SPERRY✦UNIVAC

Product: VORTEX DISK FORMATTERS 5R2

PREFACE

This Software Release Description describes the function of a product that is released for use on all properly configured Series V75, V76, and V77 CPU'S.

This SRD is re-issued with each new release of the product which it describes.

Software Release Description........VORTEX Disk Formatters

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GENERAL INFORMATION

PRODUCT NAME: VORTEX DISK FORMATTERS
VERSION: 5R2.0   TYPE NO.:
SOFTWARE CATEGORY: 1   PROPRIETARY: NO

2.0   PRODUCT OVERVIEW

           This product is a composite release of all the VORTEX
           disc   formatters   on   a   single   media.   It   includes
           formatters for the following disk types: 2822, 2823,
           2824, 2825, 2826, 2842, 2843, 8433, F3064, F309x,
           F3359, 70-7510, 70-7530, and F3770-xx.

NEW FUNCTIONS AND ENHANCEMENTS

o FORMAT-H now zeroes out the disk pack following a
  surface analysis

o Addition of FORMAT-G for the Model G.

o FORMAT-J now supports double sided VORTEX and single sided
  IBM3740 formats.

4.C   REQUIREMENTS

4.1   SOFTWARE

            No additional software is required to support this
            release. The formatter programs may be loaded using the
            MAINTAIN III EXEC which is included in this release.

4.2   HARDWARE

            An operator console device is required at device
            address 01. Either a magnetic tape transport, a card
            reader, or a paper tape reader is required to input the
            formatter programs.

4.2.1   Memory

            There are no specific memory constraints for this
            product release.

4.2.2   WCS/FPP Boards

            WCS/FPP board configuration does not apply to this
            product release.

4.2.3   CPU Types

            This product is not dependent on any particular CPU
            types; this product is also not restricted on any CPU.

4.2.4   Peripheral and Communications Equipment

            Each formatter relates to its respective disk drive. A
            Model G disk controller must always be configured at an
            odd numbered address. This means that device address 16
            should not be used for Model G disk controllers. The
            standard address for a Model G disk controller is octal
            17.

4.2.5   Terminals

A teletype or CRT is required for operator console device.

4.3   FIRMWARE

There are no firmware requirements.

5.0   DOCUMENTATION

5.1   NEW USER GUIDES AND REFERENCE MANUALS

A user guide to the disk formatters is included as
Appendix A to the VORTEX II SYSTEM GENERATION User
Guide (UP-9083).

5.2   RELATED MANUALS

None

5.3   CHANGES TO EXISTING USER DOCUMENTATION

Additions and changes to the VORTEX II System
Generation User Guide Programmer Reference, UP9083
Revision 2 follow:

1. The following changes should be made to Section
A.5 of Appendix A:

The identification message for FORMAT-H on page A-6
is now the following:

THIS IS FORMAT-H VERSION 5R2 -- THE MODEL H DISK FORMATTER

The following should be added on page A-10 at the end
of the section on Surface Analysis:

When FORMAT-H performs a surface analysis, an extra
pass is now made in which zeroes are written onto the
pack. This eliminates the need to reformat the pack
after performing a surface analysis.

The following should be added on page A-14 at the end
of the section on Disk Modification:

Only one sector can be modified per CHGDSK command.
After the first sector has been modified, the
subsequent sectors are dumped without the option of
modifying them.

2. The following changes should be made to Section

A.7 of Appendix A:

The identification message for FORMAT-G on page A-22 should be the following:

"MODEL G DISC FORMATTER [REV. 1.0]   ENTER [HELP] OR [?] FOR ASSISTANCE"

Paragraph A.7.1 should be replaced bythe following:

"A.7.1 HELP COMMAND

The HELP command provides the operator with a descriptive list of available executive level commands and error codes. The user can type 'HELP' or '?' on the console to receive te following message:

'TURN ON SENSE SWITCH 3 TO ABORT COMMAND PROCESSING
  AFTER FG** PROMPT, ENTER ONE OF THESE COMMANDS:
    FORMAT,[CONTROLLER],[BIC],[UNIT],[INTERLEAVE]
          CONTROLLER = CONTROLLER DEVICE ADDRESS
          BIC = BIC DEVICE ADDRESS
          UNIT = DISC UNIT NUMBER (0,1)
          INTERLEAVE = SECTOR INTERLEAVE VALUE
          (DEFAULT = 3)
    RECDMP,[CONTROLLER],[BIC],[UNIT],[CYLNUM],[TRKNUM],[SECNUM],
          [# RECORDS TO DUMP]
          CONTROLLER, BIC, AND UNIT SAME AS
          FORMAT
          CYLNUM = STARTING CYLINDER NUMBER
          TRKNUM = STARTING TRACK NUMBER
    CHGATA,[CONTROLLER],[BIC],[UNIT],[INTERLEAVE],[OAT],[NAT]
          CONTROLLER, BIC, AND UNIT SAME AS
          FORMAT
          OAT = ORIGINAL ALTERNATE TRACK NUMBER
          NAT = NEW ALTENATE TRACK NUMBER
ENTER CARRIAGE-RETURN TO CONTINUE HELP FILE'

Since the HELP message can not fit on the screen at one time, it has been broken up into two messages. When the user hits the carriage return key, the remainder of the HELP message is printed as follows:

```
'MRYDMP,[FWA],[LWA]
        FWA  =  FIRST WORD ADDRESS OF MEMORY TO
        DUMP
        LWA  = LAST WORD ADDRESS OF  MEMORY  TO
        DUMP
ERROR CODES:
    FG00 UNIT NOT READY OR WRITE PROTECTED
    FG01 COMMAND SYNTAX ERROR
    FG02 COMMAND PARAMETER ERROR
    FG03 HARDWARE MALFUNCTION
    FG04 READ/WRITE I/O ERROR
    FG05    DATA    VERIFICATION    ERROR    DURING
ANALYSIS' "
```

3. The following should replace Section A.7.2.7 I/O
Request Errors on page A-26:

A.7.2.7 I/O Request Errors

If any I/O request to the disk fails for any reason,
a message of one of the following types will appear
on the console:

Error Message	Description
FG01	Command syntax error
FG02	Command parameter error
FG03,DUG,YYYYYY	Hardware malfunction reported by controller
FG04,cyl,trk,sect	Read/Write I/O Error

A.7.2.7.1 FG03 Error, Hardware Malfunction

An FG03 error message is an indication of a hardware
malfunction reported by the controller. It has the
following form:

        FG03,DUG,YYYYYY

where:

    D
        is the symbol for a disk.

U
        is the disk unit number.

. G
        is the disk model code.

YYYYYY
        is the disk controller status word.

                Disk Controller Status Word Format

    15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
    +------------------+-----+-----------+----------+
    | |Disk | | |
    | Non Fatal |Drive| Error | Error |
    | Errors |Size | Class | Number |
    +------------------+-----+-----------+----------+

        Bits   Description

        15   Not used
        14   Corrected data error
        13   Header ECC error
        12   Not used
        11   Not used
        10   Not used
        9-8   Disk drive size - Bits 98   Capacity
                                        00   14 heads   112 MB
                                        01   10 heads   78 MB
        7-4   Error class
                            0 - not used
                            1 - parameter and information errors
                            2 - BIC and memory errors
                            3 - disk drive errors
                            4 - controller errors
                            5 - loop back test errors
                            6 - drive test errors
        3-0   Error number within the class

Error Class	Error Number	Octal Code	Description
1 Parameter & Information Errors	1	21	Invalid cylinder address
	2	22	Invalid head address
	3	23	Invalid sector address
	4	24	Invalid transfer count
2 BIC and Memory Errors	1	41	BIC not active
	2	42	DMA timeout
	3	43	Memory parity error
	4	44	DMA map error
3 Disk Drive Errors	1	61	Disk drive select failure
	2	62	Seek timeout
	3	63	Drive fault
	4	64	Seek error
	5	65	Dual port select timeout
	6	66	Drive not on cylinder
	7	67	Drive not ready
	8	70	Select failure at seek completion
	9	71	Write protect error
	10	72	Disk drive is sectored incorrectly
4 Controller Errors	1	101	End of track
	2	102	Programmatic command abort
	3	103	*Header compare error
	4	104	*Defective track
	5	105	Sector not found
	6	106	*Uncorrectable ECC error
	7	107	**Controller RAM parity error
5 Loop Back Test Errors	1	121	Word ready latch error
	2	122	ECC generator error
	3	123	Disk status signal error
	4	124	Bit counter error
	5	125	Data bus error
	6	126	Sync detect error
6 Drive Test	1	141	Drive test timeout error
	2	142	Drive test bad sector size

Notes: The following notes apply only to disk formatting.

* Recoverable error. Formatter program will assign an alternate sector.

** Unrecoverable error.

All other errors, if persistent, will require investigation by Sperry Univac Customer Engineering personnel.

A.7.2.7.2 FG04, Read/Write I/O Error

An FG04 error message is an indication of a read/write I/O error to a disk sector. It has the following form:

        FG04,cyl,trk,sect

where:

        cyl
            is the cylinder number.

        trk
            is the track number.

        sect
            is the sector number.

5.4   LIST OF DOCUMENTATION SHIPPED WITH THE PRODUCT

The VORTEX II SYSTEM GENERATION User Guide is shipped with this product.

6.0   GUIDELINE AND LIMITATIONS

FORMAT-H no longer writes the boot program onto the
disk as part of the format operation. The user must now
request a boot write operation be performed after the
disk has been formatted.

The following information is provided to clarify
FORMAT-G. Only tracks with non-ECC correctable errors
are listed on OC device. All tracks with bad spots,
including ECC correctable errors, are listed on LO
device. The track list output by SYSGEN only reflects
bad tracks which occur in partitioned areas.

KNOWN PROBLEMS AND RESTRICTIONS

A. KNOWN PROBLEMS

1. When using the DSKDMP and CHGDSK commands in FORMAT-G, FORMAT-H, and FORMAT-J if the ending address is less than the starting address, the program will go into an infinite loop.

2. The CHGDSK command only allows the user to modify one sector per command entry.

3. When using the "F309x and F3359" disk formatter the prompt "IS THIS A 20 MB FIXED DISK?" should be interpreted to mean "IS THIS THE 15 MB PORTION OF A 20 MB DISK?".

4. FORMAT-J copy command does not work properly.

5. FORMAT-G decimal values do not work. Octal values must be specified instead.

8.0   ERROR REPORTING PROCEDURE

             Users discovering errors or deficiencies in the
             performance of the software beng released should
             communicate this information to the local Sperry
             Univac Branch office, using a Software User Report
             (SUR), Form UD1-745, to describe the problem
             encountered. SURs must be accompanied by
             appropriate documentation, such as system console
             printouts or legible notes. They should also
             include the release number, along with a clear
             description of the problem.

             The local Sperry Unival personnel will verify that
             the errors in question are adequately documented
             and forward the SUR to:

                  Sperry Univac MCO

             Field Support: SUR Coordinator 6275

                  2722 Michelson Drive

                  Irvine, CA 92713

9   CONTENTS OF RELEASE PACKAGE

9.1   GENERATION MEDIA

        The VORTEX Disk Formatters release media consists
        of a single magnetic tape. The   tape is a 9-track
        tape with a density of 800 bpi. The programs can
        also be ordered on a 9-track, 1600 bpi tape or a
        7-track, 556 bpi tape. The programs can also be
        ordered on cards or on paper tape.

9.2   CONTENTS OF THE GENERATION MEDIA

        The release tape contains eight files. The first
        file contains the object code for MAINTAIN III.
        The other seven files contain the object code for
        the disk formatter programs in MAINTAIN III
        format. The order of the files is as follows:

        FILE   CONTENTS   DISK TYPES

        1   MAINTAIN III EXEC.
        2   FORMAT-G   F3770-XX
        3   FORMAT-H   2825,2826,2842,2843,8433
        4   FORMAT-F   F309x,F3359
        5   FORMAT-J   F3064
        6   FORMAT-34   70-7510
        7   FORMAT-35   2822
        8   FORMAT-E   2823,2824,70-7530

9.3   DOCUMENTATION

        The documentation to be shipped with the release tape
        consists solely of the Software Release Description.

10.0   INSTALLATION PROCEDURE

For program loading, the MAINTAIN III Executive,
which is the first file of the release tape, is
first. loaded using the appropriate bootstrap
routine. The operator then enters the following
instructions:

        Fm,n

and

        Ln[,BIC].

where m is the number of files on the release tape
preceding the file containing the appropriate
formatter program, and n is the magnetic tape
controller number. BIC is the even BIC device
address for the magnetic tape drive and need only
be included if a Bristol magnetic tape drive is
being used.

NEW OR REPLACED MODULES

This new release adds the V$FMTG module which is the MODEL G
Formatter. Alse included is an enchanced version of FORMAT-J
which.additionally supports single-sided IBM3742 format.

12.0   CLOSED SURs

         None.