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CONTROL DATA CORPORATION

DATA CATALOGUE 2 DATA ADMINISTRATOR'S REFERENCE MANUAL

CDC® OPERATING SYSTEMS:
NOS 1
NOS/BE 1

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PREFACE

Data Catalogue 2 operates under control of the following operating systems:

NOS 1 for the CONTROL DATA® CYBER 170 Series; CYBER 70 Models 71, 72, 73, and 74; and 6000 Series Computer Systems.

NOS/BE 1 for the CDC® CYBER 170 Series; CYBER 70 Models 71, 72, 73, and 74; and 6000 Series Computer Systems.

Data Catalogue 2 is a CDC modification of the product designed and developed by Synergetics Corporation.

This manual describes the Utility function of Data Catalogue. It is assumed that the user of this manual is familiar with the information in the Data Catalogue reference manual and with the operating system under which Data Catalogue 2 is operating. Related material is contained in the publications listed below.

Publication	Publication Number
CYBER Record Manager Advanced Access Methods Version 2 Reference Manual	60499300
Data Catalogue 2 Reference Manual	60483200
NOS Version 1 Reference Manual Volume 1 of 2	60435400
NOS Version 1 Reference Manual, Volume 2 of 2	60445300
NOS/BE Version 1 Reference Manual	60493800

CDC manuals can be ordered from Control Data Corporation, Literature and Distribution Services, 308 North Dale Street, St. Paul, Minnesota 55103.

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or parameters.

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NOTATIONS USED IN THIS MANUAL

UPPERCASE	Words are Data Catalogue reserved words. They must be spelled correctly including any hyphens.
UPPERCASE	Underlined uppercase words are required when the format in which they appear is used. When a portion of a word is underlined, either the underlined portion or the entire word can be used.
[ ] Brackets	Optional portion of a format. All of the format within the brackets can be omitted or included at user option. If items are stacked vertically within brackets, only one of the stacked items can be used.
{ } Braces	Portion of a format in which one, and only one, of the vertically stacked items must be used. Braces are also used to enclose the portion of a required entry that can be repeated.
... Ellipses	Repetition indicator. Portion of the format enclosed in the immediately preceding braces or brackets can be repeated at user option.

INTRODUCTION 1

Data Catalogue is a computerized tool for documenting the information processing function. It produces a Catalogue that is a dictionary of data, procedures, and users. The Catalogue is a central repository where information processing documentation can be maintained, accessed, retrieved, and distributed at computer speeds.

The individual charged with the responsibility of the operational use and control of the Catalogue is referred to as the data administrator in the Data Catalogue reference manuals. Information that should be restricted to the data administrator is provided in this manual. Information related to general maintenance and use of the Catalogue is detailed in the Data Catalogue reference manual.

The data administrator manages the Data Catalogue system and has a major impact on the success of its use at the installation. How the system is to be used in a specific environment, which optional features are to be implemented, and what procedures are to be used are decisions made by the data administrator.

One of the first responsibilities is to initiate the Catalogue. This involves determining the space requirements for the Catalogue files, identifying the installation, and selecting optional features. Once the Catalogue has been initiated, the data administrator plans strategies to convert files, to implement procedures, and to integrate the use of the Catalogue into the system life cycle.

The Utility function is a data administrator function that is provided to help meet some of these responsibilities. This function is only summarized in the Data Catalogue reference manual and is detailed in this separate manual in order to preserve the confidentiality of some of the privileged facilities made available through the Utility function.

DATA ADMINISTRATOR FACILITIES

The Utility function provides the data administrator with the facilities to perform the following operations:

- Initialize the system.
- Define sensitive fields.
- Transfer entries between Catalogues.
- Backup and restore the Catalogue master files.
- Manage entries.
- Display system statistics.

These operations are briefly described in this section. The use of the Utility function to implement the facilities that perform these operations is described in subsequent sections.

SYSTEM INITIALIZATION

Before Data Catalogue can be used, the system must be initialized. Initialization involves identifying the installation and providing estimates of the file space to be reserved for the Catalogue master files.

The required steps in the initialization process are as follows:

- Identify the installation.
- Provide the installation address.
- Specify the number of home blocks for the direct access files in the Catalogue.

Optional steps in the initialization process are as follows:

- Define sensitive fields.
- Specify page overflow control and end-of-page messages.

Optional features can be activated, changed, or deactivated after initialization. The Utility function is used for both required and optional procedures.

SENSITIVE FIELD DEFINITION

Entities in the Catalogue are defined by specifying values for one or more fields in various categories of information. An element, for example, can be defined by completing up to nine different categories of information. Each of these categories can contain one or many fields.

As procedures for the use of Data Catalogue are established, minimum requirements for different entity types can be determined. These requirements can be defined to Data Catalogue by describing certain fields as sensitive fields. This sets up an entry in the Catalogue control file; the entry can then be monitored by Data Catalogue.

TRANSFER OF ENTRIES

In most cases, at least two separate Catalogues are maintained. The primary Catalogue is a current Catalogue containing all the data pertaining to the installation's data resource. This Catalogue can be referred to as the production Catalogue.

A second Catalogue can be maintained to hold entries that are in varying stages of development. This Catalogue, which can be referred to as the test Catalogue, contains the evolving definitions from all ongoing projects. As a project is completed and the definitions are finished, the entries can be transferred from the test Catalogue to the production Catalogue. When the transfer occurs, the test Catalogue entry can be deleted or it can remain in the test Catalogue.

This facility provides the means to handle any number of Catalogues to meet distributed processing needs or divisional requirements. Entry transfers can be made from any Catalogue to any other Catalogue. Production-to-test Catalogue transfers can occur as well as test-to-production Catalogue transfers.

BACKUP AND RESTORE FILES

System integrity can be preserved in several ways. Good procedures to encourage controlled use of Data Catalogue minimize accidental system disasters. Plans must also be made for occasional machine or system malfunctions that could have a negative impact on the Catalogue files. When backup files are available, the Catalogue can be restored after a system failure.

When the operator succeeds in interrupting the system before a Catalogue addition or deletion is synchronized on the data and relational files, a situation exists where the files are not internally consistent. To protect against this eventuality, it is recommended that backup of the Catalogue files be performed at reasonable intervals.

Initially, the volume of additions to the Catalogue is high, and backup procedures will probably be performed frequently. As the Catalogue stabilizes, the frequency of backup will drop.

The backup and restore facilities of the Utility function produce control totals of the quantity of entries by entity type. The data administrator can thus keep abreast of the number of entities (elements, records, files, users, etc.) that are defined in the Catalogue.

ENTRY MANAGEMENT

Management of entries in the Catalogue has many facets. Each Catalogue entry has a unique system key, a Catalogue name. It is this name by which an entry is identified and accessed. An entry contains categories of information; each category can contain lines of data in which one or more fields are defined.

Entry management is accomplished through the following Data Catalogue functions:

Utility

Query

Report

Update

The use of these functions by the data administrator in managing entries is discussed briefly in the following paragraphs. The Utility function is detailed in this manual. The other functions are detailed in the Data Catalogue reference manual.

Utility Function

Entry management through the Utility function involves renaming entries and renumbering lines in entries. Renaming an entry means that the current Catalogue name (system key) is replaced with a new Catalogue name. All references to the current Catalogue name can be either changed to the new Catalogue name or retained with the current Catalogue name.

The numbering sequence for category lines in an entry can be changed when lines need to be inserted and line numbers are not available. For example, five lines have been entered in increments of one, and two lines need to be inserted between lines 3 and 4. The renumber facility can be used to change the existing line numbers so that the numbers are in increments of ten; the five lines can then be inserted in the appropriate place.

Query Function

Alternative forms of entry management are provided by the Query function. The data administrator can determine which entries meet certain criteria such as:

Missing categories of information

Existing categories of information

Changed in a given revision

Never been changed

Related to specific entries

Not related to other entries

Counts, lists, or detailed reports of these entries can be obtained by the data administrator.

Report Function

Facilities of the Report function also promote entry management. Key reports for the data administrator are:

Relational Report - shows relationships between entries.

Name Analysis Report - lists Catalogue names that can be scanned for redundancies.

Catalogue Report - details the information stored in Catalogue entries.

Three other reports are also available and will probably be used by the data administrator at times. These are the Hierarchy, Usage, and Index Reports. A plan should be developed for the regular use of some reports and the integration of other reports as project tools.

Update Function

The primary means for entry management is provided by the Update function. Entries are added, changed, and deleted through the use of this function. Combined with the facilities of the Utility function, the data administrator can change any entry defined in the Catalogue.

STATISTICS DISPLAY

The display facility of the Utility function provides the data administrator with various system statistics. This facility can be used to display the following statistics:

Date of last update and number of entries added and deleted

Date of last backup and number of entries involved

Date of last restore and number of entries involved

Fields defined as sensitive

Current number of lines per page

This information, along with the audit trails produced by the functions, adds to the ability of the data administrator to manage the data resource. Direct access file statistics produced by CYBER Record Manager are also available to obtain the amount of space available for expansion.

DATA ADMINISTRATOR CONSIDERATIONS

Many aspects of data administration interface with the use of Data Catalogue. Most of these require a decision by the data administrator. Some topics for consideration are presented in the following paragraphs. These are intended to provide a frame of reference for the individual requirements of an installation. In some cases, Data Catalogue places a constraint on the options available; in these cases, the constraint is made clear.

NAMING CONVENTIONS

Data Catalogue requires a unique Catalogue name for each entry. The name is limited to 32 characters. It can consist of alphabetic characters, the digits zero through nine, and the special characters dash and underscore. No other characters can be specified in a Catalogue name.

The Catalogue name is not the only name available for an entry. The NAMES category in an entry can be used to store a COBOL data name, a PL/I identifier, and a TOTAL DBMS name. The free-form description field can also be used to store an expanded name.

In most cases, the Catalogue name is the common name for the entry. This name should be widely intelligible and as unambiguous as possible; it must be unique within the Catalogue. The COBOL data name is frequently used for the Catalogue name. This is useful in propagating an acceptable name for all programmers. The PL/I identifier can be used in the same way for PL/I installations.

DATA ENTITY REQUIREMENTS

Several types of data entities can be defined to Data Catalogue. These include:

Elements

Groups

Records

Files

TOTAL data bases

TOTAL datasets

Once it has been established which data entity types are to be defined, each entity type should be reviewed to determine the categories that are to be used. The individual categories should then be reviewed to decide on the applicability of fields within the categories. A field can be established as:

Mandatory; it is defined as sensitive.

Desirable; it is useful, but optional.

Inappropriate; it is not applicable to the installation.

This review of entity types, categories, and fields enables the data administrator to initially tailor the Catalogue according to individual purposes.

PROCEDURE ENTITY REQUIREMENTS

Procedure entity types that can be defined to Data Catalogue include:

Forms

Reports

External resources

Programs and modules

Manual tasks

Systems

These entity types should be reviewed in the same manner as data entity types. Mandatory (sensitive), optional, and inappropriate fields in applicable categories should be determined for each procedure entity type.

USER ENTITY REQUIREMENTS

The user entity type should be reviewed to determine whether or not it is appropriate for the Catalogue. If user entities are to be defined, categories and fields should be reviewed in the same manner as for data entity types to establish requirements.

CATALOGUE LOADING

The initial information to be loaded into the Catalogue is a critical issue. The value of the Catalogue is directly related to the quantity and quality of information stored in it. A carefully drawn plan for implementing the Catalogue over a specific period of time usually ensures that both quantity and quality considerations are addressed.

A conversion plan could be set up, for example, over a period of a year. In this year, several sequential objectives can be established. The first requirement could be to define all data entities covering the three most critical applications. This is set up as a planned campaign to return as much value from the Catalogue as possible in the shortest time period.

In addition to converting the most critical applications, priorities for conversion of other significant data resources can be established. The actual time required to load the Catalogue with application information is heavily dependent on the decisions made concerning the amount of data considered mandatory and the availability of that data. In some installations, an accurate up-to-date body of data for critical applications can be readily converted. In other installations, little information is available and the research required is substantial.

The Convert function can be an effective means of capturing skeletal definitions by scanning source programs. The programs should be reviewed to determine whether the information obtained by the Convert function provides a useful amount of preliminary data or is too sketchy to repay the effort involved.

Data Catalogue must be initiated before it can be used. This process tailors the system in terms of its identification, space requirements, and some optional selections. Optional features that can be selected include sensitive (required) fields, lines per page, and end-of-page message.

INITIATION REQUEST STRUCTURE

The Utility request to initiate the system consists of a series of statements that provide the required information and select desired options.

Six statements can be included in a Utility request at system initiation time:

$UTILITY

Specifies a Utility request for system initiation.

NAME

Identifies the installation.

ADDRESS

Specifies the installation address.

HMB

Specifies the number of home blocks for the direct access files in the Catalogue.

LINES

Indicates the number of lines per page.

ENDMSG

Specifies an end-of-page message.

The $UTILITY, NAME, ADDRESS, and HMB statements are required for system initiation; no default values exist for these statements. The LINES and ENDMSG statements are optional.

A sequence number can be entered in columns 73 through 80 in any statement when the request is submitted on punched cards. Sequence numbers are not checked by Data Catalogue.

Figure 2-1 shows the deck structure of a Utility request for initiating the system.

$UTILITY STATEMENT

The $UTILITY statement is required to initiate the Utility request. Only one can be specified in the Utility request. The format of the $UTILITY statement for system initiation is shown in figure 2-2.

This statement must be the first statement in the Utility request. The keyword INITIATE indicates that the Utility request is the first Data Catalogue function performed for the system.

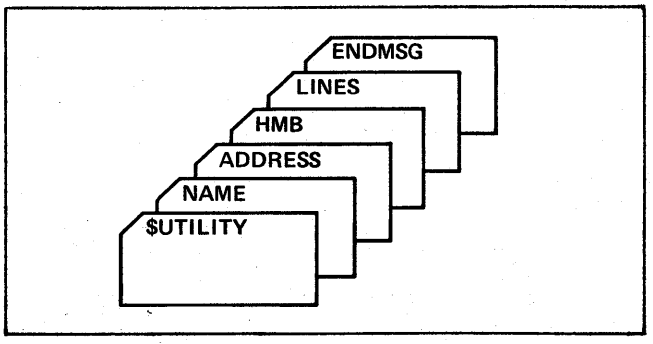

Figure 2-1. Utility Request Deck Setup, System Initiation

$UTILITY INITIATE

Figure 2-2. $UTILITY Statement Format, Utility Initiation Request

NAME STATEMENT

The NAME statement specifies the name of the installation. The specified name is printed at the top of each page output by Data Catalogue. The format of the NAME statement is shown in figure 2-3.

The single phrase in the NAME statement is defined as follows:

user-name

Name identifying the installation.

The following rules are applicable to the NAME statement:

The statement cannot be continued onto a second line.

The specified user-name can be a maximum of 27 characters.

The NAME statement is required and must immediately follow the $UTILITY statement.

NAME user-name

Figure 2-3. NAME Statement Format, Utility Initiation Request

ADDRESS STATEMENT

The ADDRESS statement specifies the address of the installation. It is a required statement for the Utility initiation request. The format of the ADDRESS statement is shown in figure 2-4.

The single phrase in the ADDRESS statement is defined as follows:

user-address

Address of the installation identified by the NAME statement.

The following rules are applicable to the ADDRESS statement:

The statement cannot be continued onto a second line.

The specified user-address can be a maximum of 27 characters.

The ADDRESS statement must immediately follow the NAME statement.

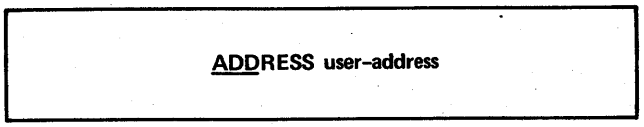

Figure 2-4. ADDRESS Statement Format, Utility Initiation Request

HMB STATEMENT

The HMB statement is required to designate the number of home blocks to be allocated for each of the two direct access files in the Catalogue. The two direct access files are the data file (MAST1) and the relational file (MAST2). The control file (MAST3) is a word addressable file and always requires 123 blocks; user specification is not required for this file. The format of the HMB statement is shown in figure 2-5.

The single phrase in the HMB statement is defined as follows:

nnnnn

Number of home blocks to be preallocated for the MAST1 file and the MAST2 file.

The following rules are applicable to the HMB statement:

The specified number cannot exceed five digits.

The number of home blocks specified is preallocated for each of the files MAST1 and MAST2.

The HMB statement must immediately follow the ADDRESS statement.

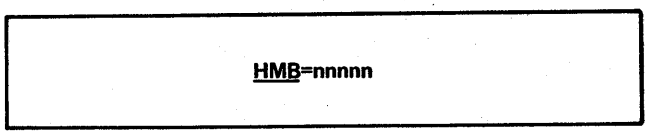

Figure 2-5. HMB Statement Format

Each block in the MAST1 and MAST2 files can contain information about two entries. The number of home blocks to be specified in the HMB statement is determined based on the maximum number of expected Catalogue entries divided by two. This number should be rounded up to the next prime number to obtain optimum utilization of the hashing routine supplied by CYBER Record Manager.

As entries are added to the Catalogue, statistics output by CYBER Record Manager should be monitored to track the number of overflow blocks created. When the number of overflow blocks becomes excessive, the following steps should be performed:

Backup the files MAST1 and MAST2 through the backup facility of the Utility function.

Initiate the system with a new value for the HMB statement.

Restore the MAST1 and MAST2 files through the restore facility of the Utility function.

Refer to the CYBER Record Manager reference manual for detailed information about direct access file statistics.

LINES STATEMENT

The number of lines to be printed on an output page can be specified by the LINES statement. Page overflow occurs when the specified number of lines is exceeded. The format of the LINES statement is shown in figure 2-6.

The single phrase in the LINES statement is defined as follows:

nn

Maximum number of lines to be printed on a page; default is 59 lines.

The following rules are applicable to the LINES statement:

The statement is optional; if it is included in the request, it must follow the HMB statement.

A maximum of 99 lines per page can be specified.

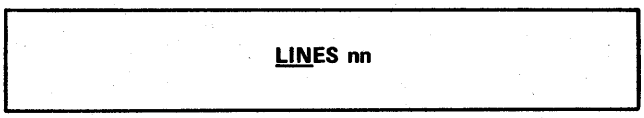

Figure 2-6. LINES Statement Format, Utility Initiation Request

ENDMSG STATEMENT

The ENDMSG statement is an optional statement that is used to specify a message to be printed at the bottom of each standard report page. The format of the ENDMSG statement is shown in figure 2-7.

The single phrase in the ENDMSG statement is as follows:

message

Text for the message to appear at the end of report pages; default is no end of page message.

The following rules are applicable to the ENDMSG statement:

The statement is optional; if it is included in the request, it must follow the HMB or LINES statement.

A maximum of 27 characters can be specified for the message; if the message is to be centered, it must be spaced accordingly within the 27 characters of the message phrase.

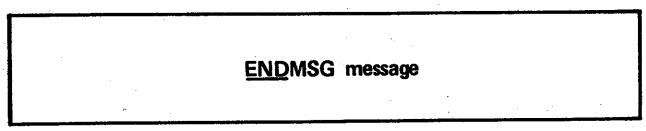

Figure 2-7. ENDMSG Statement Format, Utility Initiation Request

SENSITIVE FIELD DEFINITION

The data administrator can specify that certain fields in an entity definition are sensitive; that is, the fields are required to define the entity. Sensitive fields are monitored by Data Catalogue.

ENTITY FIELDS

Many fields are available to define an entity. Some fields are used as a matter of course. A particular field might be used in some cases and not used in other cases.

In a test Catalogue situation, it probably would not be desirable to exclude any entries because of missing fields. When entries are transferred to the production Catalogue, however, minimum field requirements for an entity type can be established to ensure that the entry contains enough information to be useful. For example, all element entities could be required to have the length, format, and picture defined. If a subsequent Update request deletes a required field, a warning message is issued.

STANDARDS STATEMENT

Sensitive fields are defined to Data Catalogue by the STANDARDS statement. This is an optional statement; one statement can be included for each entity type. The format of the STANDARDS statement is shown in figure 2-8.

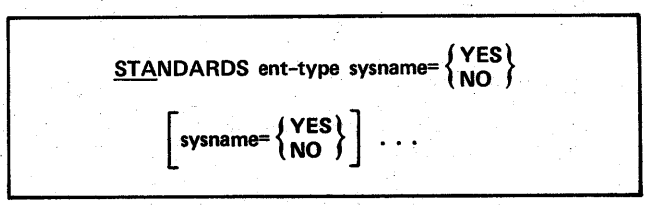

Figure 2-8. STANDARDS Statement Format

Phrases in the STANDARDS statement are defined as follows:

ent-type

Type of entity for which sensitive fields are to be established. Entity types that can be specified are as follows:

ELEMENT
GROUP
RECORD
FILE
DATASET
TOTAL
MODULE
TASK
FORM
EXTERNAL
REPORT
SYSTEM
USER

sysname=

System name for a field to be required. Values that can be specified are as follows:

YES

The field is required for the entity definition.

NO (default)

The field is not required for the entity definition. This is normally specified to change a field previously specified as required to not required.

The following rules are applicable to the STANDARDS statement:

A separate statement is required for each entity type.

A statement can be continued onto a second line. The first line must end with a comma; the continuation line must begin with two spaces followed by the next system name.

STANDARDS statements can be included in Utility initiation or maintenance requests.

Initial values for all fields are NO. After a field has been established as required, NO must be specified to remove the requirement.

Abbreviations cannot be specified for the ent-type phrase; the full name for the entity type must be specified.

A complete list of field system names for each entity type is in appendix D of the Data Catalogue reference manual.

Only important fields should be established as required fields. This makes reporting of changes or absences much more important and eliminates reviewing volumes of low grade data.

CHANGES TO INITIATION VALUES

After system initiation, the data administrator might want to change some of the information originally supplied. This is accomplished through the maintenance

capability of the Utility function. Any value specified at system initiation, except the number of home blocks, can be changed in a Utility maintenance request.

The number of home blocks allocated for the direct access files in the Catalogue can only be changed by reinitiating the system. If this becomes necessary, the backup facility must be used for the current Catalogue files. The system can then be reinitiated using the original procedure with a new HMB statement. Reinitiation is completed by performing the restore facility.

Five statements can be included in a Utility maintenance request:

$UTILITY

Specifies a Utility request for system maintenance.

NAME

Changes the name identifying the installation.

ADDRESS

Changes the installation address.

LINES

Changes the number of lines per page.

ENDMSG

Specifies a new end-of-page message.

The $UTILITY statement is required for a maintenance request. All other statements are optional.

A sequence number can be entered in columns 73 through 80 in any statement when the request is submitted on punched cards. Sequence numbers are not checked by Data Catalogue.

$UTILITY STATEMENT

The $UTILITY statement is required to initiate the Utility request. Only one statement can be specified in the Utility request. The format of the $UTILITY statement for system maintenance is shown in figure 2-9.

Figure 2-9. $UTILITY Statement Format, Utility Maintenance Request

This statement must be the first statement in the Utility request. The keyword MAINTENANCE indicates that the Utility request is for system maintenance.

NAME STATEMENT

The NAME statement is included in a Utility maintenance request to change the installation name specified at system initiation. The name can be changed without changing the installation address. The format of the NAME statement for a maintenance request is shown in figure 2-10.

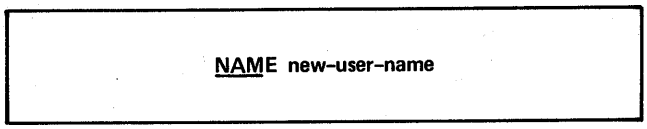

Figure 2-10. NAME Statement Format, Utility Maintenance Request

The single phrase in the NAME statement is defined as follows:

new-user-name

New name by which the installation is to be identified.

The following rules are applicable to the NAME statement:

The statement cannot be continued onto a second line.

The new-user-name can be a maximum of 27 characters.

ADDRESS STATEMENT

The installation address defined to Data Catalogue can be changed by a Utility maintenance request. The address can be changed without changing the installation name. The format of the ADDRESS statement is shown in figure 2-11.

Figure 2-11. ADDRESS Statement Format, Utility Maintenance Request

The ADDRESS statement has one phrase, which is defined as follows:

new-user-address

New address for the installation.

The following rules are applicable to the ADDRESS statement:

The statement cannot be continued onto a second line.

The new-user-address can be a maximum of 27 characters.

LINES STATEMENT

The number of lines for an output page can be changed after system initiation by including the LINES statement in a Utility maintenance request. The format of the LINES statement is shown in figure 2-12.

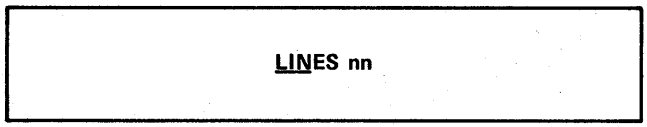

Figure 2-12. LINES Statement Format, Utility Maintenance Request

The LINES statement contains one phrase, which is defined as follows:

nn

New maximum number of lines per page.

The following rules are applicable to the LINES statement:

The number of lines specified can be up to 99 lines.

If the number of lines was specified at system initiation and the default of 59 lines is to be used, LINES 59 must be specified in a Utility maintenance request.

ENDMSG STATEMENT

The ENDMSG statement can be included in a Utility maintenance request to specify an end-of-page message or to delete an end-of-page message previously specified. The format of the ENDMSG statement is shown in figure 2-13.

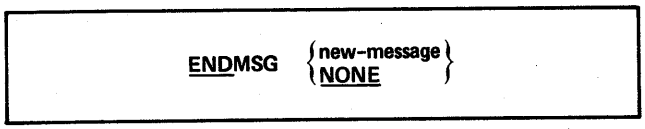

Figure 2-13. ENDMSG Statement Format, Utility Maintenance Request

The phrases that can be specified in the ENDMSG statement are defined as follows:

new-message

New text for the message to appear at the end of report pages.

NONE

Deletion of the end-of-page message previously specified; no message is printed at the end of report pages.

The following rules are applicable to the ENDMSG statement:

If new-message is specified, the message can contain up to 27 characters.

A message to be centered must be spaced accordingly within the 27 characters of the new-message phrase.

AUDIT REPORT

A Data Administrator Utility Report is output by the Utility function. All statements in the Utility request are listed in this report. Any error discovered in scanning the statements is listed immediately below the statement in error. Refer to appendix B for a complete list of diagnostics output by the Utility function.

Successful completion of the initiation process is indicated by the following message on the Data Administrator Utility Report:

DATA CATALOGUE FILES HAVE BEEN INITIATED

CATALOGUE MAINTENANCE FACILITIES 3

The data administrator has certain administrative responsibilities for the Catalogue. The Utility function provides a series of statements to carry out these responsibilities. Maintenance facilities include:

Backup and restore the Catalogue master files.

Copy and move entries between Catalogues.

Rename entries and renumber category lines.

Display system statistics.

BACKUP AND RESTORE FACILITIES

A backup copy of the Catalogue files should be maintained to ensure that the files are not completely lost or destroyed. In case of a system failure, the backup copy of the files can be used to restore the Catalogue. The operating system file management copy features can be used to backup and restore the files. The Data Catalogue Utility function also provides facilities to backup and restore the Catalogue.

GENERAL CONSIDERATIONS

The backup and restore facilities of the Utility function can be used under various conditions. The backup facility should be used frequently when the Catalogue is very volatile. When the Catalogue is in the early stages of development, the backup facility should be used after every update. As the volume of Update requests decreases, the need to backup the files also decreases.

The backup and restore facilities are used for the Catalogue data file (MAST1), relational file (MAST2), and control file (MAST3). The data file contains the entity definitions; the relational file contains pointers between entries; and the control file contains data identifying the system, the sensitive fields, and other installation-dependent information. The backup and restore facilities are performed either on all three files or on only the data and relational files.

Backup and restore of the Catalogue can be accomplished in two ways. The operating system COPY facilities should be used for simple copy operations, which occur when only an archive copy of the Catalogue is required. The backup and restore facilities of the Utility function are used to produce archive copies, to reorganize the files MAST1 and MAST2, and to produce Catalogue master file reports.

The backup and restore facilities need be used only when the following requirements exist:

The direct access files (MAST1 and MAST2) contain an unacceptable number of overflow blocks. The system must be re-initiated with a new value for the number of home blocks.

All existing Catalogue entries need to be moved to a new Catalogue.

A report of the total number of records and entries for each entity type is desired.

The backup facility produces sequential files from the Catalogue files. It also generates the Backup Audit Report, which contains totals for each entity type.

The restore facility uses the sequential files created by the backup facility to reload the Catalogue files. As the files are restored, they are reorganized so as to improve throughput. The restore facility also generates a Restore Audit Report, which is identical in format to the Backup Audit Report.

BACKUP STATEMENT

The BACKUP statement is included in a Utility request to produce an archive copy of the Catalogue files. The format of the BACKUP statement is shown in figure 3-1.

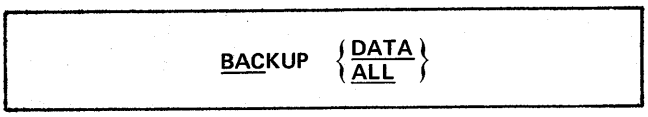

Figure 3-1. BACKUP Statement Format

Phrases in the BACKUP statement are defined as follows:

DATA

Backup the data file (MAST1) and the relational file (MAST2).

ALL

Backup the data file (MAST1), the relational file (MAST2), and the control file (MAST3).

The following rules are applicable to the BACKUP statement:

The files to be backed up must be specified by the DATA or ALL phrase.

The statement can be executed whenever information is entered or changed in the Catalogue files.

RESTORE STATEMENT

The RESTORE statement is included in a Utility request to recreate the Catalogue files from the sequential files produced by the BACKUP statement. The format of the RESTORE statement is shown in figure 3-2.

Figure 3-2. RESTORE Statement Format

Phrases in the RESTORE statement are defined as follows:

DATA

Restore the data file (MAST1) and the relational file (MAST2).

ALL

Restore the data file (MAST1), the relational file (MAST2), and the control file (MAST3).

The following rules are applicable to the RESTORE statement:

The files to be restored must be specified by the DATA or ALL phrase.

The Utility initiation request must be executed before the restore operation can be executed.

If the control file (MAST3) is not restored, it contains initiation values. The old run statistics, sensitive field definitions, and original initiation values are lost. This is desirable when an existing Catalogue is being moved to a new Catalogue.

If the control file (MAST3) is being restored, it contains the old run statistics, sensitive field definitions, and original initiation values. The number of home blocks, however, is the number specified in the immediately preceding initiation request. This approach is used when it becomes necessary to reorganize the existing Catalogue.

COPY AND MOVE FACILITIES

Many Data Catalogue users maintain separate Catalogues for developmental or test use and for production use. Some users have several Catalogues to meet divisional or other distributed responsibilities.

The communication between Catalogues generally involves the transfer of an entry from one Catalogue (the source) to another (the destination). The transfer is sometimes a test-to-production Catalogue transfer and sometimes a production-to-test Catalogue transfer.

GENERAL CONSIDERATIONS

Two types of transfer can be accomplished. A copy transfer retains the entry in the original (source) Catalogue. A move transfer deletes the entry from the original Catalogue.

Transfer is normally performed for individual entries. Element entries, for example, are usually transferred to the production Catalogue as they become fully defined during the course of a project. This enables the definitions to be used in a wider environment as early as possible. At a later time, the record, file, and other higher entity types can be transferred.

Sometimes it is desirable to transfer a hierarchy of entries from one Catalogue to another. When this option is selected for a copy or move operation, the named entry and all its component entries are transferred at the same time.

Any number of Catalogues can be established. Only two Catalogues can communicate with one another at one time.

COPY STATEMENT

The COPY statement is used to reproduce an entry from one Catalogue onto another Catalogue. When the copy operation is complete, the entry is stored in both Catalogues. The format of the COPY statement is shown in figure 3-3.

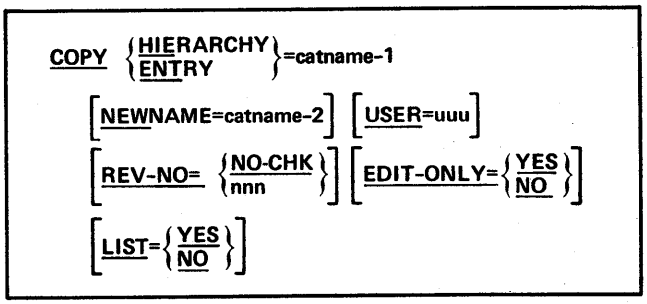

Figure 3-3. COPY Statement Format

Phrases in the COPY statement are defined as follows:

HIERARCHY or ENTRY

Type of copy operation. HIERARCHY specifies that the lower-level components of the named entry are also to be transferred. ENTRY specifies that only the named entry is to be transferred.

catname-1

Catalogue name of the entry to be transferred to the new Catalogue.

NEWNAME=catname-2

New Catalogue name to be assigned to the entry in the destination Catalogue.

USER=uuu

User identifier; default is no user identifier. The three-character identifier is stored for each transferred entry.

REV-NO=

Revision number; generates revision number checking through the Update function. Values that can be specified are as follows:

NO-CHK

The file revision number is not checked.

nnn

The file revision number is to be validated.

EDIT-ONLY=

Edit-only mode for the transfer. Values that can be specified are as follows:

YES

The entries are not transferred to the new Catalogue; the entries are edited for errors.

NO (default)

The entries are transferred to the new Catalogue; this ensures a permanent update of the new Catalogue.

LIST=

Formatted listing of the transactions that update the Catalogue to which the entries are transferred. Values that can be specified are as follows:

YES

A listing is generated.

NO (default)

A listing is not generated.

The following rules are applicable to the COPY statement:

The COPY statement must identify the entry or hierarchy of entries to be transferred.

The statement can be continued onto a second line; the first line must end with a comma.

The entry name specified for catname-1 must be a valid name in the source Catalogue; that is, it must identify an existing entry.

The entry name specified for catname-2 must be a valid name in the destination Catalogue; that is, it must be a name not already existing within the Catalogue.

MOVE STATEMENT

The MOVE statement is the same as the COPY statement except that the entry is deleted from the original (source) Catalogue. When the move operation is complete, the entry is available only in the Catalogue to which it was moved (destination Catalogue). The format of the MOVE statement is shown in figure 3-4.

Phrases in the MOVE statement are defined as follows:

HIERARCHY or ENTRY

Type of move operation. HIERARCHY specifies that the lower-level components of the named entry are also to be transferred. ENTRY specifies that only the named entry is to be transferred.

catname-1

Catalogue name of the entry to be transferred to the new Catalogue.

NEWNAME=catname-2

New Catalogue name to be assigned to the entry in the destination Catalogue.

USER=uuu

User identifier; default is no user identifier. The three-character identifier is stored for each transferred entry.

REV-NO=

Revision number; generates revision number checking through the Update function. Values that can be specified are as follows:

NO-CHK

The file revision number is not checked.

nnn

The file revision number is to be validated.

EDIT-ONLY=

Edit-only mode for the transfer. Values that can be specified are as follows:

YES

The entries are not transferred to the new Catalogue; the entries are edited for errors.

NO (default)

The entries are transferred to the new Catalogue; this ensures a permanent update of the new Catalogue.

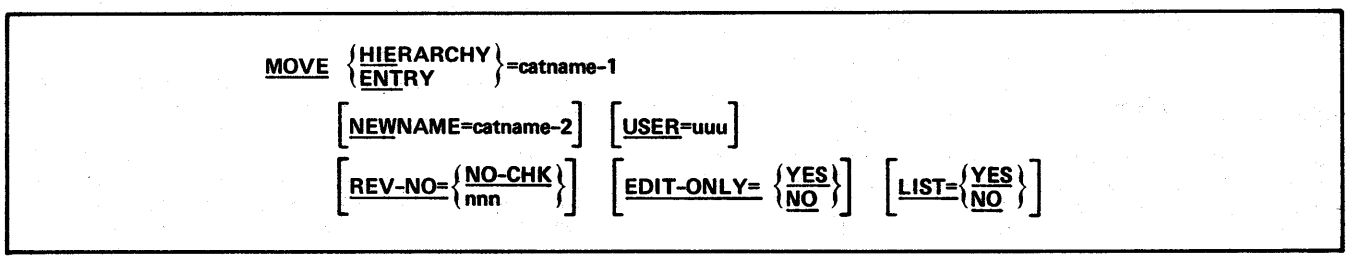

Figure 3-4. MOVE Statement Format

LIST=

Formatted listing of the transactions that update the Catalogue to which the definitions are transferred. Values that can be specified are as follows:

YES

A listing is generated.

NO (default)

A listing is not generated.

The following rules are applicable to the MOVE statement:

The MOVE statement must identify the entry or hierarchy of entries to be transferred.

The statement can be continued onto a second line; the first line must end with a comma.

The entry name specified for catname-1 must be a valid name in the source Catalogue; that is, it must identify an existing entry.

The entry name specified for catname-2 must be a valid name in the destination Catalogue; that is, it must be a name not already existing within the Catalogue.

RENAME AND RENUMBER FACILITIES

Data Catalogue entries are all identified by unique Catalogue names. Within an entry, category line numbers are used in some categories that require more than one category line. Facilities are provided for the data administrator to change Catalogue names and category line numbers.

GENERAL CONSIDERATIONS

After an entry has been stored in the Catalogue, it sometimes becomes desirable to change the Catalogue name. This can occur when the Catalogue name of an existing entry is more appropriate for a new entry to be added to the Catalogue. Renaming of Catalogue entries can also occur after scanning existing Catalogue names; some Catalogue names might not conform to a newly-established standard or convention.

The number sequence used for category lines sometimes needs to be rearranged. For example, the DESCRIPTION category in an entry could need information inserted between lines 9 and 10. Renumbering category lines can often be avoided by assigning line numbers in increments greater than one; line number values up to 9999 can be used.

RENAME STATEMENT

The RENAME statement changes the Catalogue name assigned to an existing entry. The format of the RENAME statement is shown in figure 3-5.

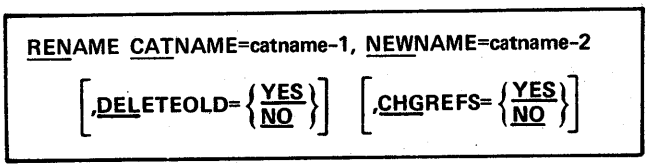

Figure 3-5. RENAME Statement Format

Phrases in the RENAME statement are defined as follows:

CATNAME=catname-1

Catalogue name of the entry to be renamed.

NEWNAME=catname-2

New Catalogue name to be assigned to the existing entry.

DELETEOLD=

Delete or retain entry with original Catalogue name. Values that can be specified are as follows:

YES (default)

Delete the existing Catalogue name; the entry is available only under the new name specified by catname-2.

NO

Retain the entry with the original Catalogue name and create a new entry with the new Catalogue name. The definition can be accessed by either Catalogue name.

CHGREFS=

Change or do not change references to the original name (catname-1). Values that can be specified are as follows:

YES (default)

All references to catname-1 are changed to refer to catname-2.

NO

References to catname-1 are not changed; this is normally used in conjunction with DELETEOLD=NO.

The following rules are applicable to the RENAME statement:

The CATNAME and NEWNAME phrases are required; the other phrases are optional.

The statement can be continued onto another line. The line to be continued must end with a comma; the continuation statement line must begin with two spaces followed by the next phrase of the statement.

NUMBER STATEMENT

Category line numbers for an entry can be reallocated by the NUMBER statement. This statement is usually specified for an entry category that requires category line insertions when existing line numbers do not allow lines to be inserted. The format of the NUMBER statement is shown in figure 3-6.

Phrases in the NUMBER statement are defined as follows:

CATNAME=catname-1

Catalogue name of the entry to be renumbered.

CATEGORY=

Category within the specified entry to be renumbered. Values that can be specified are as follows:

ALL

All categories in the specified entry are to be renumbered.

category

The category lines within the specified category are to be renumbered. Appendix D in the Data Catalogue reference manual lists valid categories for each entity type.

BY=iiii

Increment number for renumbering the lines; default is 5.

FROM=mmmm

First category line number to be renumbered; cannot be used if CATEGORY=ALL is specified.

TOLINE=tttt

Last category line number to be renumbered; cannot be used if CATEGORY=ALL is specified.

STARTLINE=bbbb

Value for first line number in the series to be renumbered.

DISPLAY FACILITY

Data Catalogue provides many means of reporting statistics. Each function request that is executed produces some type of statistical report. In addition, the Utility function can request a display of certain system statistics.

GENERAL CONSIDERATIONS

The Utility function can be used to request a display of statistics that are useful in managing the Catalogue. These statistics are requested through the DISPLAY statement of the Utility function.

DISPLAY STATEMENT

The DISPLAY statement is a data management facility statement that provides statistical information. The format of the DISPLAY statement is shown in figure 3-7.

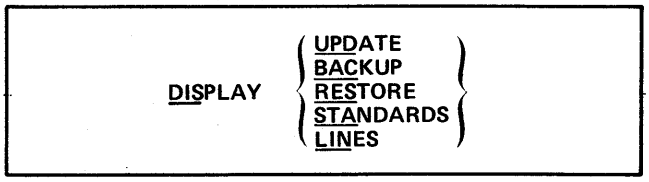

Figure 3-7. DISPLAY Statement Format

Phrases in the DISPLAY statement are defined as follows:

UPDATE

Display date of last update and number of entries added and deleted by that update.

BACKUP

Display date of last backup and total number of entries involved in the backup.

RESTORE

Display date of last restore and total number of entries involved in the restore.

STANDARDS

Display all fields defined as sensitive (mandatory).

LINES

Display number of lines per page currently in effect.

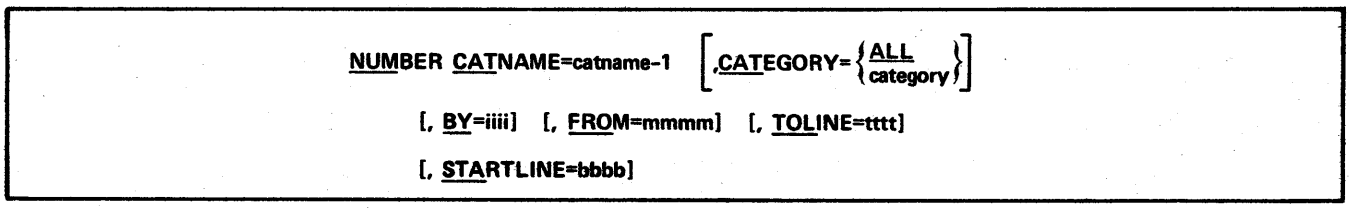

Figure 3-6. NUMBER Statement Format

The Utility function is implemented through execution of the programs in the module stored on the permanent file DCUTL. This file must be made available to the function. The Catalogue master files are also permanent files that must be made available to the function. In addition, certain facilities require other files. This section discusses the file requirements and operational considerations for using the Utility function.

GENERAL CONSIDERATIONS

The Utility function requires files that are used by all Data Catalogue functions. It also uses pseudo-switches that are common to all functions.

PSEUDO-SWITCH SETTINGS

Three of the four pseudo-switches used by Data Catalogue are applicable to the Utility function. These pseudo-switches, which indicate the function termination condition, are defined as follows:

SW2 — Set to ON for a normal termination of the function.

SW3 — Set to ON for a normal termination; however, an error occurred during processing. The Catalogue master files are not impaired, but the output should be carefully reviewed.

SW4 — Set to ON for an abnormal termination; a fatal error occurred during processing. The Catalogue master files were closed at the point the error was detected. The output should be reviewed to determine the nature of the error. It might be necessary to restore the files.

COMMON FILES

All facilities of the Utility function use the Catalogue master files. For card image input and printed output, the required files are the system files INPUT and OUTPUT, respectively.

The Catalogue master files are three permanent files that contain all the information related to the Catalogue entries. These three files are referred to collectively as the Catalogue. Each new Catalogue that is initialized through the Utility function has its own copy of the master files. The three files are the data file (MAST1), the relational file (MAST2), and the control file (MAST3). Table 4-1 lists the file characteristics of the master files.

FUNCTIONAL CONSIDERATIONS

The Catalogue is initiated by the Utility function. This is the first function that is requested. After system initiation, the Utility function is requested to perform other support type operations.

TABLE 4-1. CATALOGUE FILE CHARACTERISTICS

Characteristic	Data File	Relational File	Control File
Logical file name (LFN)	MAST1	MAST2	MAST3
File organization (FO)	Direct access	Direct access	Word addressable
Maximum block length (MBL)	2550	1270	3840
Maximum record length (MRL)	1265	620	3830
Minimum record length (MNR)	1265	620	3830
Record type (RT)	F	F	F
Key length (KL)	36	36	--
Relative key word (RKW)	0	0	--
Relative key position (RKP)	0	0	--
Home blocks (HMB)	User-defined†	User-defined†	--

†By data administrator.

Input/output operations are performed by CYBER Record Manager (CRM). Error messages and file statistics are output by CRM to an error file when FILE control statements for the Catalogue files specify EFC=3. The CRMEP control statement is then used to print the messages and statistics.

REQUIRED FILES

The Utility function requires the modules on file DCUTL and the three Catalogue master files (MAST1, MAST2, and MAST3). It also requires the system file INPUT for input transactions and the system file OUTPUT for printed reports.

Utility transactions are read from the system file INPUT. The first input transaction must be the $UTILITY statement. Other input transactions depend on the facility being requested.

The files MAST1, MAST2, and MAST3 are created when the Utility initiation request is executed. For Utility maintenance requests, these files need only be attached. Examples of Utility requests are shown in section 5.

Backup and Restore Facilities

Two or three additional files are required for the backup and restore facilities. If the BACKUP or RESTORE statement specifies DATA, only two files (MAST1BK and MAST2BK) are required for the data and relational files. If the statement specifies ALL, one additional file (MAST3BK) is required for the control file. Figure 4-1 shows the file usage flow for the backup and restore facilities. Figures 4-2 and 4-3 show the control statements required to execute the backup and restore facilities, respectively.

Before the restore facility is performed, the backup copy of the relational file (MAST2BK) should be sorted to obtain optimum consolidation of the file. The sort key begins in character position 1, is 36 characters in length, and is in display code. The sort is an ascending sort in the COBOL6 sequence.

The files MAST1BK, MAST2BK, and MAST3BK are sequential files with C type blocks and F type records. The records are 620 characters in length. These files can reside on system internal formatted tapes or disk.

Copy and Move Facilities

The copy facility requires one additional file (TARGET) and the move facility requires two additional files (TARGET and SOURCE). The file TARGET contains the Update function transactions for updating the new (destination) Catalogue. The file SOURCE contains the Update function transactions for updating the existing (source) Catalogue. Figure 4-4 shows the file usage flow for the copy and move facilities. Figures 4-5 and 4-6

NOS Operating System

```
Job statement
USER control statement
CHARGE control statement
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3/M=W,NA.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
DEFINE,MAST1BK,MAST2BK,MAST3BK.
DCUTL.
CRMEP,LO.
```

NOS/BE Operating System

```
Job statement
ATTACH,DCUTL.
ATTACH,MAST1,ID=name.
ATTACH,MAST2,ID=name.
ATTACH,MAST3,ID=name.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
REQUEST,MAST1BK,*PF.
REQUEST,MAST2BK,*PF.
REQUEST,MAST3BK,*PF.
DCUTL.
CATALOG,MAST1BK,ID=name.
CATALOG,MAST2BK,ID=name.
CATALOG,MAST3BK,ID=name.
CRMEP,LO.
```

Figure 4-2. Backup Facility Control Statements

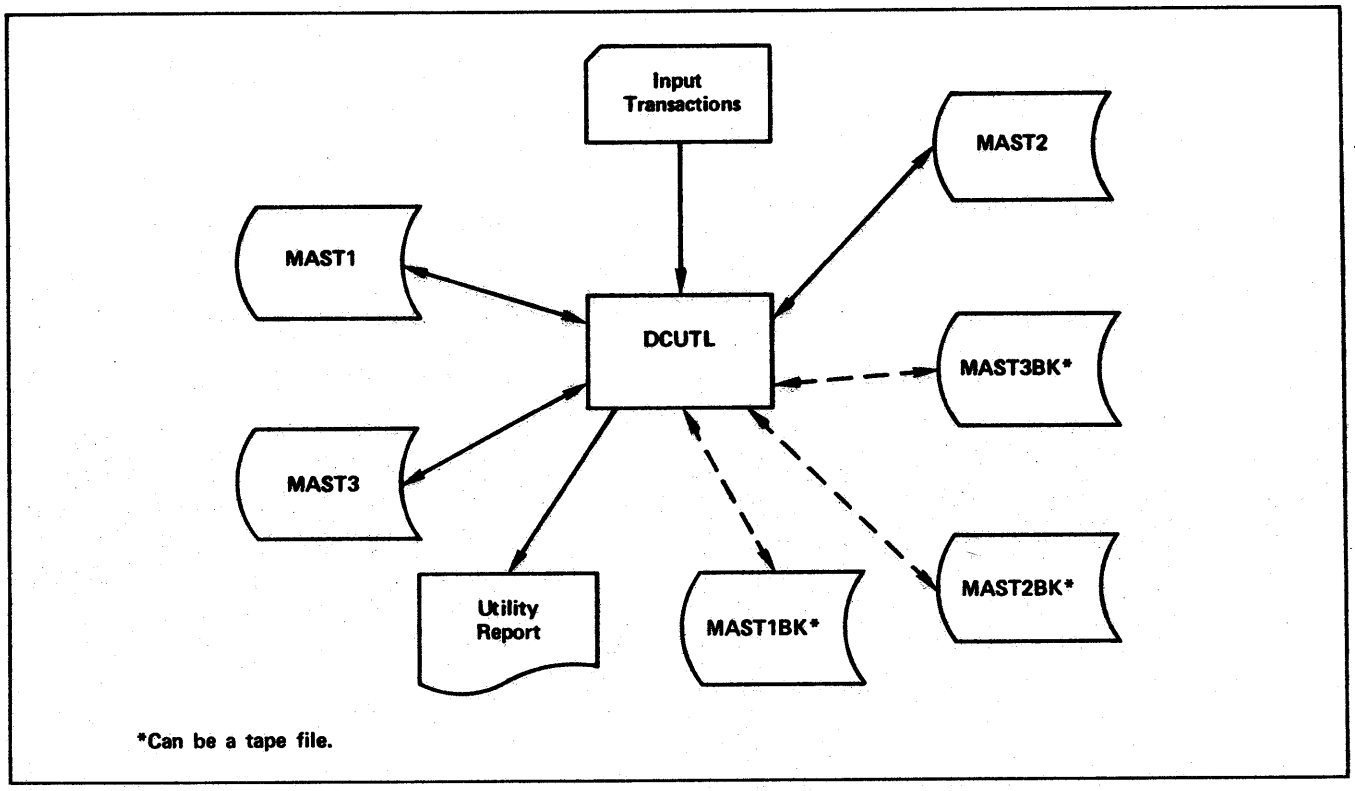

Figure 4-1. Backup and Restore Facilities File Usage

NOS Operating System

```
Job statement
USER control statement
CHARGE control statement
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3/M=W,NA.
ATTACH,MAST1BK,MAST3BK/NA.
ATTACH,STM2BK=MAST2BK/NA.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
FILE,STM2BK,BT=C,RT=F,FL=620.
FILE,MAST2BK,BT=C,RT=F,FL=620.
SORTMRG.
DCUTL.
CRMEP,LO.
```

NOS/BE Operating System

```
Job statement
ATTACH,DCUTL.
ATTACH,MAST1,ID=name.
ATTACH,MAST2,ID=name.
ATTACH,MAST3,ID=name.
ATTACH,MAST1BK,ID=name.
ATTACH,STM2BK,MAST2BK,ID=name.
ATTACH,MAST3BK,ID=name.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
FILE,STM2BK,BT=C,RT=F,FL=620.
FILE,MAST2BK,BT=C,RT=F,FL=620.
SORTMRG.
DCUTL.
CRMEP,LO.
```

Figure 4-3. Restore Facility Control Statements

NOS Operating System

```
Job statement
USER control statement
CHARGE control statement
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3.
DCUTL.
REWIND,TARGET.
COPYSBF,TARGET,OUTPUT.
```

NOS/BE Operating System

```
Job statement
ATTACH,DCUTL.
ATTACH,MAST1,ID=name.
ATTACH,MAST2,ID=name.
ATTACH,MAST3,ID=name.
DCUTL.
REWIND,TARGET.
COPYSBF,TARGET,OUTPUT.
```

Figure 4-5. Copy Facility Control Statements

show the control statements required to execute the copy and move facilities respectively.

The files TARGET and SOURCE are sequential files with C type blocks and Z type records. Both files can reside on system internal formatted tapes or disk.

OPERATIONAL CONSIDERATIONS

The minimum field length requirement for the Utility function is 40000_8 words. The programs that constitute the function are overlaid during processing.

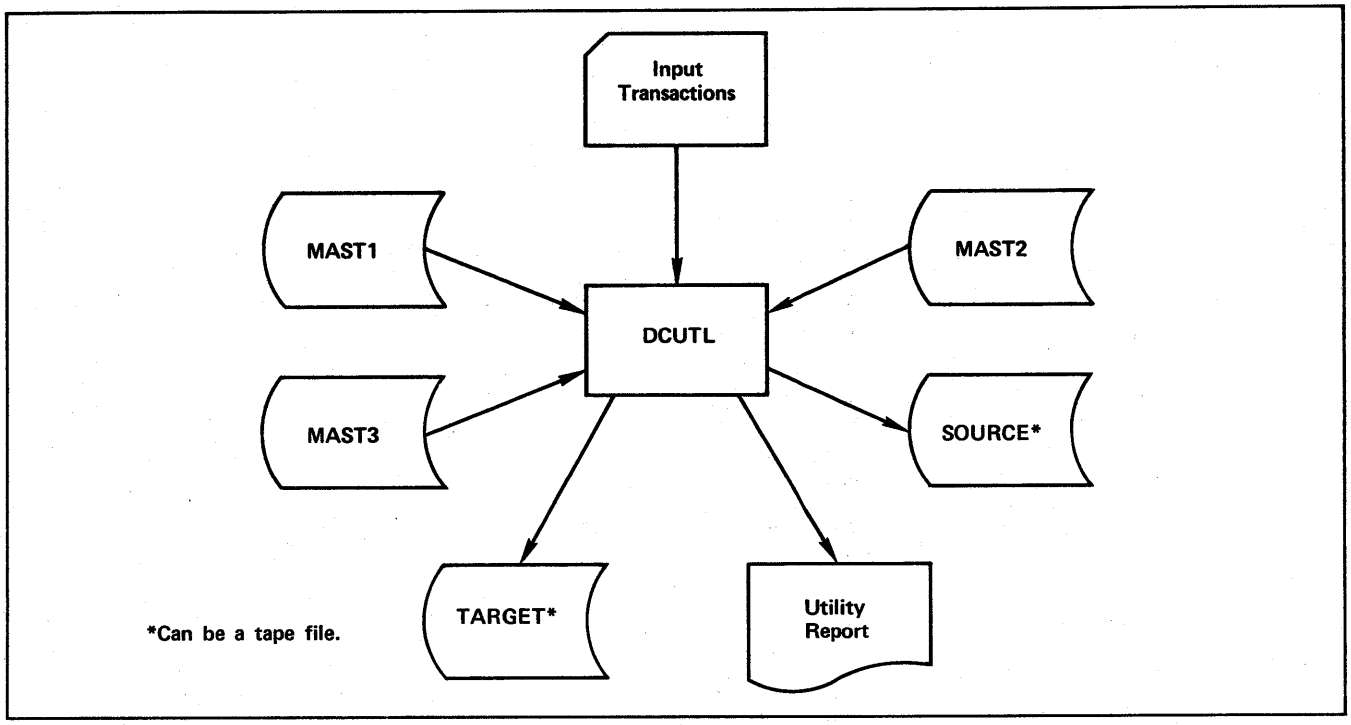

Figure 4-4. Move and Copy Facilities File Usage

NOS Operating System

```
Job statement
USER control statement
CHARGE control statement
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3.
DCUTL.
REWIND,SOURCE,TARGET.
COPYSBF,SOURCE,OUTPUT.
COPYSBF,TARGET,OUTPUT.
```

NOS/BE Operating System

```
Job statement
ATTACH,DCUTL.
ATTACH,MAST1,ID=name.
ATTACH,MAST2,ID=name.
ATTACH,MAST3,ID=name.
DCUTL.
REWIND,SOURCE,TARGET.
COPYSBF,SOURCE,OUTPUT.
COPYSBF,TARGET,OUTPUT.
```

Figure 4-6. Move Facility Control Statements

Following the $UTILITY statement, the statements must be entered as described in previous sections of this manual. No sequencing by key fields is required.

When the system is initiated, sufficient space should be allocated for MAST1 and MAST2 to accommodate the expected maximum number of entries. Each block in MAST1 and MAST2 can contain information related to two Catalogue entries.

The Utility function has no run time options governing operational considerations.

OUTPUT

The Catalogue files are altered when the rename, renumber, copy, or move facility of the Utility function is used. The basic output of the function is the Data Administrator Utility Report. This report documents the facilities used.

The backup facility produces the files MAST1BK and MAST2BK; if requested, it also produces the file MAST3BK. The copy and move facilities produce the file TARGET; the move facility also produces the file SOURCE.

The final output for a Utility request is as follows:

```
***END DATA ADMINISTRATOR UTILITY REPORT***
```

EXAMPLES 5

Several examples are presented in this section to illustrate the use of the facilities available through the Utility function. Samples of input statements and output reports are shown for each facility.

SYSTEM INITIATION

The first function request that must be executed is a Utility request to initiate the system. This request identifies the installation and specifies the space requirements for the Catalogue. Optional features can be selected in a request for initiation.

Figure 5-1 illustrates the control statements and the input statements for a Utility request for initiation. The module DCUTL must be attached. The three Catalogue master files (MAST1, MAST2, and MAST3) must be established as permanent files; MAST1 and MAST2 are direct access files and MAST3 is a word addressable file. The input statements included in this request provide the installation name and address, the number of home blocks for MAST1 and MAST2, the number of lines per page, and an end-of-page message.

The Data Administrator Utility Report output for the request shown in figure 5-1 is illustrated in figure 5-2. This report indicates the input statements and the results of executing the statements.

SYSTEM MAINTENANCE

Once the system has been initiated, the Utility function is used to maintain the system. Facilities are provided to backup and restore the Catalogue, copy and move entries from one Catalogue to another, rename entries, renumber lines, and display statistics.

BACKUP FACILITY

Figure 5-3 illustrates the control statements and the input statements for a Utility request to backup the Catalogue master files. The three Catalogue files (MAST1, MAST2, and MAST3) and the module DCUTL must be attached. The files to be used for the backup files (MAST1BK, MAST2BK, and MAST3BK) must be established as permanent files. The BACKUP statement in this request specifies ALL, which means that all three Catalogue files are to be processed.

The Data Administrator Utility Report shown in figure 5-4 lists the statements in the request and then indicates the number of entries for each entity type. The last three lines of the report indicate the totals for each of the three Catalogue files.

RESTORE FACILITY

Figure 5-5 illustrates the control statements and input statements for a Utility request to restore the Catalogue files. The three Catalogue files (MAST1, MAST2, and MAST3), the module DCUTL, and the three backup files (MAST1BK, MAST2BK, and MAST3BK) must be attached. The RESTORE statement in this request specifies ALL to restore the three Catalogue files.

The Data Administrator Utility Report generated by the request in figure 5-5 is shown in figure 5-6. The input statements are shown followed by a listing of the number of entries restored for each entity type. The last three lines of the report indicate the totals for each of the three Catalogue files.

MOVE FACILITY

The control statements and input statements for a Utility request to move entries from one Catalogue to another are illustrated in figure 5-7. The three Catalogue files (MAST1, MAST2, and MAST3) and the module DCUTL must be attached. The MOVE statement in this request specifies that the entry with the Catalogue name INVENTORY and all entries within its hierarchy are to be moved to the destination Catalogue; a listing of the entries is also specified in the statement.

Figure 5-8 shows the Data Administrator Utility Report produced by the request in figure 5-7. This report lists the request statements and then the number of transactions written to the files TARGET and SOURCE. This is followed by a listing of the card images on both files.

DISPLAY FACILITY

Figure 5-9 illustrates the control statements and input statements for a Utility request to display statistics. The Catalogue control file (MAST3) and the module DCUTL must be attached. The DISPLAY statement requests the current number of lines per page.

The Data Administrator Utility Report shown in figure 5-10 lists the input statements and then indicates that 50 lines are printed on a page.

NOS Operating System

```
Job statement.
USER control statement.
CHARGE control statement.
ATTACH,DCUTL/UN=LIBRARY.
PURGE,MAST1,MAST2,MAST3/NA.
RETURN,MAST1,MAST2,MAST3.
DEFINE,MAST1,MAST2,MAST3.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
DCUTL.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
7/8/9 card
```

NOS/BE Operating System

```
Job statement.
ATTACH,DCUTL.
REQUEST,MAST1,PF.
REQUEST,MAST2,PF.
REQUEST,MAST3,PF.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
DCUTL.
CATALOG,MAST1,ID=DC2,PW=DC2,RP=999.
CATALOG,MAST2,ID=DC2,PW=DC2,RP=999.
CATALOG,MAST3,ID=DC2,PW=DC2,RP=999.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
7/8/9 card
```

```
$UTILITY INI
NAME THE DATA CATALOGUE MANUAL
ADD DBA ROOM
HMB=211
LIN 50
ENDMSG MANUAL END OF PAGE
6/7/8/9 card
```

Figure 5-1. Initiation Request Example

```
                                    C A T A   C A T A L O G U E   2

                                   DATA ADMINISTRATOR UTILITY REPORT

$UTILITY INI
NAME THE DATA CATALOGUE MANUAL
ADD DBA ROOM
HMB=211

DATA CATALOGUE FILES HAVE BEEN INITIATED
INSTALLATION: THE DATA CATALOGUE MANUAL
ADDRESS: DBA ROOM
DATE: 06/05/79
HOME BLOCK =   211


                                   DATA ADMINISTRATOR UTILITY REPORT

LIN 50

 LINES PER PAGE ALTERED FROM 59 TO 50


                                   DATA ADMINISTRATOR UTILITY REPORT

ENDMSG MANUAL END OF PAGE

 END OF PAGE MESSAGE ALTERED
   FROM-
   TO-   MANUAL END OF PAGE

                          *** END OF DATA ADMINISTRATOR UTILITY REPORT ***
```

Figure 5-2. Report for Initiation Request

NOS Operating System

Job statement.
USER control statement.
CHARGE control statement.

```
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3/M=W,NA.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
PURGE,MAST1BK,MAST2BK,MAST3BK/NA.
RETURN,MAST1BK,MAST2BK,MAST3BK.
DEFINE,MAST1BK,MAST2BK,MAST3BK.
DCUTL.
CRMEP,LC.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
```

7/8/9 card

NOS/BE Operating System

Job statement.

```
ATTACH,DCUTL.
ATTACH,MAST1,ID=DC2,PW=DC2.
ATTACH,MAST2,ID=DC2,PW=DC2.
ATTACH,MAST3,ID=DC2,PW=DC2.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
REQUEST,MAST1BK,PF.
REQUEST,MAST2BK,PF.
REQUEST,MAST3BK,PF.
DCUTL.
CATALOG,MAST1BK,ID=DC2,PW=DC2,RP=999.
CATALOG,MAST2BK,ID=DC2,PW=DC2,RP=999.
CATALOG,MAST3BK,ID=DC2,PW=DC2,RP=999.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
```

7/8/9 card

```
$UTILITY
BACKUP ALL
```

6/7/8/9 card

Figure 5-3. Backup Request Example

```
DATA CATALOGUE 2
THE DATA CATALOGUE MANUAL
                                        D A T A   C A T A L O G U E   2

                                      DATA ADMINISTRATOR UTILITY REPORT

$UTILITY



                                      DATA ADMINISTRATOR UTILITY REPORT

BACKUP ALL

 WE HAVE BACKED UP)

    12 RECORDS REPRESENTING    12 ELEMENT        ENTRIES
     0 RECORDS REPRESENTING     0 GROUP          ENTRIES
     3 RECORDS REPRESENTING     2 RECORD         ENTRIES
     0 RECORDS REPRESENTING     0 DATASET        ENTRIES
     1 RECORDS REPRESENTING     1 FILE           ENTRIES
     0 RECORDS REPRESENTING     0 TOTAL          ENTRIES
     1 RECORDS REPRESENTING     1 FORM           ENTRIES
     2 RECORDS REPRESENTING     2 REPORT         ENTRIES
     0 RECORDS REPRESENTING     0 EXTERNAL       ENTRIES
     8 RECORDS REPRESENTING     8 MODULE         ENTRIES
     0 RECORDS REPRESENTING     0 TASK           ENTRIES
     1 RECORDS REPRESENTING     1 SYSTEM         ENTRIES
     0 RECORDS REPRESENTING     0 USERS          ENTRIES
    28 RECORDS REPRESENTING    27 TOTAL          ENTRIES
    29 RECORDS REPRESENTING    28 REFERENCE      ENTRIES
    71 RECORDS REPRESENTING    71 CONTROL        ENTRIES

                          *** END OF DATA ADMINISTRATOR UTILITY REPORT ***
```

Figure 5-4. Report for Backup Request

NOS Operating System

Job statement.
USER control statement.
CHARGE control statement.

```
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3/M=W,NA.
ATTACH,MAST18K,MAST38K/NA.
ATTACH,STM28K=MAST28K/NA.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
FILE,STM28K,BT=C,RT=F,FL=620.
FILE,MAST28K,BT=C,RT=F,FL=620.
SORTMRG.
DCUTL.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
```

7/8/9 card

NOS/BE Operating System

Job statement.

```
ATTACH,DCUTL.
ATTACH,MAST1,ID=DC2,PW=DC2.
ATTACH,MAST2,ID=DC2,PW=DC2.
ATTACH,MAST3,ID=DC2,PW=DC2.
ATTACH,MAST18K,ID=DC2,PW=DC2.
ATTACH,STM28K,MAST28K,ID=DC2,PW=DC2.
ATTACH,MAST38K,ID=DC2,PW=DC2.
FILE,MAST1,FO=DA,EFC=3.
FILE,MAST2,FO=DA,EFC=3.
FILE,MAST3,FO=WA,EFC=3.
FILE,STM28K,BT=C,RT=F,FL=620.
ILE,MAST28K,BT=C,RT=F,FL=620.
SORTMRG.
DCUTL.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
```

7/8/9 card

```
SORT
FILE,INPUT=STM28K(C),OUTPUT=MAST28K(R)
FIELD,NAME(1,36,DISPLAY)
KEY,NAME(A,COBOL6)
END
```

7/8/9 card

```
$UTILITY
RESTORE ALL
```

6/7/8/9 card

Figure 5-5. Restore Request Example

```
DATA CATALOGUE 2
THE DATA CATALOGUE MANUAL
                                        D A T A   C A T A L O G U E   2

                                       DATA ADMINISTRATOR UTILITY REPORT

$UTILITY


                                       DATA ADMINISTRATOR UTILITY REPORT

RESTORE ALL

 WE HAVE RESTORED1

    12 RECORDS REPRESENTING     12 ELEMENT          ENTRIES
     0 RECORDS REPRESENTING      0 GROUP            ENTRIES
     3 RECORDS REPRESENTING      2 RECORD           ENTRIES
     0 RECORDS REPRESENTING      0 DATASET          ENTRIES
     1 RECORDS REPRESENTING      1 FILE             ENTRIES
     0 RECORDS REPRESENTING      0 TOTAL            ENTRIES
     1 RECORDS REPRESENTING      1 FORM             ENTRIES
     2 RECORDS REPRESENTING      2 REPORT           ENTRIES
     0 RECORDS REPRESENTING      0 EXTERNAL         ENTRIES
     8 RECORDS REPRESENTING      8 MODULE           ENTRIES
     0 RECORDS REPRESENTING      0 TASK             ENTRIES
     1 RECORDS REPRESENTING      1 SYSTEM           ENTRIES
     0 RECORDS REPRESENTING      0 USERS            ENTRIES
    28 RECORDS REPRESENTING     27 TOTAL            ENTRIES
    29 RECORDS REPRESENTING     28 REFERENCE        ENTRIES
   123 RECORDS REPRESENTING    123 REFERENCE        ENTRIES

                          *** END OF DATA ADMINISTRATOR UTILITY REPORT ***
```

Figure 5-6. Report for Restore Request

NOS Operating System

Job statement.
USER control statement.
CHARGE control statement.

```
ATTACH,DCUTL/UN=LIBRARY.
ATTACH,MAST1,MAST2,MAST3.
DCUTL.
REWIND,SOURCE,TARGET.
COPYSBF,SOURCE,OUTPUT.
COPYSBF,TARGET,OUTPUT.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
```

7/8/9 card

NOS/BE Operating System

Job statement.

```
ATTACH,DCUTL.
ATTACH,MAST1,ID=DC2,PW=DC2.
ATTACH,MAST2,ID=DC2,PW=DC2.
ATTACH,MAST3,ID=DC2,PW=DC2.
DCUTL.
REWIND,SOURCE,TARGET.
COPYSBF,SOURCE,OUTPUT.
COPYSBF,TARGET,OUTPUT.
CRMEP,LO.
EXIT.
DMP.
DMP,377777.
CRMEP,LO.
```

7/8/9 card

```
$UTILITY
MOVE HIE=INVENTORY,LIST=YES
```

6/7/8/9 card

Figure 5-7. Move Request Example

```
DATA CATALOGUE 2
THE DATA CATALOGUE MANUAL
                                D A T A   C A T A L O G U E   2

                               DATA ADMINISTRATOR UTILITY REPORT

$UTILITY



                               DATA ADMINISTRATOR UTILITY REPORT

MOVE HIE=INVENTORY,LIST=YES

         34 TRANSACTIONS WERE WRITTEN TO TARGET FILE
         17 TRANSACTIONS WERE WRITTEN TO SOURCE FILE


                               DATA ADMINISTRATOR UTILITY REPORT

                  0         1         2         3         4         5                   7         8
TARGET CARD IMAGE 1.........0.........0.........0.........0.........0.........)(....0..3......0

                  $UPDATE
                  OPTIONS  REV-NO=NO-CHK,EDIT-ONLY=NO
                  ADD FIL=INVENTORY
                  ADD REC=PART-REC
                  ADD ELE=PART-NO
                  ADD ELE=NO-PART
                  ADD ELE=BACK-ORDER
                  ADD ELE=ON-ORDER
                  ADD ELE=REORDER-PT
                  ADD ELE=LEAD-TIME
                  ADD ELE=UNIT-WEIGHT
                  ADD ELE=UNIT-COST
                  ADD ELE=UNIT-PRICE
                  ADD ELE=DESCRIPTION
                  ADD ELE=CHECKSUM
                  ADD REC=PROFIT-REC
                  ADD ELE=PART-NO
                  ADD ELE=UNIT-COST
                  ADD ELE=UNIT-PRICE
                  CHG FIL=INVENTORY
                  CON
                  0001 EST=E
                  CLA
                  0001 KEY=CLASS=PART,PARTS,INVENTORY,STOCK
                  DES
                  0001 THIS FILE HAS ALL INFORMATION ABOUT PARTS
                  RES
                  0001 STA=F,FUN=D,DEP=INVENTORY DEPT,
                       PER=MR. PART FIRST
                  0005 PHO=734 7439,TIT=MGR,MAI=SV110,DAT=101078
                  0010 STA=C,DEP=INVENTORY DEPT,PER=MR. PART SECOND
                  0015 PHO=7347 7600,TIT=MGR,MAI=SV104,DAT=122578
                                          .
                                          .
                                          .
```

Figure 5-8. Report for Move Request (Sheet 1 of 2)

```
                              DATA ADMINISTRATOR UTILITY REPORT

                    0         1         2         3         4         5                   7         8
SOURCE CARD IMAGE 1.....0.....0.....0.....0.....0.....)(.....0..3.....0

                    DEL  FIL=INVENTORY                          WHEREUSED
                    DEL  REC=PART-REC                           WHEREUSED
                    DEL  ELE=PART-NO                            WHEREUSED
                    DEL  ELE=NC-PART                            WHEREUSED
                    DEL  ELE=BACK-ORDER                         WHEREUSED
                    DEL  ELE=ON-ORDER                           WHEREUSED
                    DEL  ELE=REORDER-PT                         WHEREUSED
                    DEL  ELE=LEAD-TIME                          WHEREUSED
                    DEL  ELE=UNIT-WEIGHT                        WHEREUSED
                    DEL  ELE=UNIT-COST                          WHEREUSED
                    DEL  ELE=UNIT-PRICE                         WHEREUSED
                    DEL  ELE=DESCRIPTION                        WHEREUSED
                    DEL  ELE=CHECKSUM                           WHEREUSED
                    DEL  REC=PROFIT-REC                         WHEREUSED
                    DEL  ELE=PART-NO                            WHEREUSED
                    DEL  ELE=UNIT-COST                          WHEREUSED
                    DEL  ELE=UNIT-PRICE                         WHEREUSED

                  *** END OF DATA ADMINISTRATOR UTILITY REPORT ***
```

Figure 5-8. Report for Move Request (Sheet 2 of 2)

NOS Operating System

Job statement.
USER control statement.
CHARGE control statement.

```
ATTACH,DCUTL/UN=LIBRARY,NA.
ATTACH,MAST3.
DCUTL.
EXIT.
DMP.
DMP,377777.
```

7/8/9 card

NOS/BE Operating System

Job statement.

```
ATTACH,DCUTL.
ATTACH,MAST3,ID=DC2,PW=DC2.
DCUTL.
EXIT.
DMP.
DMP,377777.
```

7/8/9 card

```
$UTILITY
DIS LIN
```

6/7/8/9 card

Figure 5-9. Display Request Example

```
DATA CATALOGUE 2
THE DATA CATALOGUE MANUAL
                                    D A T A   C A T A L O G U E   2

                                   DATA ADMINISTRATOR UTILITY REPORT

$UTILITY


                                    D A T A   C A T A L O G U E   2

                                   DATA ADMINISTRATOR UTILITY REPORT

DIS LIN

  THERE ARE  50 LINES PRINTED PER PAGE

                          *** END OF DATA ADMINISTRATOR UTILITY REPORT ***
```

Figure 5-10. Report for Display Request

STANDARD CHARACTER SETS

Control Data operating systems offer the following variations of a basic character set:

CDC 64-character set

CDC 63-character set

ASCII 64-character set

ASCII 63-character set

The set in use at a particular installation is specified when the operating system is installed.

Depending on another installation option, the system assumes an input deck has been punched either in 026 or in 029 mode (regardless of the character set in use).

Under NOS/BE, the alternate mode can be specified by a 26 or 29 punched in columns 79 and 80 of the job statement or any 7/8/9 card. The specified mode remains in effect throughout the job unless it is reset by specification of the alternate mode on a subsequent 7/8/9 card.

Under NOS, the alternate mode can be specified by a 26 or 29 punched in columns 79 and 80 of any 6/7/9 card, as described above for a 7/8/9 card. In addition, 026 mode can be specified by a card with 5/7/9 multipunched in column 1; 029 mode can be specified by a card with 5/7/9 multipunched in column 1 and a 9 punched in column 2.

Graphic character representation appearing at a terminal or printer depends on the installation character set and the terminal type. Characters shown in the CDC Graphic column of the standard character set table are applicable to BCD terminals; ASCII graphic characters are applicable to ASCII-CRT and ASCII-TTY terminals.

TABLE A-1. STANDARD CHARACTER SETS

Display Code (octal)	CDC			ASCII		
	Graphic	Hollerith Punch (026)	External BCD Code	Graphic Subset	Punch (029)	Code (octal)
00†	: (colon)††	8-2	00	: (colon) ††	8-2	072
01	A	12-1	61	A	12-1	101
02	B	12-2	62	B	12-2	102
03	C	12-3	63	C	12-3	103
04	D	12-4	64	D	12-4	104
05	E	12-5	65	E	12-5	105
06	F	12-6	66	F	12-6	106
07	G	12-7	67	G	12-7	107
10	H	12-8	70	H	12-8	110
11	I	12-9	71	I	12-9	111
12	J	11-1	41	J	11-1	112
13	K	11-2	42	K	11-2	113
14	L	11-3	43	L	11-3	114
15	M	11-4	44	M	11-4	115
16	N	11-5	45	N	11-5	116
17	O	11-6	46	O	11-6	117
20	P	11-7	47	P	11-7	120
21	Q	11-8	50	Q	11-8	121
22	R	11-9	51	R	11-9	122
23	S	0-2	22	S	0-2	123
24	T	0-3	23	T	0-3	124
25	U	0-4	24	U	0-4	125
26	V	0-5	25	V	0-5	126
27	W	0-6	26	W	0-6	127
30	X	0-7	27	X	0-7	130
31	Y	0-8	30	Y	0-8	131
32	Z	0-9	31	Z	0-9	132
33	0	0	12	0	0	060
34	1	1	01	1	1	061
35	2	2	02	2	2	062
36	3	3	03	3	3	063
37	4	4	04	4	4	064
40	5	5	05	5	5	065
41	6	6	06	6	6	066
42	7	7	07	7	7	067
43	8	8	10	8	8	070
44	9	9	11	9	9	071
45	+	12	60	+	12-8-6	053
46	-	11	40	-	11	055
47	*	11-8-4	54	*	11-8-4	052
50	/	0-1	21	/	0-1	057
51	(	0-8-4	34	(	12-8-5	050
52	)	12-8-4	74	)	11-8-5	051
53	$	11-8-3	53	$	11-8-3	044
54	=	8-3	13	=	8-6	075
55	blank	no punch	20	blank	no punch	040
56	, (comma)	0-8-3	33	, (comma)	0-8-3	054
57	. (period)	12-8-3	73	. (period)	12-8-3	056
60	≡	0-8-6	36	#	8-3	043
61	[	8-7	17	[	12-8-2	133
62	]	0-8-2	32	]	11-8-2	135
63	% ††	8-6	16	% ††	0-8-4	045
64	≠	8-4	14	" (quote)	8-7	042
65	↵	0-8-5	35	_ (underline)	0-8-5	137
66	∨	11-0 or 11-8-2†††	52	!	12-8-7 or 11-0†††	041
67	∧	0-8-7	37	&	12	046
70	↑	11-8-5	55	' (apostrophe)	8-5	047
71	↓	11-8-6	56	?	0-8-7	077
72	<	12-0 or 12-8-2†††	72	<	12-8-4 or 12-0†††	074
73	>	11-8-7	57	>	0-8-6	076
74	≤	8-5	15	@	8-4	100
75	≥	12-8-5	75	\	0-8-2	134
76	¬	12-8-6	76	~ (circumflex)	11-8-7	136
77	; (semicolon)	12-8-7	77	; (semicolon)	11-8-6	073

†Twelve zero bits at the end of a 60-bit word in a zero byte record are an end of record mark rather than two colons.

††In installations using a 63-graphic set, display code 00 has no associated graphic or card code; display code 63 is the colon (8-2 punch). The % graphic and related card codes do not exist and translations yield a blank (55_8).

†††The alternate Hollerith (026) and ASCII (029) punches are accepted for input only.

TABLE A-2. CDC CHARACTER SET COLLATING SEQUENCE

Collating Sequence Decimal	Collating Sequence Octal	CDC Graphic	Display Code	External BCD	Collating Sequence Decimal	Collating Sequence Octal	CDC Graphic	Display Code	External BCD
00	00	blank	55	20	32	40	H	10	70
01	01	≤	74	15	33	41	I	11	71
02	02	%	63 †	16 †	34	42	v	66	52
03	03	[	61	17	35	43	J	12	41
04	04	→	65	35	36	44	K	13	42
05	05	≡	60	36	37	45	L	14	43
06	06	∧	67	37	38	46	M	15	44
07	07	↑	70	55	39	47	N	16	45
08	10	↓	71	56	40	50	O	17	46
09	11	>	73	57	41	51	P	20	47
10	12	≥	75	75	42	52	Q	21	50
11	13	¬	76	76	43	53	R	22	51
12	14	.	57	73	44	54	]	62	32
13	15	)	52	74	45	55	S	23	22
14	16	;	77	77	46	56	T	24	23
15	17	+	45	60	47	57	U	25	24
16	20	$	53	53	48	60	V	26	25
17	21	*	47	54	49	61	W	27	26
18	22	-	46	40	50	62	X	30	27
19	23	/	50	21	51	63	Y	31	30
20	24	,	56	33	52	64	Z	32	31
21	25	(	51	34	53	65	:	00 †	none†
22	26	=	54	13	54	66	0	33	12
23	27	≠	64	14	55	67	1	34	01
24	30	<	72	72	56	70	2	35	02
25	31	A	01	61	57	71	3	36	03
26	32	B	02	62	58	72	4	37	04
27	33	C	03	63	59	73	5	40	05
28	34	D	04	64	60	74	6	41	06
29	35	E	05	65	61	75	7	42	07
30	36	F	06	66	62	76	8	43	10
31	37	G	07	67	63	77	9	44	11

†In installations using the 63-graphic set, the % graphic does not exist. The : graphic is display code 63, External BCD code 16.

TABLE A-3. ASCII CHARACTER SET COLLATING SEQUENCE

Collating Sequence Decimal	Collating Sequence Octal	ASCII Graphic Subset	Display Code	ASCII Code	Collating Sequence Decimal	Collating Sequence Octal	ASCII Graphic Subset	Display Code	ASCII Code
00	00	blank	55	20	32	40	@	74	40
01	01	!	66	21	33	41	A	01	41
02	02	"	64	22	34	42	B	02	42
03	03	#	60	23	35	43	C	03	43
04	04	$	53	24	36	44	D	04	44
05	05	%	63†	25	37	45	E	05	45
06	06	&	67	26	38	46	F	06	46
07	07	'	70	27	39	47	G	07	47
08	10	(	51	28	40	50	H	10	48
09	11	)	52	29	41	51	I	11	49
10	12	*	47	2A	42	52	J	12	4A
11	13	+	45	2B	43	53	K	13	4B
12	14	,	56	2C	44	54	L	14	4C
13	15	-	46	2D	45	55	M	15	4D
14	16	.	57	2E	46	56	N	16	4E
15	17	/	50	2F	47	57	O	17	4F
16	20	0	33	30	48	60	P	20	50
17	21	1	34	31	49	61	Q	21	51
18	22	2	35	32	50	62	R	22	52
19	23	3	36	33	51	63	S	23	53
20	24	4	37	34	52	64	T	24	54
21	25	5	40	35	53	65	U	25	55
22	26	6	41	36	54	66	V	26	56
23	27	7	42	37	55	67	W	27	57
24	30	8	43	38	56	70	X	30	58
25	31	9	44	39	57	71	Y	31	59
26	32	:	00†	3A	58	72	Z	32	5A
27	33	;	77	3B	59	73	[	61	5B
28	34	<	72	3C	60	74	\	75	5C
29	35	=	54	3D	61	75	]	62	5D
30	36	>	73	3E	62	76	^	76	5E
31	37	?	71	3F	63	77	_	65	5F

†In installations using a 63-graphic set, the % graphic does not exist. The : graphic is display code 63.

ERROR PROCESSING AND DIAGNOSTICS B

Diagnostics issued by the Utility function are usually associated with input transactions and are listed on the Data Administrator Utility Report. Two types of diagnostics can be issued:

Fatal

The Utility function cannot be initiated or it has terminated prematurely. Fatal errors are usually caused by the absence of a required statement, which is corrected by entering the appropriate statement. Fatal errors can also occur if the Catalogue master files have been impaired. This type of error usually necessitates restoration of previously backed up files. A fatal error is always indicated by the ON condition for pseudo-switch 4 (SW4).

Serious

A particular transaction cannot be processed. For example, an invalid key word has been encountered. The next transaction is read and normal processing continues. A serious error is always indicated by the ON condition for pseudo-switch 3 (SW3).

Data Catalogue diagnostics are output in the following message format:

function-number-severity *ERROR message text

The first part of the message identifies the function being requested, the unique error number for that function, and the severity of the error. The function identifier for the Utility function is DCUTL. The severity level is indicated by the letter F (fatal) or S (serious). The following example of the first part of an error message indicates serious error number 410 diagnosed by the Utility function:

DCUTL-410-S

Table B-1 lists the diagnostics issued by the Utility function. The table shows in tabular format the error number, severity level, and message text output by the function. Two additional columns in the table indicate the significance of the error and the action to be taken to correct the error.

TABLE B-1. UTILITY FUNCTION (DCUTL) DIAGNOSTICS

Error Number	Severity	Message	Significance	Action
400	S	$UTILITY TRANSACTION	The first statement is not the $UTILITY statement, or it did not specify one of the following: INI INITIATE MAI MAINTENANCE space	Correct and enter the $UTILITY statement.
405	S	OPERAND MUST BE DAT OR ALL	The phrase in the BACKUP or RESTORE statement is invalid.	Correct the statement to specify DAT, DATA, or ALL.
410	S	KEYWORD INVALID	The input statement is invalid.	Correct the statement.
800	S	MAST1 WRITE catname	Invalid key path taken.	For a restore operation, ensure that initialization has been performed. For any other operation, the Catalogue has been damaged; restore a backup copy of the Catalogue.

TABLE B-1. UTILITY FUNCTION (DCUTL) DIAGNOSTICS (Contd)

Error Number	Severity	Message	Significance	Action
805	S	MAST2 WRITE catname	Invalid key path taken.	For a restore operation, ensure that initialization has been performed. For any other operation, the Catalogue has been damaged; restore a backup copy of the Catalogue.
810	S	MAST1 READ catname	Invalid key path taken.	Restore a backup copy of the Catalogue.
815	S	MAST2 READ catname	Invalid key path taken.	Restore a backup copy of the Catalogue.
900	F	NAME TRANSACTION MUST BE SPECIFIED	The Utility initiation request does not include the NAME statement.	Enter the NAME statement.
905	F	ADDRESS TRANSACTION MUST BE SPECIFIED	The Utility initiation request does not include the ADDRESS statement.	Enter the ADDRESS statement.
915	F	HMB MUST BE NUMERIC	The HMB statement does not specify a numeric value.	Correct the HMB statement.
950	F	MAST3-UNABLE TO LOCATE CUST RECORD	A problem has been encountered with the control file (MAST3) in the Catalogue.	Reload the backup copy of the Catalogue.
960	F	MAST3-UNABLE TO LOCATE ENTRY RECORD	A problem has been encountered with the control file (MAST3) in the Catalogue.	Reload the backup copy of the Catalogue.
965	F	MAST3-UNABLE TO LOCATE CATG RECORD	A problem has been encountered with the control file (MAST3) in the Catalogue.	Reload the backup copy of the Catalogue.
970	F	MAST3-UNABLE TO LOCATE FIELD RECORD	A problem has been encountered with the control file (MAST3) in the Catalogue.	Reload the backup copy of the Catalogue.
995	F	INITIATION INCOMPLETE	This message accompanies any of the messages numbered 900 through 970.	Rerun the initialization request.

Alias -
An element, group, or record entry that is established as a variation of another entry in the Catalogue. A category of information in an element entity used to document alternate names and descriptions for an element.

Catalogue -
A computerized dictionary of data, procedures, and users; the master files that contain all the information related to the entity definitions. The Catalogue consists of a data file, a relational file, and a control file. It is a central repository where information processing documentation can be maintained, accessed, retrieved, and distributed at computer speeds.

Catalogue Name -
The unique key that identifies and relates all of the information concerning an entry in the Catalogue. Each entry must be assigned a unique Catalogue name.

Category -
A class of information that is used to define an entity to Data Catalogue. Several categories exist and are used in various combinations to define different entity types. A category contains one or more fields of information.

Convert Function -
The Data Catalogue procedure used to create entity definitions from existing COBOL programs and TOTAL DBDLs. Input transactions are generated by the Convert function for processing by the Update function.

Data Base Entity -
A collection of information that describes the characteristics of a TOTAL data base. A data base is a logical aggregate of data; it is the collection of datasets that participate in a defined relationship.

Data Dictionary -
Synonymous with Catalogue.

Data Entities -
A class of entity types for defining data structures. Element, group, record, file, dataset, and data base entity types are data entities.

Dataset Entity -
The entity type for describing the characteristics of a TOTAL dataset. A dataset is a file of records in the TOTAL data base environment. It is a part of the data base and can be related to other datasets within the data base.

Element Entity -
The entity type for defining data that cannot be subdivided. An element is the basic building block of data structures. It is the lowest level data entity in the hierarchy. A TOTAL data item is described to Data Catalogue as an element entity.

Entity -
A Data Catalogue component consisting of various categories of information. Entities are grouped into classes according to the type of information used to describe them. This information can include definitions, values, technical attributes, control information, usage data, structural definitions, and relationships.

Entry -
A discrete occurrence of an entity type in the Catalogue.

External Resource Entity -
The entity type used to define an information processing resource that is not accessible by computer. Relevant resources could be flowcharts or procedural instructions.

Field -
A unit of information in an entity definition. One or more fields are provided for each category applicable to an entity type.

File Entity -
The entity type for describing the characteristics of a file, which is a collection of one or more records that can be accessed and stored physically. A single file can contain several different types of records and many different records of each type.

Form Entity -
The entity type containing information related to a form used in the information processing cycle. A form is a document containing printed captions, data, and blank spaces that need to be filled with data. It can be a source for input data, or it can be partly the output of one Data Catalogue function and partly the source of another function.

Function -
A process that performs a specific type of operation for creating, maintaining, and accessing the Catalogue. The six Data Catalogue functions provided are Update, Query, Report, Generate, Convert, and Utility.

Generate Function -
The Data Catalogue procedure used to create source statement data definitions from information in the Catalogue. COBOL, PL/I, and TOTAL DBDL statements can be generated.

Group Entity -
The entity type for describing a logical collection of elements and subgroups. A group contains two or more subcomponents, which can be elements and/or other groups. A TOTAL element is described to Data Catalogue as a group entity.

Hierarchy -
The rank or order of entity types recognized by Data Catalogue. An element entity is the lowest level in the hierarchy and a user entity is the highest level in the hierarchy.

Manual Task Entity -
The entity type for describing an activity that does not involve any computer processing. Checking control totals is a manual task.

Module Entity -
The entity type for describing a computer process that performs one or more discrete tasks. A module can be free-standing or part of a program.

Procedure Entities -
A class of entity types for describing the processes that perform a task and the resources required to complete the task. Procedure entities are one step up the hierarchy from data entities. Module, program, system, form, report, external resource, and manual task entity types are procedure entities.

Program Entity -
Synonymous with module entity. A program can contain modules, call modules, or consist of one module by itself.

Query Function -
The Data Catalogue procedure used to interrogate the Catalogue. Entities can be counted, listed by Catalogue name, or listed in detail.

Record Entity -
The entity type for describing the characteristics of a record. A record is a logically associated collection of related elements and/or groups.

Report Entity -
The entity type for describing a formatted presentation of information that can be printed or displayed. A report is the end product of the information processing cycle and can be prepared manually or by computer.

Report Function -
The Data Catalogue procedure used to produce various reports based on information in the Catalogue. The reports are used for documentation and for analysis.

Report Name -
The name by which a category field is identified on Data Catalogue reports.

Request -
A series of statements that identify the function to be performed and specify the requirements for the desired operation.

Screen Entity -
Synonymous with Report Entity.

System Entity -
The entity type for describing an information processing system. A system is a self-contained collection of one or more computer programs and ancillary manual tasks that perform a given function completely. A system contains processes that in turn access resources.

System Name -
The name specified by the user when entering or accessing a category field.

Update Function -
The Data Catalogue procedure used to maintain entries in the Catalogue. Entries can be added, changed, or deleted through this function.

User Entity -
The entity type for defining responsibility of a management unit for a given activity or resource. A management unit can be assigned responsibility for a system, a program, a manual task, a file, or an external resource.

Utility Function -
The Data Catalogue procedure used to initialize and support the Catalogue. This is a data administrator function.

Version -
A procedure or user entry that is established as a variation of another entry in the Catalogue.

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