

Honeywell



LEVEL 66

SOFTWARE

**UTL2 UTILITY
ROUTINE**

SERIES 60 LEVEL 66

GCOS

SOFTWARE

SUBJECT:

Descriptions and Changes to Series 60 Level 66 UTL2 Utility Routine.

SPECIAL INSTRUCTIONS:

This addendum, Addendum A to Order No. DC91, Rev. 1, supports Software Release 4, Supplement 1. The attached pages are to be inserted into the manual as indicated in the collating instructions on the back of this cover. Change bars in the margins indicate new and changed information; asterisks denote deletions.

SOFTWARE SUPPORTED:

Series 60 Level 66 Software Release 4, Supplement 1

DATE:

March 1978

ORDER NUMBER:

DC91A, Rev. 1

20757
2578
Printed in U.S.A.

COLLATING INSTRUCTIONS

To update this manual, remove old pages and insert new pages as follows:

Remove

v, vi
1-1, blank

2-9 through 2-12
3-1, 3-2
3-5, blank
4-1 through 4-4
5-3, 5-4

Insert

Cover/Collating Instructions
v, vi
1-1, blank
2-8.1, blank
2-9 through 2-12
3-1, 3-2
3-5, blank
4-1 through 4-4
5-3, 5-4

SERIES 60 (LEVEL 66)
SOFTWARE
UTL2 UTILITY ROUTINE

SUBJECT

Description and Operating Procedures for Input and Output Operations,
Control Cards, and Error Messages of the UTL2 Utility Routine

SPECIAL INSTRUCTIONS

This manual, Order No. DC91, Rev. 1, supersedes the previous edition dated
March 1975, Order No. DC91, Rev. 0. Change bars in the margins indicate
new and changed information; asterisks denote deletions.

SOFTWARE SUPPORTED

Series 60 Level 66 Software Release 3

ORDER NUMBER

DC91, Rev. 1

June 1976

Honeywell

PREFACE

This manual contains a detailed description of the components, use, and operation of the Series 60 (Level 66) UTL2 utility routine. The UTL2 routine enables the user to perform processing functions on GFRC, American National Standard, Series 2000, IBM, and Unified File Format (UFF) sequential tape files, and on GFRC, Indexed Sequential Processor (ISP), and all UFF mass storage files through the Unified File Access System (UFAS).

The Series 60 (Level 66) is hereafter referred to as the Series 60.

FUNCTIONAL LISTING OF PUBLICATIONS
for
SERIES 60 (LEVEL 66) and SERIES 6000 SYSTEMS

FUNCTION	APPLICABLE REFERENCE MANUAL	ORDER NO.
	<u>TITLE</u>	
	Series 60 (Level 66)/Series 6000:	
Hardware reference:		
Series 60 Level 66 System	Series 60 Level 66 Summary Description	DC64
Series 6000 System	Series 6000 Summary Description	DA48
DATANET 355 Processor	DATANET 355 Systems Manual	BS03
DATANET 6600 Processor	DATANET 6600 Systems Manual	DC88
Operating system:		
Basic Operating System	General Comprehensive Operating Supervisor (GCOS)	DD19
Job Control Language	Control Cards Reference Manual	DD31
Table Definitions	System Tables	DD14
I/O Via MME GEINOS	I/O Programming	DB82
System initialization:		
System Startup	System Startup	DD33
System Operation	System Operation Techniques	DD50
Communications System	GRTS/355 and GRTS/6600 Startup Procedures	DD05
Communications System	NPS Startup	DD51
DSS180 Subsystem Startup	DSS180 Startup (Series 6000 only)	DD34
Program Recovery	Program Recovery/Restart	DC98
Data management:		
File System	File Management Supervisor	DD45
Integrated Data Store (I-D-S)	I-D-S/I Programmer's Guide	DC52
Integrated Data Store (I-D-S)	I-D-S/I User's Guide	DC53
File Processing	Indexed Sequential Processor	DD38
File Input/Output	File and Record Control	DD07
File Input/Output	Unified File Access System (UFAS) (Series 60 only)	DC89
I-D-S Data Query System	I-D-S Data Query System Installation	DD47
I-D-S Data Query System	I-D-S Data Query System User's Guide	DD46
Program maintenance:		
Object Program	Source and Object Library Editor	DD06
System Editing	System Library Editor	DD30
Test system:		
Online Test Program	Total Online Test System (TOLTS)	DD39
Test Descriptions	Total Online Test System (TOLTS) Test Pages	DD49
Error Analysis and Logging	Honeywell Error Analysis and Logging System (HEALS)	DD44
Language processors:		
Macro Assembly Language	Macro Assembler Program (GMAP)	DD08
COBOL-68 Language	COBOL Reference Manual	DD25
COBOL-68 Usage	COBOL User's Guide	DD26
Standard COBOL-68 Language	Standard COBOL-68 Reference Manual	DE17
Standard COBOL-68 Usage	Standard COBOL-68 User's Guide	DE18
JOVIAL Language	JOVIAL	DD23
FORTTRAN Language	FORTTRAN	DD02
Macro Assembly Language	DATANET 355/6600 Macro Assembler Program	DD01

FUNCTION

APPLICABLE REFERENCE MANUAL

ORDER
NO.TITLESeries 60 (Level 66)/Series 6000:

Generators:

Sorting
MergingSort/Merge Program
Sort/Merge ProgramDD09
DD09

Simulators:

DATANET 355/6600 Simulation

DATANET 355/6600 Simulator

DD32

Service and utility routines:

Loader
Utility Programs
Utility Programs
Media Conversion
System Accounting
FORTRAN
FNP Loader
Service Routines
Software DebuggingGeneral Loader
Utility
UTL2 Utility Routine (Series 60 only)
Bulk Media Conversion
Summary Edit Program
FORTRAN Subroutine Libraries
DATANET 355/6600 Relocatable Loader
Service Routines
Debug and Trace RoutinesDD10
DD12
DC91
DD11
DD24
DD20
DD35
DD42
DD43

Time Sharing systems:

Operating System
System Programming
System ProgrammingTSS General Information
TSS Terminal/Batch Interface
TSS System Programmer's Reference
ManualDD22
DD21
DD17BASIC Language
FORTRAN Language
Text Editing
dataBASIC Language
dataBASIC LoadingTime Sharing BASIC
FORTRAN
Time Sharing Text Editor
dataBASIC System Language Manual
dataBASIC Load/Unload SystemDD16
DD02
DD18
DD95
DD96

Remote communications:

DATANET 30/305/355/6600 FNP
DATANET 355/6600 FNP
DATANET 700 RNPRemote Terminal Supervisor (GRTS)
Network Processing Supervisor (NPS)
RNP/FNP InterfaceDD40
DD48
DB92

Communication facilities:

COBOL-74 Communications

Message Control System Site Manual

DC99

Transaction processing:

User's Procedures

Transaction Processing System User's
Guide

DD41

Handbooks:

System-operator communication
Error Messages, Abort CodesSystem Console Messages
Error Messages and Abort CodesDD13
DC97

Pocket guides:

Control Card Formats
FORTRANControl Cards and Abort Codes
FORTRAN Pocket GuideDD04
DD82

CONTENTS

		Page
Section I	Introduction.	1-1
Section II	Control Cards	2-1
	FDEF (File Definition Card)	2-2
	Function.	2-2
	Card Format	2-5
	Variable Field.	2-5
	Rules	2-5
	Example	2-6
	FOPT (File Options Card)	2-7
	Function.	2-7
	Card Format	2-7
	Variable Field.	2-7
	Rules	2-9
	Example	2-9
	PROC (Procedure Card)	2-10
	Function.	2-10
	Card Format	2-10
	Variable Field.	2-11
	Rules	2-11
	Example	2-11
	ETC (Continuation Card)	2-12
	Function.	2-12
	Card Format	2-12
	Variable Field.	2-12
	Rules	2-12
	Example	2-12
	* (Comment Card)	2-13
	Function.	2-13
	Card Format	2-13
	Variable Field.	2-13
	Rules	2-13
	Example	2-13
Section III	Usage	3-1
	Deck Setup	3-1
	Deck Setup Examples	3-1
	Example 1	3-1
	Example 2	3-2
	Example 3	3-2
	Example 4	3-3
	Example 5	3-3
	Example 6	3-4
	Example 7	3-4
	Example 8	3-5
	Memory Requirements	3-5
	Abort Codes	3-5
	UTL2 After An Aborted Activity	3-5
	Tape Density	3-5
Section IV	Description	4-1
	Preprocessor	4-1
	Executive	4-1

CONTENTS (cont)

	Page
Functions.	4-2
COPY.	4-2
MCOPY	4-3
COMPARE	4-3
SKIP.	4-3
DUMP.	4-3
SDUMP	4-4
REWIND.	4-4
REWIND AND UNLOAD	4-4
CLOSE	4-4
Section V	
Error Messages.	5-1
Fatal Error Messages	5-1
Warning Messages	5-4
Section VI	
GFRC Tape Labels.	6-1
Section VII	
Unit Record Devices	7-1
Card Reader.	7-1
Card Punch	7-1
Index	i-1

ILLUSTRATIONS

Figure 2-1	Characteristics by File Format.	2-3
------------	---	-----

SECTION I

INTRODUCTION

The Series 60 UTL2 utility routine processes logical records sequentially for American National Standard, GFRC¹, IBM, H2000², ISP³, and Unified File Format (UFF) sequential, relative, and indexed files. UTL2 provides the capability of performing COPY, MCOPY, COMPARE, SKIP, REWIND, REWIND AND UNLOAD, DUMP, SDUMP, and CLOSE functions on logical records of any of the mentioned files. Any of these files can be copied from one format to another, except the ISP files which cannot be created with the UTL2 routine. The routine is called into execution by the General Comprehensive Operating Supervisor (GCOS) through a \$ UTL2 card supplied by the user and is supported by the Unified File Access System (UFAS) to perform input and output operations.

American National Standard, H2000, and IBM files can reside only on tape. UFF relative and indexed files can reside only on mass storage. Whereas, GFRC and UFF sequential files can reside on both tape and mass storage.

Control of input and output data is effected through utility control cards with a free format starting in column 1 through column 72. The main control cards are the file definition (FDEF) card, which lists the file characteristics; the file options (FOPT) card, which lists the options selected; and the procedure (PROC) card, which specifies the functions to be performed.

The structure of UTL2 consists essentially of three components: a preprocessor to check the validity of the UTL2 control cards and build a control table; an executive to invoke and control the functions specified in the PROC card; and the functions available with this routine.

When fatal errors are encountered, error messages are printed out and a 1U, 3U, 4U, or 9U abort takes place. Complete information about these and other messages is given in Section V.

¹File and Record Control

²Series 2000

³Indexed Sequential Processor

SECTION II

CONTROL CARDS

UTL2 control cards must be supplied by the user at execution time, in order to exercise the functions provided by this routine. There are five UTL2 control cards currently available.

Each UTL2 control card is described separately in detail and is followed by specific examples regarding its application. A complete list of the control cards associated with UTL2 follows:

1

FDEF	(variables)	File definition card specifies characteristics of file.
FOPT	(variables)	File options card specifies processing options selected.
PROC	(variables)	Procedure card specifies functions to be performed.
ETC	(variables)	Continuation card for the functions or options of the FDEF, FOPT, and PROC cards.
*	(variables)	Comments card contains comments to be included in control card listing on P*.

NOTE: The FDEF and FOPT cards for a particular file code must precede the PROC card. It is also advisable to have the FDEF card precede the FOPT card for the same file code so that additional error checking can be performed on the FOPT card.

FDEF (FILE DEFINITION CARD)

Function

The file definition control card defines the characteristics of the files to be operated on. All the file characteristics that can be specified in this card are defined below and listed in Figure 2-1 by file format.

<u>Characteristics</u>	<u>Meaning</u>
GFRC	GFRC sequential file
ANSI	American National Standard sequential file
H2000	Series 2000 sequential file
IBM	IBM sequential file
USEQ	UFF sequential file
UREL or URELATIVE	UFF relative file
UIND or UINDEXED	UFF indexed file
ISP	Indexed Sequential Processor file
ASCII	American Standard Code for Information Interchange
EBCDIC	Extended Binary-Coded Decimal Interchange Code
GBCD	GCOS Binary-Coded Decimal (BCD)
HBCD	Honeywell Binary-Coded Decimal (Series 2000)
CIxxxxx	Control interval (physical record) size in characters
MRxxxxx ¹	Maximum logical record size in characters
Fxxxxx	Fixed-length record size in characters
Rxxx	Retention period in days (GFRC and ANSI only)
NLAB or NLABEL	Unlabeled tape file (not applicable to ANSI tape files)
PCFxx	Percent fill - UFF indexed files only (optional)
KLSx y	Key offset and key size pair - indexed files only
NKxxxxx	Number of KLS (key offset and key size) pairs - indexed files only
MODxx	Any of the following tape file formats for the Series 2000 operating systems Mod 1 and Mod 4: xx = 1A - Mod 1 Type A 1B - Mod 1 Type B 41 - Mod 4 Type 1 42 - Mod 4 Type 2
BANNERxx	Banner identifier (octal representation of a single character) - Series 2000 tape files
PADxx	Padding identifier (octal representation of a single character) - Series 2000 tape files
LABxx	Label identifier - Series 2000 tape files

¹Maximum record size for partitioned (spanned) records must be large enough to hold the entire logical record.

Characteristics

Meaning

NSER
SER¹ No block serial numbers (GFRC, IBM, and ANSI only)
Block serial numbers (GFRC, IBM, and ANSI only)

MBCD BCD recording mode (GFRC tape files only - NSER and fixed records required)

PART or PARTITIONED Partitioned (spanned) records (GFRC, ANSI, or IBM files)

File Format	Characteristics		Defaults	Restrictions
	Required	Optional		
GFRC		GBCD HBCD or ASCII CIxxxxx MRxxxxx or Fxxxxx Rxxx NSER, SER MBCD PART NLAB	GBCD CI1920 (GBCD) or CI1280 (ASCII) MR1908 (GBCD) or MR1272 (ASCII) No retention SER Labeled (tape)	$MR \leq CI - \begin{cases} 6 & \text{if NSER} \\ 12 & \text{if SER} \end{cases}$ } GBCD or HBCD $MR \leq CI - \begin{cases} 4 & \text{if NSER} \\ 8 & \text{if SER} \end{cases}$ } ASCII $F \leq CI - \begin{cases} 6 & \text{if SER - GBCD or HBCD} \\ 4 & \text{if SER - ASCII} \end{cases}$ $F \leq CI$ if NSER Rxxx applies to tape only MBCD requires NSER and Fxxxxx PART option requires: $MRxxxxx > CIxxxxx - \begin{cases} 6 & \text{if NSER} \\ 12 & \text{if SER} \end{cases}$ } GBCD or HBCD $\begin{cases} 4 & \text{if NSER} \\ 8 & \text{if SER} \end{cases}$ } ASCII
	(See Note)			

NOTE: CI - block and record control words must be included in character count.
MR - only data characters must be included in logical record size.

Figure 2-1. Characteristics by File Format

¹The block sequence indicator (BSI) on American National Standard files is supported only on input.

File Format	Characteristics		Defaults	Restrictions
	Required	Optional		
ANSI	CIxxxxx MRxxxxx or Fxxxxx	NSER, SER Rxxx PART	ASCII NSER No retention	$MR \leq CI - 10$ if SER $MR \leq CI - 4$ if NSER $F \leq CI - 6$ if SER $F \leq CI$ if NSER Rxxx applies to tape only PART option requires: $MRxxxxx > CIxxxxx - \begin{cases} 10 & \text{if SER} \\ 4 & \text{if NSER} \end{cases}$
IBM	CIxxxxx MRxxxxx or Fxxxxx	PART NSER NLAB	EBCDIC SER Labeled	$MR \leq CI - 8$ $F \leq CI$ PART option requires: $MRxxxxx > CIxxxxx - 8$
USEQ	CIxxxxx MRxxxxx or Fxxxxx	ASCII	ASCII	MR or $F \leq CI - 12$ ASCII
UREL	CIxxxxx MRxxxxx or Fxxxxx	ASCII	ASCII	MR or $F \leq CI - 12$ ASCII
UIND	CIxxxxx MRxxxxx or Fxxxxx	ASCII PCFxxx KLSxby NKxxxx	ASCII PCF100 NK10	MR or $F \leq CI - 32$ ASCII When PCFxxx is used, $xxxCI/100 \geq MR$ Key offset + key size $\leq MR$ Key offset $\leq MR - 1$
H2000	CIxxxxx MRxxxxx or Fxxxxx MODxx	BANNERxx PADxx LABxx	HBCD LAB80 No banner No padding	
ISP	CIxxxxx MRxxxxx or Fxxxxx	GBCD PCFxxx KLSxby NKxxxxx	GBCD PCF100 NK1	NK=1 When PCFxxx is used, $xxxCI/100 \geq MR$ Key offset + key size $\leq MR$ Key offset $\leq MR - 1$
NOTE: CI - block and record control words must be included in character count. MR - only data characters must be included in logical record size. ANSI - American National Standard.				

Figure 2-1. (cont.) Characteristics by File Format

Card Format

1
FDEF/fc,characteristics.

An indexed file requires two file codes, a data file code (aa) and an index file code (bb). Both file codes appear in pairs separated by a hyphen as shown in the following card format for an indexed file.

1
FDEF/aa-bb,UIND,.....,.....

aa = data file code
bb = index file code

Variable Field

The variable field contains the applicable file characteristics previously specified for this card.

Rules

1. The card identifier (FDEF) must be entered starting in column 1 and followed by a blank.
2. An FDEF card can contain more than one file code or more than one pair of indexed file codes linked by the connective AND. The connective must be preceded and followed by blanks.
3. An FDEF card cannot contain more than ten different file codes and the total number of different file codes used in any activity cannot exceed forty.
4. The file code is separated from the file characteristics and the characteristics are separated from each other by a comma.
5. The file characteristic expression must be terminated with a period.
6. All file definition (FDEF) cards must contain at least one file code.
7. A file code must appear on a file definition (FDEF) card before it can be used on a procedure (PROC) card.
8. An FDEF card must specify a file format. Control interval size and maximum record size also must be specified, except for GFRC files.
9. The GFRC file default sizes for CI and MR are:
 - CI - 1920 for a 6-bit character set
 - 1280 for a 9-bit character set
 - MR - 1908 for a 6-bit character set
 - 1272 for a 9-bit character set
10. A specific file code cannot appear more than once on any FDEF card and cannot appear on more than one FDEF card.
11. Commas may be preceded or followed by blanks.

12. A key offset and key size must be stated always as a pair separated by a blank.

The KLS pair is only required when copying from a non-indexed file to an indexed file. Unless one KLS pair is specified for the indexed file a 3U abort occurs. In all other instances, the keys specified on the input file are used.

13. NK (number of KLS pairs) must be specified, if KLS is not specified, and there are more than 10 KLS pairs. If only one KLS pair is used, it is not required but is advisable to specify NK in order to reduce the size of memory needed to process the file.

Example

```
1  
-----  
FDEF FC,GFRC,ASCII,CI1280,MR1272.
```

This file definition card specifies file code FC, a GFRC sequential file, and ASCII character set. The control interval size is 1280 characters and the maximum record size is 1272 characters. Default option is SER.

```
1  
-----  
FDEF F1 AND F2 AND F3,ANSI,CI1200,F60.
```

This FDEF card specifies three ANSI files with identical characteristics. Files F1, F2, and F3 are defined as ANSI files, having a control interval size of 1200 characters and a fixed logical record size of 60 characters. Default option is NSER.

```
1  
-----  
FDEF FC-F1,UIND,CI195,MR48,KLS1 3 4 10,ASCII.
```

In this example, the FDEF card specifies an indexed file with file codes FC-F1 and ASCII character set. The control interval size is 195 characters and the maximum record size is 48 characters. The prime key offset starts at byte 1 and is 3 bytes long; whereas, the alternate key starts at byte 4 and is 10 bytes long.

FOPT (FILE OPTIONS CARD)

Function

The file options card specifies the options in effect on succeeding procedure cards for a particular file code. These options remain in effect for that file code until another FOPT card is encountered for the same file code. When another FOPT card is encountered the options of the previous FOPT card are cancelled and a new set of options for that file code is adopted.

Card Format

1
FOPT~~fc~~,options.

Variable Field

The variable field specifies any of the following processing options that can be entered in this card:

RECT	A logical record count is displayed on P* for this file code (fc) when an end of file is reached on input or a close occurs on output.
Uxxxxx (x = decimal number)	Non-recoverable parity errors or control interval size errors are permitted before the run is aborted. The control intervals in error are used (U).
Sxxxxx (x = decimal number)	Non-recoverable parity errors or control interval size errors are permitted before the run is aborted. The control intervals in error are skipped (S).
IGNSER	Block serial number and block sequence indicator (American National Standard files) errors are ignored.
FN*n-----n	Option FN* is followed by file name (12 characters for GFRC and 17 for American National Standard files). The label check for this option is effected as follows: <ul style="list-style-type: none">● High-Speed Devices On input files the file name is included in the input label check. On output files the file name is entered in the output label.● Card Reader The label, including the asterisk (*), is checked against the first 13 columns of the first card of the input deck. This card has the format *nnnnnnnnnn.

This option is only available for GFRC and American National Standard files. If the file name is less than 12 or 17 characters (, or . terminate the field), UTL2 left-justifies and blank-fills the field in accordance with the file format being used.

TAKEc Option TAKE is followed by (representational) character c, which is used to replace invalid card characters. This option is applicable only to BCD cards.

MBIN Reads input cards with the read card binary continuous command. This option precludes the use of the read card mixed continuous command. Cards without a 7-9 punch in column 1 can be read in binary by means of this option.

NOID No ID cards are punched for an output card file.

FORM*(-----) Option FORM* is followed by a mount special card form message (up to 45 characters in length) to inform the operator that a special card form is required. The FORM* message has the following format:

sssss-aa MNT ON PUNCH icc

s = SNUMB
a = activity number
i = input/output multiplexer number
c = channel address

NMEDIA Input media codes are ignored. If this option is not specified, UTL2 punches only GFRC variable-length records with media code 1 (binary), 2 (BCD), and 12 (ASCII).

RCyy This option is available for GFRC VLR files on tape and random access devices.

For input, only those input records with (octal) report code yy will be used. For output, the report code on each output record will be changed to (octal) report code yy. The RCyy option can be used only with the COPY and DUMP functions. For the COMPARE and SKIP functions this option is ignored.

MCyy This option is available for GFRC VLR output files on tape and random access devices. The media code on each output record will be changed to (octal) media code yy.

OFF All file options for the file code are turned off. This option provides the means of cancelling options previously specified without having to specify a new set of options.

NSTRIP This option is available only for use with the card reader. The purpose of this option is to enable the user to retain the \$ ASCII/\$ ENX cards enclosing ASCII data. If not specified, the \$ ASCII/\$ ENX cards are stripped.

STWO Allows HBCD punch characters to be read or punched (Series 2000 card files only). Absence of this option may produce illegal punch codes.

COMDK

Indicates that the input is a COMDK, and decompression is desired on the output. This option is used in conjunction with the COPY or MCOPY function. When COMDK is specified, only files (not records) can be specified on the Procedure (PROC) cards with COPY or MCOPY.

A U3 abort will occur either if a binary card read is not a COMDK card, or if a COMDK card contains an error. The following message is output: ERROR IN COMDK CARD. Any BCD cards encountered are output normally.

NCMP

This option is used to pre-establish that certain character positions are to be ignored when comparing two files. Use of this option will eliminate the printing of much unnecessary data on a file-compare operation.

To enable the NCMP option for two files, the user can specify the option for either file. Normally, however, the NCMP option and the character positions are specified for the first file only. For documentation purposes, the user can specify this option and list the character positions for both files.

Example:

1 6

FOPT fc,NCMP1 3 7-10

where: Character positions 1, 3, and 7-10 of file fc are not to be compared.

Note: Once the NCMP option is specified for a file, it remains in effect for that file on all subsequent compare functions until it is disabled via another FOPT card for that file code.

XSUM

The XSUM option gives the user the capability to have a checksum test performed when binary cards are being read. This option can be of particular importance to users who are building IMCV tapes or other files in which error-free binary cards or binary card images are required. If the user invokes this option and a checksum error occurs, the following message is output at the system console.

CKSUM ERROR CARD READER i cc SNUMB sssss

TO ABORT TYPE A
TO REREAD BACKSPACE xx CARDS AND TYPE B
TO ACCEPT THE CARD AND CONTINUE CKSUMMING TYPE C

For every checksum error accepted by the operator (C reply), the following message is sent to the printer.

*** CHECKSUM ERROR CARD xxxxxx ***

Rules

1. More than one FOPT card per file code is permissible to allow change of options for a file code.
2. The card identifier (FOPT) must be entered starting in column 1 and followed by a blank.
3. More than one file code can be specified on one FOPT card; if more than one file code is specified, the file codes must be linked by the connective AND preceded and followed by blanks. Error checking is performed only for the first file code specified.
4. An FOPT card cannot contain more than ten different file codes and the total number of different file codes used in any activity cannot exceed forty.
5. The file code is separated from the file options and the file options are separated from each other by a comma.
6. The file options must be terminated with a period.
7. The OFF option must be used by itself with no other options specified on the FOPT card.

Example

1
FOPT FC,RECCT,IGNSER.

In this example, for file code FC, the logical record count is displayed when an end of file is reached on input or a close is encountered on output. Block serial number errors are ignored.

PROC (PROCEDURE CARD)

Function

The procedure card allows the user to specify the DUMP, SDUMP, COPY, MCOPY, COMPARE, SKIP, REWIND, REWIND AND UNLOAD, and CLOSE functions. These functions can be specified singly or in the combinations desired.

Card Format

The following card formats cover all the functions available with the PROC card. Only one format is shown for those functions with similar formats.

Format for MCOPY, COPY, and COMPARE

```
1
-----
PROCfunctionfc TO fcmFILESnRECORDS.
      AND
```

NOTE: Only TO can be used with MCOPY and COPY.
Either TO or AND may be used with COMPARE.

Format for DUMP, SDUMP, and SKIP

```
1
-----
PROCfunctionfcmFILESnRECORDS.
```

Format for REWIND, REWIND AND UNLOAD, and CLOSE

```
1
-----
PROCfunctionfc.
```

The parameters and functions listed below can be either spelled out or abbreviated as follows:

- REWIND - REW
- REWIND AND UNLOAD - REWU
- COMPARE - COMP
- FILES - F
- RECORDS - R

The variables m and n represent decimal numbers of files and records respectively, and fc represents the file code.

Variable Field

The variable field can contain one or more of the following functions:

COPY	Copies m files and n records from first file code to second file code. Closes the output file at standard EOF on input file, at the end of the function, or when all activity on the file code is completed.
MCOPY	Same as COPY, except that an output file built with MCOPY is closed only when all activity on the file code is completed, or REWIND or CLOSE is specified for the output file.
COMPARE	Compares files with like character sets.
DUMP	Dumps logical records with five data words per line in octal and alphanumeric character equivalent.
SDUMP	Allows dumping without octal representation.
SKIP	Skips m files and n records.
REWIND	Rewinds appropriate device.
REWU	Allows the user to rewind and unload a magnetic tape so that it cannot be used again in a particular activity.
CLOSE	Terminates the processing of any open input or output file.

Rules

1. The card identifier (PROC) must be entered starting in column 1 and be followed by a blank.
2. A complete expression of a function must be terminated with a period.
3. The DUMP, SDUMP, SKIP, REWIND, REWIND AND UNLOAD, and CLOSE functions can be specified for a maximum of 40 different file codes; e.g., SKIP~~FC~~AND~~FC~~...
4. One or more blanks must separate the file codes and connective words.
5. The function literal must be followed by one or more blanks.
6. The total number of different file codes used in an activity cannot exceed forty.

Example

```
1  
PROC REWIND FC. DUMP FC 1FILES. COPY FC TO FD 2FILES.
```

In this example file FC is rewound. File number 1 from file FC is dumped. Files 2 and 3 from file FC are copied onto file FD.

ETC (CONTINUATION CARD)

Function

The continuation card is used to indicate that the variable field of the procedure card, file definition card, or file options card is continued. One or more continuation cards can be used, but a word or option cannot be split between cards.

Card Format

```
1  
-----  
ETC (continuation of preceding card)
```

Variable Field

The variable field contains additional parameters from the preceding card.

Rules

1. The card identifier (ETC) must be entered starting in column 1 and be followed by a blank.
2. The rules for the variables of this card are those applicable to the variables of the card to be continued.
3. The ETC card must follow immediately the card that is being continued.

Example

```
1  
-----  
PROC REWIND FC AND FD. DUMP FC AND FD
```

```
1  
-----  
ETC 3F. SKIP FC AND FD 3F. REWIND FC AND FD.
```

The preceding example shows an ETC card continuing the DUMP function specification started on the preceding procedure card.

*(COMMENT CARD)

Function

The comment card allows the user to include comments with the other directives on the control card listing on P*.

Card Format

1
*(comments)

Variable Field

Comments in the variable field are not subject to any restriction.

Rules

1. An asterisk (*) must be entered in column 1.
2. No blanks are required between the asterisk and the comments.
3. The comments can extend from column 2 through column 72.
4. Comment cards can be placed anywhere among the UTL2 control cards.

Example

1
*THIS CONTROL CARD IS IRRELEVANT

SECTION III

USAGE

DECK SETUP

The UTL2 utility routine is called into execution by a UTL2 card prepared by the user. Two options are available on this card. The first option, DUMP, provides memory dump when the UTL2 activity is aborted. The second option, ASCIIPRT, causes the output to be sent to SYSOUT in ASCII with ASCII print media code (octal 7). If this second option is not specified, BCD print media code (octal 3) is used with BCD print records. In addition to the UTL2 card, the deck setup must include UTL2 control cards, which are placed on *U file.

The following example of a UTL2 deck setup shows all the control cards available.

1	8	16	
\$	UTL2		
FDEF	(file definition)		} UTL2 Control Cards
FOPT	(file options)		
PROC	(procedure)		
ETC	(continuation)		
*	(comments)		

DECK SETUP EXAMPLES

The following examples illustrate deck setups for the UTL2 utility routine:

Example 1

1	8	16	
\$	UTL2		
\$	TAPE	FC,X1D,,1234	
FDEF	FC,GFRC.		
PROC	REWIND FC. DUMP FC	2FILES5RECORDS. REWIND FC.	

In this example GFRC tape file code FC is rewound and 2 files and 5 records are dumped. Then, file FC is rewound again.

Example 2

```
1      8      16
-----
$      UTL2    ASCIIPRT
$      READ    IN
$      TAPE    TP,X1R
$      PUNCH    OT
FDEF IN,GFRC
FDEF TP,GFRC
FDEF OT,GFRC,ASCII
PROC REW IN AND TP AND OT. COPY IN TO TP 1
ETC FILE. REW TP. COPY TP TO
ETC OT 1 FILE. REW TP. DUMP
ETC TP 1 FILE.
```

This example demonstrates the use of the READ and PUNCH functions with UTL2. The card files are defined as GFRC files in the first and third FDEF cards. Card file IN is copied to tape file TP which, in turn, is copied to card file OT that has ASCII character set as defined in its FDEF card. Then, card file IN is reproduced with any BCD input cards being transliterated to ASCII and an ASCII output card deck is obtained, excluding any binary cards that are reproduced in binary. Finally, tape file TP is rewound and dumped to SYSOUT for ASCII printing as specified by the ASCIIPRT option in the UTL2 card.

Example 3

```
1      8      16
-----
$      UTL2
$      PRMFL   FC,R,R,SMITH/FILE1
$      PRMFL   FD,R/W,R,SMITH/FILE2
FDEF FC,USEQ,C11280,MR1268.
FDEF FD,USEQ,C11280,MR1268.
FOPT FC,RECCT.
FOPT FD,RECCT.
PROC REW FC AND FD.
PROC COPY FC TO FD 1F.
PROC REWIND FC AND FD.
PROC COMP FC TO FD 1FILES.
PROC REW FC AND FD.
```

The preceding example illustrates the use of UFF sequential files. The control interval size of these files is 1280 characters and the maximum record size is 1268 characters. The two files are rewound and file FC is copied onto file FD. Then, the files are rewound and compared. A record count is displayed at the end of each file as specified by the RECCT option.

Example 4

```
1      8      16
-----
$      UTL2
$      TAPE    FC,X1D,,1234
$      TAPE    FD,X2D,,5678
$      TAPE    FE,X3D,,9012
$      TAPE    FF,X4D,,,,OUTPUT-FILE
FDEF FC AND FD AND FE AND FF,GFRC.
PROC REW FC AND FD AND FE AND FF.
PROC MCOPY FC TO FF 1F5R. SKIP FC 1F. MCOPY
ETC FC TO FF 1F.
PROC MCOPY FD TO FF 1F. CLOSE FF.
PROC MCOPY FE TO FF 20R. SKIP FE 1F.
PROC MCOPY FE TO FF 1F.
PROC REWIND FF. DUMP FF 2F.
```

This example illustrates the MCOPY, SKIP, and CLOSE functions of a GFRC file. Two files are created on file FF. The first file on file FF contains the first file from file FC, the first 5 records of file 2 of file FC, the third file from file FC (the remainder of the records on file 2 of file FC are not copied to file FF, because a SKIP was performed after the first MCOPY), and the first file of file FD. Since a CLOSE was performed on file FF, an end-of-file label and mark are entered on file FF. The second file on file FF contains the first 20 records of the first file and the entire second file of file FE. A CLOSE is not required after the last MCOPY, because the REWIND function closes the file automatically.

Example 5

```
1      8      16
-----
$      UTL2
$      FILE    FA,X1R,1R
$      FILE    FC,X2R,5R
$      FILE    FB,X3R,1R
$      FILE    FD,X4R,5R
$      TAPE9   FE,X1R
FDEF FE,GFRC,ASCII,C11280,MR1272
FDEF FC-FA AND FD-FB,UIND,KLS20 4,
ETC C11280,MR1248.
PROC REW FE AND FC AND FD.
PROC COPY FE TO FC 1F. REW FE AND FC.
PROC COPY FE TO FD 1F. REW FE AND FD.
PROC COMPARE FC AND FD 1F.
```

The preceding example illustrates the use of UFF indexed files (FC and FD). Note that two random mass storage files (one for the file itself and one for the index file) must be allocated to each indexed file. Since an ASCII character set is specified on the FDEF card for file FE, the default option is overridden and the data on file FE is treated as being expressed in the ASCII character set.

Example 6

```
1      8      16
-----
$      UTL2
$      PRMFL   FC,R,R,SMITH/FILES3
$      PRMFL   FD,R/W,R,SMITH/FILE4
FDEF FC AND FD,UREL,C11280,MR1268.
PROC REW FC AND FD.
PROC COPY FC TO FD 1F. REW FC AND FD.
PROC COMP FC TO FD 1F. REW FC AND FD.
PROC SKIP FC AND FD 1F. REW FC AND FD.
PROC DUMP FC AND FD 1F. REW FC AND FD.
PROC CLOSE FC AND FD.
```

This example illustrates the use of UFF relative files with all UTL2 functions, except MCOPY. The CLOSE function is not required in this instance, because the REWIND function in the preceding card closes files FC and FD.

NOTE: Although logical records in a UFF relative file can vary in size, the file space required for each record is equal to the maximum record size.

Example 7

```
1      8      16
-----
$      UTL2
$      TAPE    FC,X1R
$      TAPE    FD,X2R
FDEF FC AND FD,GFRC.
FOPT FC,S50.
PROC REW FC AND FD.
PROC COPY FC TO FD 20R. COPY FC TO FD 20R. COPY FC TO FD 20R.
FOPT FC,OFF.
PROC DUMP FC 1F.
FOPT FC,RECCT.
PROC COPY FC TO FD 60R. REW FD. DUMP FD 4F.
```

The preceding example demonstrates that the UTL2 utility routine closes files at the end of each COPY function. In the first COPY function, 3 files with 20 records each are created on file FD. In the second COPY function only one file is created on file FD.

Note how the FOPT card is used. The first FOPT card directs UTL2 to skip 50 non-recoverable parity or control interval length errors before the run is aborted. The second FOPT card turns off the SKIP (S50) function used during the COPY function and the next FOPT card turns on the record count option for file FC during the next COPY and DUMP functions.

Example 8

<u>1</u>	<u>8</u>	<u>16</u>
\$	UTL2	
\$	TAPE	FC,X1D,,1234
\$	TAPE	FD,X2D,,5678
FDEF FC,GRFC,ASCII.		
FDEF FD,IBM,C11280,MR1270.		
PROC REW FC AND FD. COPY FC TO FD 1F.		
PROC REW FC AND FD. DUMP FD 1F. REW FD.		

This example illustrates the use of the UTL2 routine in file translation. A GRFC file with ASCII character set is converted to an IBM file with EBCDIC character set. Then, the output file is dumped to ensure the correctness of the COPY function, because files with different character sets cannot be compared.

MEMORY REQUIREMENTS

The minimum memory requirement for the execution of UTL2 is 18K (K = 1024 words). UTL2 will invoke GEMORE for additional memory if it is required.

ABORT CODES

The following abort codes identify the type of error that caused the abort:

- 1U - Control Card Error
- 3U - Machine Error
- 4U - Internal Error During Checksum Test
- 9U - Operator Requested Abort After Checksum Error

UTL2 AFTER AN ABORTED ACTIVITY

The user can elect to execute the UTL2 routine after an aborted activity by inserting either a \$ BREAK card or a \$ IF ABORT card between the aborted activity and the UTL2 routine.

TAPE DENSITY

To set a magnetic tape density the user need only specify the density desired through the option DENn on a \$ TAPE card.

SECTION IV

DESCRIPTION

The UTL2 utility routine is characterized by pure procedure in its execution, double buffers for input and output, and ASCII character set for internal use and output. Most input/output activities for UTL2 are performed by the Unified File Access System (UFAS).

The major components of this utility routine are the preprocessor, the executive, and the functions. These three components interface with each other, but do act independently while active.

PREPROCESSOR

When the routine is called by the UTL2 card, the preprocessor is initialized and starts to read the UTL2 control cards from the *U file. Syntax and semantic analysis is performed on each UTL2 control card and a file control table is built. Upon reaching the end of file on the *U file, the preprocessor determines if fatal errors occurred. If any fatal errors are encountered, the job is terminated with a LU abort code. In the absence of fatal errors, space is calculated for, and assigned to, the buffers and file control table. Process area space also is calculated and reserved for the executive. Then, control is transferred from the preprocessor to the executive.

EXECUTIVE

The executive assumes control from the preprocessor and, based on the information contained in the file control table, proceeds to assign a storage area of memory to each file to be processed by a function. This storage area is used for UFF file information blocks generated from FDEF card parameters, miscellaneous information blocks that contain the file options specified on the FOPT cards, and other control information.

Based on the parameters on the FDEF card, the UFF communication block is initialized by the executive. The message FUNCTION REQUESTED is printed, communication words are set with directives for the function, and the function is called to assume control. After the function returns control to the executive, the message FUNCTION COMPLETED is printed, specifying the actual number of files and records processed. The number of files and records processed can vary from those requested if more files or records were requested than existed in the file. Also, at this time a report of input/output errors encountered in the function is provided. The procedure just described continues until the information in the file control table is exhausted. Upon completion of the functions specified in the file control table, the executive performs wrapup functions (such as closing open files) and terminates the activity.

The following printout messages are typical examples of the messages issued by the executive:

FUNCTION REQUESTED: DUMP fc XXX FILE(S) YYYYYY RECORD(S).
FUNCTION REQUESTED: SKIP fc XXX FILE(S) YYYYYY RECORD(S).
FUNCTION COMPLETED: DUMPED fc XXX FILE(S) YYYYYY RECORD(S).
 SKIPPED fc XXX FILE(S) YYYYYY RECORD(S).
FUNCTION COMPLETED: COPY f1 to f2 XX FILE(S) YYYYYY RECORD(S).
FUNCTION REQUESTED: COMPARE f1 to f2 XXX FILE(S) YYYYYY RECORD(S).
FUNCTION REQUESTED: COPIED f1 to f2 XXX FILE(S) YYYYYY RECORD(S).
 COMPARED f1 to f2 XXX FILE(S) YYYYYY RECORD(S).

FILES CLOSED: f1, f2, f3,.....fn.

FILES REWOUND: f1, f2, f3,fn.

***** ERRORS ENCOUNTERED ON FILE CODE f1

ZZZ BLOCK SERIAL NUMBER ERRORS
ZZZ BLOCK LENGTH ERRORS
ZZZ BLANK TAPE ERRORS
ZZZ LATERAL PARITY ERRORS
ZZZ LONGITUDINAL PARITY ERRORS

FUNCTIONS

When a function is invoked by the executive, control is assumed by the function and is not relinquished to the executive until the function is completed. The functions performed are COPY, MCOPY, COMPARE, SKIP, DUMP, SDUMP, REWIND, REWIND AND UNLOAD, and CLOSE.

COPY

This function copies logical records from a card reader, magnetic tape, or random access device to a card punch, magnetic tape, or random access device. Edited records (media code 3 or 7) from a variable-length record GFRC file can be copied only to another variable-length record GFRC file with the same character set. When a nonstandard EOF is encountered on the input file, a message is printed and copying continues (the nonstandard EOF is not copied to the output file). No transliteration is allowed when copying is being effected to an UFF file. The COPY function always closes the output file when an EOF is encountered on the input file, at the end of a COPY function, or when all activity for the file code is completed.

MCOPY

The MCOPY function is similar to the COPY function, except that an output file built with MCOPY is closed only when the CLOSE or REWIND function is specified or all activity for the file code is completed. MCOPY is used to copy files and records from the input file to the output file without separating or terminating labels, or file marks on the output file. If required, an EOF label and EOF mark can be entered on the output file with the CLOSE function.

COMPARE

A comparison can be effected only on files with identical character sets. Both records and files, or a combination of both, can be compared. Only records of the same length are compared on a character-by-character basis. If either the records are not of the same length or the characters do not match, the records are dumped and the appropriate message is printed. In the latter case, the character number of each non-matching character is printed out. If a nonstandard EOF is encountered, a message is printed and the comparison continues.

Specific character positions can be ignored by use of the NCMP option on the FOPT card.

SKIP

This function skips either files or records or a combination of both files and records. When a nonstandard EOF is encountered a message is printed and the skipping continues.

DUMP

The dumping of logical records is similar for all file formats, except for some minor differences as noted. Five data words are dumped on a line in both octal and alphanumeric character equivalent. Duplicate lines are suppressed. The character count of the first data character of the line appears on the second line (and all succeeding lines) opposite the logical record. The dump format of logical records is as follows:

- GFRC Sequential

CI n R m MCxx RCyy (octal or ASCII equivalent)

CI = Control interval (physical block) number n

R = Logical record number m

MC = Media code xx (octal)

RC = Report code yy (octal)

- American National Standard, UFF Sequential, H2000, ISP, and UFF Indexed

Same as for GFRC sequential files, except that the media code and report code are not applicable.

- UFF Relative

Same as for American National Standard, and UFF sequential and indexed files, except that the control interval field (CI) is replaced by the relative key (RK) field.

SDUMP

The SDUMP (Short Dump) function allows dumping of a BCD, ASCII, or EBCDIC file without the octal representation. This feature permits one who is not interested in reading octal representation to obtain a shorter dump.

The following new print line has been designed for use by both SDUMP and DUMP.

First Line	CIxxxxx/MxxRxx/Rxxxxxxx *DATA.....
Second Line	CCxxxxxxxxDATA.....
Last Line	CCxxxxxxxxDATA..*

where: CI - Control interval
MR - Media code and report code
R - Record number
CC - Character count

A maximum of 108 characters of data per line can be printed.

REWIND

This function rewinds the appropriate device (random mass storage files are repositioned to the beginning). If REWIND is the only function specified for a file code, only a tape file or sequential disk file can be rewound.

REWIND AND UNLOAD

This function will rewind and unload a magnetic tape so that it cannot be used again in a particular activity.

CLOSE

The CLOSE function can be used to close any open input or output file. Normally, the CLOSE function is used in conjunction with MCOPY to close the output file.

SECTION V

ERROR MESSAGES

All messages issued by UTL2 are listed in this section. These messages are classified as either fatal error or warning messages. Fatal error messages identify the cause of an abort. Warning messages indicate that non-fatal errors were encountered.

FATAL ERROR MESSAGES

<u>Message</u>	<u>Abort Code</u>	<u>Meaning</u>
*** BLANK EXPECTED - NOT FOUND	1U	Required blank character was not found.
*** DISCREPANCY BETWEEN CI AND MR OR F	1U	Not enough space was allowed for record and block control words.
*** ETC CANNOT BE FIRST	1U	ETC card precedes an FDEF, FOPT, or PROC card.
*** F(ILES) OR R(ECORDS) NOT FOUND	1U	Can mean that: <ol style="list-style-type: none"> 1. Number of files or records being processed is not specified. 2. Designation F or R is missing after number specifying files or records being processed.
*** FDEF OPTION PREVIOUSLY DEFINED	1U	An option on an FDEF card was specified more than once.
*** FILE CODE?	1U	File code is missing.
*** FILE CODE NOT DEFINED	1U	File code on a PROC card was not specified previously on an FDEF card.
*** FILE CODE PREVIOUSLY DEFINED	1U	Another FDEF card was previously scanned for this file code.
*** FILE CODE PREVIOUSLY USED FOR INDEX FILE	1U	The file code was specified previously for an index of indexed file.
*** FILE TYPE INCOMPATIBLE WITH DEVICE TYPE	1U	Incorrect device type specified, such as linked mass storage for an IBM file type.
*** IDENTICAL CHARACTER SETS REQUIRED	1U	Both the COMPARE function and the COPY (to indexed files) function can only process files with identical character sets.

<u>Message</u>	<u>Abort Code</u>	<u>Meaning</u>
*** ILLEGAL CONTROL CARD	1U	The parameter in the first four columns was not the identifier FDEF, FOPT, PROC, ETC, OR *.
*** ILLEGAL FILE CODE	1U	A file code of more than two or less than two characters was specified.
*** ILLEGAL FUNCTION	1U	Function specified on PROC card probably is misspelled or copying was attempted to an ISP file.
*** ILLEGAL OPTION	1U	Can mean that: 1. An option specified on an FDEF or FOPT card is not recognized. 2. An option specified on an FDEF or FOPT card is incompatible with other functions specified.
*** KLS INCORRECT	1U	Key offset is greater than or equal to the maximum record size, key offset plus key size is greater than the maximum record size, or one item of the pair is missing.
*** MEMORY EXHAUSTED	1U	A request for additional memory was denied.
*** NO DATA ON *U	1U	No data available on *U input file.
*** NO INDEX FILE CODE	1U	An index file code was not specified in the definition of an indexed file.
*** NO READ AFTER WRITE	1U	After a file is written on, it cannot be read before it is rewound.
*** NUMBER EXPECTED - NOT FOUND	1U	Required number was not present.
*** NUMBER TOO BIG	1U	A number contained more than the appropriate number of digits, or an 8 or 9 was detected instead of the octal number expected.
*** ONE AND ONLY ONE FILE TYPE REQUIRED	1U	One file format must be specified, but no more than one file format can be specified on an FDEF card.
*** ONLY 1 FILE ON UFORM FILES	1U	Request for a function to be performed on more than one file on a file defined as UIND, USEQ, or UREL.
*** ONLY 2 FILE CODES ALLOWED	1U	More than two file codes were mentioned in COPY, MCOPY, or COMPARE functions.
*** ONLY ONE CHARACTER SET PERMITTED	1U	More than one character set was specified on an FDEF card.
*** OPTION INCOMPATIBLE WITH DEVICE TYPE	1U	Option specified on FOPT card is not applicable to the device type for that file code.
*** OPTION INCOMPATIBLE WITH FILE TYPE	1U	An option specified on an FDEF or FOPT card cannot be applied to this file format.
*** PERIOD OR CONNECTIVE WORD NOT FOUND	1U	A period or the connectives TO or AND are missing.

<u>Message</u>	<u>Abort Code</u>	<u>Meaning</u>
*** REQUIRED OPTION NOT FOUND	1U	An option required for the specified file format is missing.
*** TO EXPECTED - NOT FOUND	1U	Connective TO is missing.
*** TOO MANY FILE CODES	1U	Can mean that: 1. More than ten file codes were specified on an FDEF or FOPT card. 2. More than 40 different file codes were specified for this activity.
*** WRITE AFTER READ ON CLOSE ONLY	1U	A file can be written on after being read, only if it is closed after being read.
BSN ERR FILE CODE xx BLK # xxxxxx EXPECTED BSN # xxxxxx FOUND	3U	Block serial number of tape block is not the one expected.
EDITED RECORD NOT LEGAL	1U	Copying of a GFRC edited record (media code 3 or 7) to an American National Standard or UFF file was attempted.
FILE CODE xx BLANK TAPE ON READ	3U	A status of blank tape on read was returned when an attempt was made to read this tape.
FILE CODE xx BLOCK # xxxxxx BLK LENGTH ERROR	3U	Block length in block serial word does not agree with actual block length.
FILE CODE xx BLOCK # xxxxxx LATERAL PARITY ERROR	3U	Lateral parity error was encountered when magnetic tape file was read.
FILE CODE xx BLOCK # xxxxxx LONG PARITY ERROR	3U	Longitudinal parity error was encountered when magnetic tape file was read.
FILE CODE xx CARD READER ERROR	3U	UTL2 was unsuccessful in attempting to read a card file.
FILE CODE xx CHECK ALERT ERROR	3U	Check alert status was returned when an attempt was made to read this random access device.
KEY NOT SPECIFIED FOR FILE CODE xx	1U	Output file is an UFF indexed file and input file is not an UFF indexed file. No keys were specified for the output file.
TOO MANY KEYS FOR FILE CODE xx	1U	There are more keys than specified by KLS pairs or NK, or default was assumed and the file has more than 10 keys.
ERROR IN COMDK CARD	3U	Either a binary card read is not a COMDK card, or a COMDK card contains an error.
UTL2 Abort message	4U	There was a UTL2 internal error during a checksum error test.
UTL2 Abort message	9U	A checksum error occurred, and the operator requested an abort.

WARNING MESSAGES

Message

Meaning

*** FILE NAME TOO LONG

File name specified in FN* option is more than 12 characters (GFRC) or more than 17 characters (American National Standard).

*** ILLEGAL REWIND ON FILE
CODE xx

The REWIND function was specified for a random file and was the only function requested for that file.

*** xxK ADDITIONAL CORE NEEDED

Additional memory was requested to execute this activity.

*** MAXIMUM CI SIZE EXCEEDED
FOR GFRC FILES

Control interval size specified exceeded 1280 (ASCII) or 1920 (BCD) characters and was changed by the routine to one of the mentioned sizes.

*** PCF TOO SMALL - MR USED

Percent fill was not enough. Maximum record size was used.

*** PERIOD OR COMMA EXPECTED -
NOT FOUND

A period or comma is missing after the last option.

BSN ERR FILE CODE xx
BLK # xxxxxx EXPECTED
BSN # xxxxxx FOUND

Block serial number of tape block is not the one expected.

COMPARE STOPPED AT 50
NONCOMPARES

At least 50 characters in a record did not match during comparison.

EOF FIRST FILE ONLY

An EOF was encountered only on the first file during a comparison.

EOF SECOND FILE ONLY

An EOF was encountered only on the second file during a comparison.

FILE CODE xx BLOCK #
xxxxxx BLK LENGTH
ERROR

Block length in block serial word does not agree with actual block length.

FILE CODE xx BLOCK #
xxxxxx LATERAL PARITY
ERROR

Lateral parity error was encountered when magnetic tape file was read.

FILE CODE xx BLOCK #
xxxxxx LONG PARITY
ERROR

Longitudinal parity error was encountered when magnetic tape file was read.

RECORD SIZES DIFFERENT
XXXXXX VS. XXXXXX

Comparison is not possible between two records of different lengths.

RECORDS DO NOT COMPARE FILE
XXXXXX RECORD XXXXXX
CHARACTERS IN ERROR XX

This COMPARE function encountered two records that do not match.

SECTION VI

GFRC TAPE LABELS

Magnetic tape label processing for GFRC files is subject to special handling as follows:

- Tape Labels

During execution of a DUMP function all tape labels encountered are printed.

- Partial Labels

When a partial label (a standard GFRC label with zeros in words 6 through 10) is encountered, the function is terminated. The partial label signals the end of useful data. The following message is issued to P* when a partial label is encountered:

```
PARTIAL LABEL ENCOUNTERED ON XX. FUNCTION ENDED
```

```
XX = file code
```

- Input/Output File Labels

During execution of a COPY function the following header label and trailer label information is copied from an input file tape label to an output file tape label:

Header Label¹

Creation date	- Word 7 (YYDDD)
Retention period	- Word 8 (bits 18 through 35)
File name	- Words 9 and 10
Reserved space	- Words 11 through 13
Retention date	- Word 17 (binary year and day of year)

Trailer Label

Reserved space	- Words 3 through 12
----------------	----------------------

¹UFAS generates a 20-word binary header label for GFRC files.

If an Rxxx (retention period) option is used for an output file during a COPY function, the following label fields are not copied from input to output:

Header Label

Creation date
Retention period
Retention date

If a FN* (file name) option is specified for the output file, the file name is not copied from the input file to the output file.

SECTION VII

UNIT RECORD DEVICES

All input/output functions for the card reader and card punch are provided by UTL2. No support is provided for the printer. Card files must be defined as GFRC or H2000 files and specify only GBCD, HBCD, and ASCII character sets.

CARD READER

Reading of card files is performed with a read card mixed or read card mixed ASCII command that enables the card reader to read not only binary and BCD characters but also ASCII characters, provided a microprogrammed peripheral controller (MPC) is available. The character set selected, at any particular time, is determined by the input record size. When the card reader is used, the file definition control card must specify a GFRC or H2000 file (e.g., FDEF A1,GFRC,F80). The only UTL2 functions that can use the card reader are DUMP and COPY.

Any of the following processing options applicable to the card reader can be specified on a file options control card for the purposes stated:

- MBIN - Read cards in binary mode
- FN*n----n - Perform a label card check
- TAKEc - Replace invalid characters
- STWO - Read HBCD character set
- NSTRIP - Do not strip \$ ASCII or \$ ENX cards

CARD PUNCH

Cards can be punched either from a variable-length record, if the card contains a punch media code, or from any fixed-length record. Also, cards can be punched from variable-length records when any other media code is specified, if the NMEDIA option was specified for the input file. When the NMEDIA option is specified on a file options control card the character set selected is determined by:

- Record length, if input comes from the card reader.
- Media code, if input comes from a high-speed device.

By specifying the desired character set (GBCD, HBCD, or ASCII), the user can have transliteration performed. When MPC is not available, automatic transliteration is performed if ASCII records are desired. In this instance, UTL2 transliterates the record to an ASCII binary image and punches the card in binary. When the card punch is used, the file definition control card must specify a GFRC or H2000 file (e.g., FDEF A2,GFRC). The only UTL2 function that can use the card punch is COPY.

The following processing options are applicable to the card punch as indicated:

- NOID - To eliminate the ID card on the output deck.
- FORM* - To notify the operator to mount a special form.
- STWO - To punch HBCD character set.

INDEX

1U
 1U - Control Card Error 3-5
 3U
 3U - Machine Error 3-5
 2000
 Series 2000 sequential file 2-2
 *(COMMENT CARD
 *(COMMENT CARD) 2-13
 ABORT
 ABORT CODES 3-5
 UTL2 AFTER AN ABORTED ACTIVITY 3-5
 ACTIVITY
 UTL2 AFTER AN ABORTED ACTIVITY 3-5
 AMERICAN NATIONAL STANDARD
 American National Standard
 sequential file 2-2
 BANNER
 Banner identifier 2-2
 BLOCK
 Block serial number 2-7
 CARD
 CARD PUNCH 7-1
 CARD READER 7-1
 CHARACTERISTICS
 Characteristics by File Format 2-3
 file characteristics 2-2
 CLOSE
 CLOSE 4-4
 CODES
 ABORT CODES 3-5
 Input media codes 2-8
 COMPARE
 COMPARE 4-3
 CONTINUATION CARD
 ETC (CONTINUATION CARD) 2-12
 CONTROL
 Control interval (physical record)
 size 2-2
 CONTROL CARD
 1U - Control Card Error 3-5
 control cards 2-1, 3-1
 COPY
 COPY 4-2
 COUNT
 logical record count 2-7
 DECK SETUP
 DECK SETUP 3-1
 DECK SETUP EXAMPLES 3-1
 DEFINITION CARD
 FDEF (FILE DEFINITION CARD) 2-2
 DENSITY
 TAPE DENSITY 3-5
 DEVICES
 UNIT RECORD DEVICES 7-1
 DUMP
 DUMP 4-3
 ERROR
 1U - Control Card Error 3-5
 3U - Machine Error 3-5
 ERROR MESSAGES 5-1
 FATAL ERROR MESSAGES 5-1
 ETC
 ETC (CONTINUATION CARD) 2-12
 EXAMPLES
 DECK SETUP EXAMPLES 3-1
 EXECUTIVE
 EXECUTIVE 4-1
 FATAL
 FATAL ERROR MESSAGES 5-1
 FDEF
 FDEF (FILE DEFINITION CARD) 2-2
 FILE
 American National Standard
 sequential file 2-2
 Characteristics by File Format 2-3
 FDEF (FILE DEFINITION CARD) 2-2
 file characteristics 2-2

FILE (cont)
 FOPT (FILE OPTIONS CARD) 2-7
 GFRC sequential file 2-2
 IBM sequential file 2-2
 Indexed Sequential Processor file 2-2
 Input/Output File Labels 6-1
 Series 2000 sequential file 2-2
 UFF indexed file 2-2
 UFF relative file 2-2
 UFF sequential file 2-2

FN*
 Option FN* 2-7

FOPT
 FOPT (FILE OPTIONS CARD) 2-7

FORM*
 Option FORM* 2-8

FORMAT
 Characteristics by File Format 2-3

FUNCTIONS
 FUNCTIONS 4-2

GFRC
 GFRC Sequential 4-3
 GFRC sequential file 2-2
 GFRC TAPE LABELS 6-1

H2000
 H2000 2-2, 4-3

IBM
 IBM sequential file 2-2

IDENTIFIER
 Banner identifier 2-2
 Label identifier 2-2
 Padding identifier 2-2

INDEXED
 Indexed Sequential Processor file 2-2
 UFF Indexed 4-3
 UFF indexed file 2-2

INPUT
 Input media codes 2-8

INPUT/OUTPUT
 Input/Output File Labels 6-1

INTERVAL
 Control interval (physical record) size 2-2

ISP
 ISP 2-2, 4-3

LABEL
 Label identifier 2-2

LABELS
 GFRC TAPE LABELS 6-1
 Input/Output File Labels 6-1

LABELS (cont)
 Partial Labels 6-1
 Tape Labels 6-1

LOGICAL
 logical record count 2-7
 Maximum logical record size 2-2

MACHINE
 3U - Machine Error 3-5

MAXIMUM
 Maximum logical record size 2-2

MCOPY
 MCOPY 4-3

MEDIA
 Input media codes 2-8

MEMORY REQUIREMENTS
 MEMORY REQUIREMENTS 3-5

MESSAGES
 ERROR MESSAGES 5-1
 FATAL ERROR MESSAGES 5-1
 WARNING MESSAGES 5-4

NUMBER
 Block serial number 2-7

OPTION
 Option FN* 2-7
 Option FORM* 2-8
 Option TAKE 2-8

OPTIONS CARD
 FOPT (FILE OPTIONS CARD) 2-7

PADDING
 Padding identifier 2-2

PARTIAL
 Partial Labels 6-1

PERIOD
 Retention period 2-2

PHYSICAL
 Control interval (physical record) size 2-2

PREPROCESSOR
 PREPROCESSOR 4-1

PROC
 PROC (PROCEDURE CARD) 2-10

PROCEDURE CARD
 PROC (PROCEDURE CARD) 2-10

PROCESSOR
 Indexed Sequential Processor file 2-2

PUNCH
 CARD PUNCH 7-1

READER
CARD READER 7-1

WARNING
WARNING MESSAGES 5-4

RECORD
Control interval (physical record)
size 2-2
logical record count 2-7
Maximum logical record size 2-2
UNIT RECORD DEVICES 7-1

RELATIVE
UFF Relative 4-3
UFF relative file 2-2

RETENTION
Retention period 2-2

REWIND
REWIND 4-4

SEQUENTIAL
American National Standard
sequential file 2-2
GFRC Sequential 4-3
GFRC sequential file 2-2
IBM sequential file 2-2
Indexed Sequential Processor file
2-2
Series 2000 sequential file 2-2
UFF Sequential 4-3
UFF sequential file 2-2

SERIAL
Block serial number 2-7

SERIES
Series 2000 sequential file 2-2

SIZE
Control interval (physical record)
size 2-2
Maximum logical record size 2-2

SKIP
SKIP 4-3

TAKE
Option TAKE 2-8

TAPE
GFRC TAPE LABELS 6-1
TAPE DENSITY 3-5
Tape Labels 6-1

UFF
UFF Indexed 4-3
UFF indexed file 2-2
UFF Relative 4-3
UFF relative file 2-2
UFF Sequential 4-3
UFF sequential file 2-2

UNIT
UNIT RECORD DEVICES 7-1

USAGE
USAGE 3-1

HONEYWELL INFORMATION SYSTEMS
Technical Publications Remarks Form

TITLE

SERIES 60(LEVEL 66) UTL2 UTILITY ROUTINE

ORDER NO.

DC91, REV. 1

DATED

JUNE 1976

ERRORS IN PUBLICATION

Large empty rectangular box for reporting errors in the publication.

SUGGESTIONS FOR IMPROVEMENT TO PUBLICATION

Large empty rectangular box for providing suggestions for improvement to the publication.



Your comments will be promptly investigated by appropriate technical personnel and action will be taken as required. If you require a written reply, check here and furnish complete mailing address below.

FROM: NAME _____

DATE _____

TITLE _____

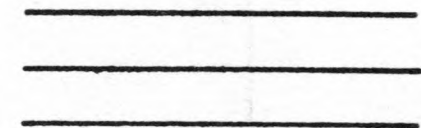
COMPANY _____

ADDRESS _____

CUT ALONG LINE

PLEASE FOLD AND TAPE –

NOTE: U. S. Postal Service will not deliver stapled forms



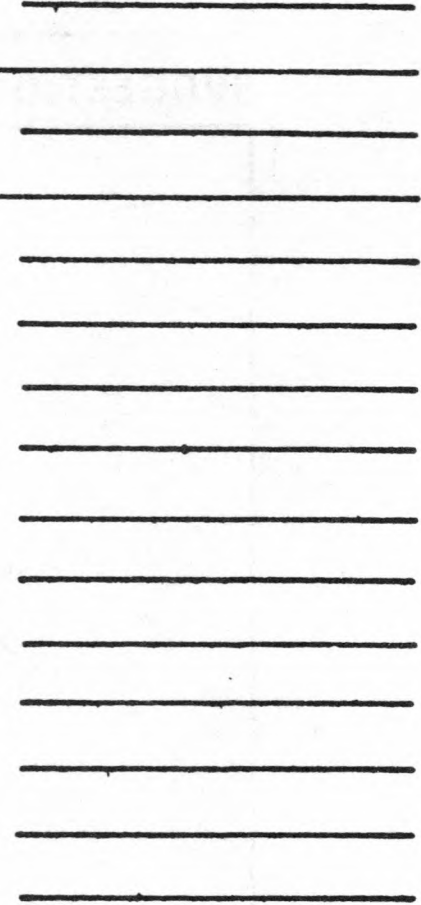
FIRST CLASS
PERMIT NO. 39531
WALTHAM, MA
02154

Business Reply Mail
Postage Stamp Not Necessary if Mailed in the United States

Postage Will Be Paid By:

HONEYWELL INFORMATION SYSTEMS
200 SMITH STREET
WALTHAM, MA 02154

ATTENTION: PUBLICATIONS, MS 486



Honeywell

CUT ALONG LINE

FOLD ALONG LINE

FOLD ALONG LINE

HONEYWELL INFORMATION SYSTEMS

Technical Publications Remarks Form

TITLE

SERIES 60 LEVEL 66 UTL2 UTILITY ROUTINE
ADDENDUM A

ORDER NO.

DC91A, REV. 1

DATED

MARCH 1978

ERRORS IN PUBLICATION

[Empty box for errors in publication]

SUGGESTIONS FOR IMPROVEMENT TO PUBLICATION

[Empty box for suggestions for improvement to publication]



Your comments will be promptly investigated by appropriate technical personnel and action will be taken as required. If you require a written reply, check here and furnish complete mailing address below.

FROM: NAME _____

DATE _____

TITLE _____

COMPANY _____

ADDRESS _____

CUT ALONG

PLEASE FOLD AND TAPE —

NOTE: U. S. Postal Service will not deliver stapled forms

FIRST CLASS
PERMIT NO. 39531
WALTHAM, MA
02154

Business Reply Mail
Postage Stamp Not Necessary if Mailed in the United States

Postage Will Be Paid By:

HONEYWELL INFORMATION SYSTEMS
200 SMITH STREET
WALTHAM, MA 02154

ATTENTION: PUBLICATIONS, MS 486

Honeywell

CUT ALONG LINE

FOLD ALONG LINE

FOLD ALONG LINE

Honeywell

Honeywell Information Systems

In the U.S.A.: 200 Smith Street, MS 486, Waltham, Massachusetts 02154
In Canada: 2025 Sheppard Avenue East, Willowdale, Ontario M2J 1W5
In Mexico: Avenida Nuevo Leon 250, Mexico 11, D.F.

21800, 1978, Printed in U.S.A.

DC91, Rev. 1