FOR EVALUATION A GROUND BASED MILLIMETER WAVE COMMUN
ICATIONS SYSTEM TO BE USED BETWEEN LOCATIONS IN THE WASH
INGTON, D.C. AREA.

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*** ITEM NAME ***
* MOL CHECKOUT EQUIPMENT

*** ATTRIBUTE ***
* ARTICLE = DOUGLAS AIRCRAFT CO., USAF PRIME
CONTRACTOR FOR THE MANNED ORBITING LABORATORY /MOL/ RE-
CENTLY BRIEFED PROSPECTIVE BIDDERS FOR GROUND CHECKOUT EQ-
UIPMENT FOR THE SPACE LABORATORY. PROPOSAL REQUESTS WILL
BE ISSUED SOON.
CURRENT COMMAND HAS BEEN PROCESSED.
2 ITEMS WERE FOUND TO SATISFY COMMAND. (MOLIN)

*

COMMAND BEING PROCESSED IS AS FOLLOWS (KDCOM) TIME= 09-38-49
(2/2/66) (DISPLAY) (DESCRIPTOR POOL) () ()
..... NOTICE THAT THE DESCRIPTORS DISPLAYED HERE WHICH
HAVE A ZERO USE WILL BE REMOVED FROM THE POOL AS A RES-
ULT OF FILE CLOSING AND CLEANUP AS SHOWN ON THE NEXT PAGE
\$\$\$ \$\$\$

*** DESCRIPTOR POOL ***
CL USES REFS DESCRIPTOR

		A	
PROJ	6	0	AVIATION WEEK
		F	
PROJ	0	2	FILTER CENTER
PROJ	0	1	F.C.
		M	
PROJ	2	0	MICROELECTRONICS
		A	
SYST	0	0	ATTRIBUTE ADDED
SYST	0	0	ATTRIBUTE VALUE CHANGED
SYST	0	0	ATTRIBUTE NAME CHANGED
SYST	1	0	ATTRIBUTE DELETED
		D	
SYST	0	0	DESCRIPTOR ADDED
SYST	0	0	DESCRIPTOR CHANGED
SYST	0	0	DESCRIPTOR DELETED
		I	
SYST	0	0	ITEM NAME CHANGED

DESCRIPTOR POOL CONTAINS 12 DESCRIPTORS

END OF COMMAND PROCESSING, TIME= 09-38-50

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INACTIVE TEXT WITH NAME BELOW REMOVED FROM FILE. (CLNXTX)

- * MILLIMETER COMMUNICATIONS FROM MUL
- * MOL CHECKOUT EQUIPMENT
- * ARMY SEEKS LASER DISPLAY
- * WIDEBAND MICROCIRCUIT
- * SUN PUMPED LASER PROGRESS
- * IMPROVED FIELD EFFECT DEVICES
- * MILLIMETER COMMUNICATIONS FROM MUL
- * MOL CHECKOUT EQUIPMENT
- * ARMY SEEKS LASER DISPLAY
- * WIDEBAND MICROCIRCUIT
- * SUN PUMPED LASER PROGRESS
- * IMPROVED FIELD EFFECT DEVICES
- * SYSTEM ITEM
- * SYSTEM ITEM
- * MILLIMETER COMMUNICATIONS FROM MUL
- * MOL CHECKOUT EQUIPMENT
- * IMPROVED FIELD EFFECT DEVICES
- * SYSTEM ITEM
- * ARMY SEEKS LASER DISPLAY
- * WIDEBAND MICROCIRCUIT
- * SUN PUMPED LASER PROGRESS
- * SYSTEM ITEM
- * SYSTEM ITEM
- * SYSTEM ITEM
- * SYSTEM ITEM

OF 4000 CELLS IN THE ITEM NAME TABLE 37 HAVE BEEN USED. LEAVING
3963 AVAILABLE

THE FILE CONTAINS 646 WORDS

FILE NOW CONTAINS 7 ITEMS. (CLNXTX) TBEG= 09-32-50TEND= 09-34-54

UNUSED DESCRIPTOR/S BELOW REMOVED FROM DESCRIPTOR POOL. (CLNDES)

- * FILTER CENTER
- * ATTRIBUTE ADDED
- * DESCRIPTOR ADDED
- * ATTRIBUTE VALUE CHANGED
- * ATTRIBUTE NAME CHANGED
- * ITEM NAME CHANGED
- * F.C.
- * DESCRIPTOR CHANGED
- * DESCRIPTOR DELETED

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*** DESCRIPTOR POOL ***

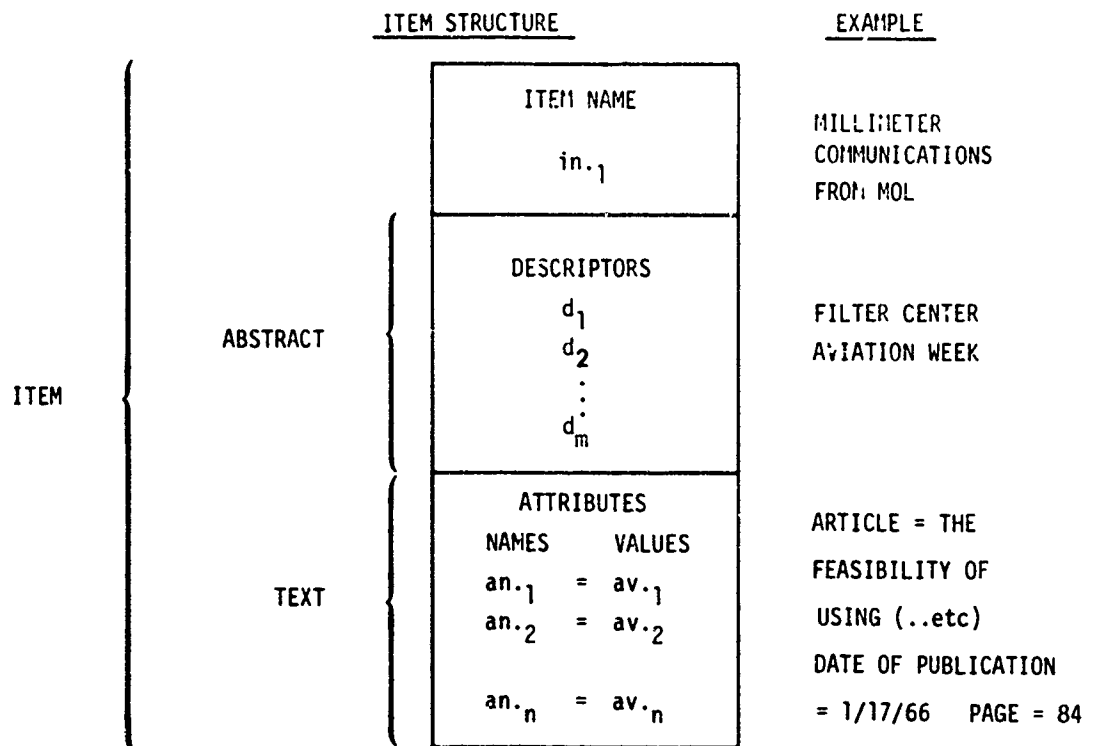
CL	USES	REFS	DESCRIPTOR
		A	
PROJ	6	0	AVIATION WEEK
		M	
PROJ	2	0	MICROELECTRONICS
		A	
SYST	1	0	ATTRIBUTE DELETED

DESCRIPTOR POOL CONTAINS 3 DESCRIPTORS
OF 1600 CELLS IN THE DESCRIPTOR POOL 15 HAVE BEEN USED LEAVING
1585 AVAILABLE

DPPOOL CONTAINS 3 DESCRIPTORS (CLNDES) THEG= 09-38-54 TEND= 09-38-54

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COMMAND FORMAT

(COMMAND) = :	(DATE)	(FUNCTION)	(OBJECT)	(VALUES)	(CONDITIONS) \$\$
		ADD	ITEM	VALUE	BIN
		CHANGE	ITEM NAME	OF	BD
		DELETE	ABSTRACT	'OBJECT'	BAN
		DISPLAY	DESCRIPTOR		BAV
			TEXT		BTV
			ATTRIBUTE		
			ATTRIBUTE		
			NAME		
			ATTRIBUTE		
			VALUE		
			DESCRIPTOR		
			POOL		

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13. ABSTRACT This user's manual describes ORDER, a computer program for the management of general information. The program is controlled by commands in English. The data-base or individual data items can be displayed as required. The data-base can be manipulated, increased, or decreased by simple commands from the user. A record of all changes made in the data-base may be displayed when required.			

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14	KEY WORDS	LINK A		LINK B		LINK C	
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