

TEXT LISTING

068-000673-01

PROGRAM

CARTRIDGE DISKETTE DISK
FORMATTER PROGRAM

TEXT TAPE

097-000673-01

ABSTRACT

THE CARTRIDGE DISKETTE DISK FORMATTER PROGRAM IS A UTILITY PROGRAM DESIGNED TO FORMAT AND CHECK DISK PACKS TO BE USED ON THE ABOVE DISK SYSTEMS. THE PROGRAM IS !NOT! A MAINTENANCE PROGRAM AND ASSUMES THE HARDWARE TO BE IN WORKING ORDER. THE PROGRAM WILL, ON DETECTING A NON-DATA RELATED ERROR, PRINT THE ERROR INFORMATION AND TAKE THE CORRESPONDING UNIT OFFLINE.

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MACRO REV 06.30

00:50:31 03/27/79

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PROGRAM NAME: CDFP.SR
CARTRIDGE DISKETTE DISK FORMATTER PROGRAM

REVISION HISTORY:

01 FIX ALL OUTSTANDING PROBLEMS
UPDATE FOR DTOS I/O MODULES

MACHINE REQUIREMENTS:

NOVA, UNOVA OR ECLIPSE FAMILY PROCESSOR
16K READ/WRITE MEMORY
CARTRIDGE/DISKETTE CONTROLLER &
CARTRIDGE DRIVE TYPE 4234
CARTRIDGE STORAGE MEDIA TYPE 4234C OR 4234D
*** OR ***
CARTRIDGE/DISKETTE CONTROLLER &
DISKETTE DRIVE TYPE 6031 OR 6030
DISKETTE STORAGE MEDIA 1098A
OR
6095 - 10 MEGABYTE DISK SYSTEM (UNOVA)

TEST REQUIREMENTS: N/A

SUMMARY:

THE CARTRIDGE DISKETTE DISK FORMATTER PROGRAM IS A
UTILITY PROGRAM DESIGNED TO FORMAT AND CHECK DISK
PACKS TO BE USED ON THE ABOVE DISK SYSTEMS.
THE PROGRAM IS NOT A MAINTENANCE PROGRAM
AND ASSUMES THE HARDWARE TO BE IN WORKING ORDER.
THE PROGRAM WILL, ON DETECTING A NON-DATA
RELATED ERROR, PRINT THE ERROR INFORMATION AND TAKE
THE CORRESPONDING UNIT OFFLINE. IF MORE THAN ONE
UNIT WAS CONFIGURED, THE PROGRAM WILL CONTINUE FORMAT-
TING AND/OR TESTING THE REMAINING UNITS. IF ONLY
ONE UNIT WAS CONFIGURED OR IF ALL CONFIGURED UNITS
HAVE ENCOUNTERED NON-DATA ERRORS THE PROGRAM
WILL PAUSE PENDING OPERATOR INTERVENTION.

THE CONTROL CAN BE ANY DEVICE 20-76 OCTAL
THE DEFAULT IS 33 ## SEE 9.

RESTRICTIONS: N/A

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PART NUMBER: 097-000673

NAME: CDFP.TX
DESCRIPTION: CARTRIDGE DISKETTE DISK FORMATTER PROGRAM

REVISION HISTORY:

REV. DATE

00 04/21/78

01 03/02/79

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01 ?7.0 PROGRAM DESCRIPTION/THEORY OF OPERATION:
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A. FORMATTER PROGRAM (STARTING ADDRESS <SA> 500)
THE DISK IS FIRST FORMATTED AFTER WHICH A FORMAT DONE
MESSAGE IS PRINTED. THEN A 155555 PATTERN IS WRITTEN
TO THE ENTIRE PACK AND READ BACK 2 TIMES; AT WHICH
TIME THE PROGRAM EXECUTES A RANDOM CYLINDER/RANDOM
SECTOR SEEK EXERCISER CONSISTING OF 750 SEEK/
READS FOR ADDRESS VALIDATION PRIOR TO PRINTING
"PASS". THE DATA PATTERN IS THEN ROTATED 1 BIT
AND THE WRITE/READ/READ PROCESS IS REPEATED.

IT IS RECOMMENDED THAT AT LEAST 4 PASSES (WRI/REA/REA)
BE ALLOWED TO INSURE PACK QUALITY. IF TIME PERMITS,
LONGER RUNS WILL FURTHER INSURE QUALITY.

ANY HARD DATA OR ADDRESS ERRORS WILL BE LOGGED AS
BAD SECTORS. ANY "SOFT DATA" OR "ADDRESS ERROR"
ADDRESS ENCOUNTERED TWICE WILL BE LOGGED AS BAD SECTORS.
ANY OTHER ERROR WILL CAUSE THE PROGRAM TO PRINT THE
FAILURE TO THE TTY AND TAKE THE CORRESPONDING UNIT
OFFLINE. IF NO UNITS REMAIN TO BE TESTED THE PROGRAM
WILL PAUSE PENDING OPERATOR INTERVENTION, OTHERWISE
TESTING WILL RESUME ON THE REMAINING UNITS.
THIS PROGRAM IS NOT INTENDED TO BE A RELIABILITY FOR
THE DISK SYSTEM AND IN GENERAL ASSUMES THE CONTROL AND
DRIVE TO BE IN WORKING ORDER.

A HARD ADDRESS ERROR IS DEFINED AS SUCH AFTER TWO
ATTEMPTS HAVE BEEN MADE BOTH RESULTING IN AN ADDRESS
ERROR. A HARD DATA ERROR IS DEFINED AS SUCH AFTER
2 OR MORE OF 10 READ TRIES HAVE BEEN UNSUCCESSFUL.

B. CHECK PROGRAM ONLY (SA 501)
SAME AS SA 500 EXCEPT THAT INITIAL PACK FORMAT
OPERATION IS BYPASSED.

B1. STATISTICS
TYPE L FOR 1ST 100. DISK ADDRESSES OF BAD SECTORS,
DATA AND ADDRESS ERRORS.

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C. COMMAND STRING INTERPRETER (SA 502)
AS A TROUBLE SHOOTING AID THE SERVICE ENGINEER
MAY TYPE IN HIS OWN TEST LOOP. AFTER STARTING
AT 502, THREE ARGUMENTS MUST BE ENTERED IN
RESPONSE TO THREE PROGRAM QUESTIONS; "UNIT",
"DATA", AND "COMMAND STRING". ALL NUMBERS MUST
BE ENTERED IN OCTAL.

I. UNIT: TYPE UNIT # OR CARRIAGE RETURN
TO USE THE PREVIOUS ENTRY

II. DATA: RAN-RANDOM
AL=ALL ONES
ALZ=ALL ZEROS
PAT=110110
FLZ=FLOATING ZERO PATTERN
ADR=ALTERNATING CYLINDER AND
HEAD. SECTOR WORDS
VAP=EXISTING WORDS ENTERED
PREVIOUSLY AS DESCRIBED BELOW
ALTERNATIVELY ENTER A STRING OF UP
UP TO 7 OCTAL 16 BIT WORDS TO BE
USED AS DATA. THE WORDS ENTERED
ARE USED REPEATEDLY TO MAKE UP A
SECTOR BLOCK. TYPE CARRIAGE TO
USE THE PREVIOUS ENTRY.

III. COMMAND STRING:

OPTIONS 1. READ HEAD,SECTOR,#SECTORS
2. WRITE SAME
3. SEEK CYLINDER
4. RECALIBRATE
5. LOOP (GO TO BEGINNING OR LR)
6. DELAY N (N=DELAY IN MS)
7. LR (BEGIN LOOP HERE)
8. FORMAT CYL,HD,SECTOR
9. TYPE CARRIAGE RETURN TO USE THE
PREVIOUS COMMAND STRING,UNIT,OR
DATA.
10. TYPE ESCAPE TO BYPASS UNIT & DATA
PROMPT TO COMMAND STRING PROMPT,
& DATA.
11. TYPE ANY KEY TO INTERRUPT EXECUTION
OF CURRENT COMMAND AND RETURN TO
UNIT#.
12. TYPE A "*" TO ENTER ODT

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NOTE THAT EITHER SPACES OF A COMMA MAY BE USED AS AN ARGUMENT DELIMITER. EACH RESPONSE IS TERMINATED BY TYPING CARRIAGE RETURN. IF MORE ROOM IS NEEDED ON A LINE, TYPE LINE FEED TO SPACE TO THE NEXT LINE. THE WORD "SAME" USED WITH READ, OR WRITE, WILL CAUSE THE PREVIOUS DISK ADDRESS PARAMETERS TO BE USED.

SHOULD COMMAND STRING ENTRIES EXCEED INPUT BUFFER CAPACITY, THE PROGRAM RESPONDS WITH THE MESSAGE "INPUT OVERFLOW". THE OPERATOR MUST DEPRESS ONE OR MORE "REBOOTS" FOLLOWED BY A "CR" TO POSITION THE BUFFER POINTER TO THE LAST VALID COMMAND IN THE STRING AND BEGIN EXECUTION.

AN "R" TYPED WHILE A STRING IS BEING EXECUTED WILL CAUSE THE PROGRAM TO RETURN TO COMMAND STRING START. THE ESCAPE KEY WILL BYPASS UNIT AND DATA PROMPTS TO THE COMMAND STRING PROMPT.

THE FOLLOWING EXAMPLE WOULD CAUSE UNIT 1 TO SEEK CYLINDER 50, THEN REPEATEDLY WRITE SECTORS 2 AND 3 OF HEAD 1, THEN READ IT BACK AND CHECK. DATA IS SPECIFIED AS ALTERNATE WORDS OF ZEROS THEN ONES.

UNIT: 1
DATA: 0,177777
COMMAND STRING: SEEK 50 LR WRITE 1,2,2 READ SAME LOOP

D. ERROR LOG RECOVERY (SAS03)
THE ERROR LOG MAY BE RECOVERED AT THIS STARTING ADDRESS. THE OPERATOR MUST NOT RESTART THE PROGRAM AT ANY OTHER ADDRESS PRIOR TO RECOVERING THE LOGS AS THE LOGS ARE INITIALIZED AT RESTART.

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SWITCH SETTINGS

LOCATION "SWREG" IS USED TO SELECT THE PROGRAM OPTIONS (NOT SYSTEM CONFIGURATION). WHILE RUNNING UNDER DTOS, THIS LOCATION WILL BE LOADED BY THE MONITOR. HOWEVER, UNDER STAND ALONE AND PROGRAM LOAD MODES THIS LOCATION WILL BE SET ACCORDING TO THE ANSWERS SUPPLIED BY THE OPERATOR. IN ANY CASE THE OPTIONS CAN BE CHANGED OR VERIFIED BY USING ONE OF THE COMMANDS GIVEN IN SEC. 8.3.

SWITCH OPTIONS
DIFFERENT BITS AND THEIR INTERPRETATION AT LOCATION "SWREG" IS AS FOLLOWS:

BIT	OCTAL VALUE	BINARY VALUE	INTERPRETATION
1	40000	1	LOOP ON ERROR SKIP LOOPING ON ERROR
2	20000	0	PRINT TO CONSOLE ABORT PRINT OUT TO CONSOLE
5	02000	1	DO NOT PRINT ON THE LINE PRINTER PRINT ON THE LINE PRINTER

SWITCH COMMANDS

ONCE THE PROGRAM STARTS EXECUTING THE STATE OF ANY OF THE BITS CAN BE CHANGED BY HITTING KEYS 1-9, A-F. THE PROGRAM WILL CONTINUE RUNNING AFTER UPDATING THE OPTIONS EACH KEY WILL COMPLETE THE STATE OF THE BIT AFFILIATED WITH IT, THUS BIT 4 CAN BE ALTERED BY HITTING KEY 4. SETTING OF ANY BIT OF LOCATION "SWREG" WILL SET BIT 0. (DEFAULT MODE IS DEFINED AS ALL BITS OF SWREG SET TO 0)

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10.4 OTHER COMMANDS (* = CONTROL KEY)
 "CR" A "RETURN" CAN BE TYPED TO CONTINUE THE PROGRAM AFTER ITS LOCKED IN A SWITCH MODIFICATION MODE.
 *D THIS COMMAND GIVEN AT ANY TIME WILL RESET "SWREG" TO DEFAULT MODE AND RESTART THE PROGRAM.
 *R THIS COMMAND GIVEN AT ANY TIME WILL RESTART THE PROGRAM. SWITCHES ARE LEFT WITH THE VALUES THEY HAD BEFORE THE COMMAND WAS ISSUED.
 *O THIS COMMAND GIVEN AT ANY TIME WILL CAUSE THE PROGRAM CONTROL TO GO TO ODT (NOTE: THIS IS AN OPTIONAL COMMAND AND IS AVAILABLE ONLY IF ODTPK IS PRESENT)
 M THIS COMMAND GIVEN AT ANY TIME WILL PRINT THE CURRENT OPERATING MODES.
 0 THIS COMMAND GIVEN AT ANY TIME WILL LOCK THE PROGRAM INTO SWITCH MODIFICATION MODE WHERE MORE THAN 1 BIT CAN BE CHANGED.

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19.0 OPERATION PROCEDURE/OPERATOR INPUT:
 A. VERIFY DRIVE (DRIVES) ARE READY ON-LINE
 B. LOAD PROGRAM USING BINARY LOADER
 C. RESET, LOAD ONE OF THE STARTING ADDRESSES SHOWN BELOW INTO THE DATA SWITCHES AND HIT START.
 STARTING ADDRESS (SA)
 4 SET DISK CONTROL ADDRESS TO OTHER THAN 33
 11 OUT - DIRECT ENTRY ONLY
 200 FORMATTER/CHECK PROGRAM
 500 CHECK PROGRAM ONLY
 501 CHECK PROGRAM ONLY
 502 COMMAND STRING INTERPRETER
 503 ERROR LOG RECOVERY (SEE 7.0)
 INITIALLY, THE OPERATOR IS REQUESTED TO ENTER A TTY BAUD RATE (NO RTC PRESENT) FOR TIMING, DATE -DAY, MONTH, YEAR, HOUR, & MINUTE (A [CR] RESPONSE WILL IGNORE THIS ROUTINE), # PASSES FOR FORMAT COMPLETION (IF [CR] IS GIVEN THIS ROUTINE IS BYPASSED), AND (UNIT#,MIN SURFACE,MAX SURFACE) FOR EACH UNIT TO BE TESTED OR (UNIT#,F) IF FLOPPY. EX: 0,0,3 1,F 2,0,3 ETC. SUBSEQUENT PROGRAM RESTARTS MAY USE PREVIOUSLY ENTERED PARAMETERS FOR UNIT#'S & RANGE BY TYPING A "CR" IN RESPONSE TO MESSAGE PROMPT.
 OPERATOR INPUT CONTROLLED PRINTOUTS ARE AS FOLLOWS:
 L = FIRST 100. BAD SECTORS, DATA, OR ADDRESSES
 10.0 PROGRAM OUTPUT/ERROR DESCRIPTION:
 1. ERRORS- ERROR STATUS IS PRINTED WHENEVER ENCOUNTERED. WHEN DATA ERRORS ARE FOUND ONLY THREE ARE PRINTED PER ENCOUNTER. (SEE PARAGRAPH 10.3)
 2. IF ERRORS ARE ENCOUNTERED MORE THAN ONCE, A COUNT WILL BE RECORDED AND ERROR IS LOGGED AS A BAD SECTOR. ALL ADDRESS INFO. WILL BE PRINTED IN OCTAL.
 3. ERROR REPORTING AND RECOVERY
 ALL ERRORS ARE IDENTIFIED, AND THE PROGRAM IS ROUTED VIA BASE TO A CALL TO CKSW. WITH THE EXCEPTION OF ADDRESS AND DATA ERRORS THE PROGRAM WILL THEN LOOP FOR OPERATOR INTERVENTION, ON THE BASIS OF SWPAK (SEE 8.)
 RECALIBRATE- ANY UNUSUAL STATUS IS REPORTED IMMEDIATELY AND AN ERROR RETURN EXECUTED.
 SEEK- POSITIONER FAULT STATUS RESULTS IN STATUS PRINTOUT AND ERROR RETURN.
 WRITE- FOLLOWING "DONE" ON A WRITE, ERRORS ARE CHECKED IN THE SEQUENCE SHOWN BELOW. ERROR RECOVERY PROCEDURE IS OUTLINED FOR EACH CASE.
 IF THE ERROR IS NOT PRESENT THE NEXT CHECK IS MADE.

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01 "LF" LINE FEED IS USED TO CLOSE THE OPEN CELL WITH
02 OR WITHOUT MODIFICATION AND TO OPEN THE SUC-
03 CCEEDING CELL.
04 ^ CLOSE THE OPEN CELL WITH OR WITHOUT MODIFICATION
05 / AND OPEN THE PRECEDING CELL
06 / CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
07 / OPEN THE CELL POINTED TO BY ITS CONTENTS.
08 / + "ADR"/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
09 / - "ADR"/ OPEN THE CELL POINTED TO BY ITS CONTENTS + "ADR"
10 / ^ "ADR"/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
11 / ^ "ADR"/ OPEN THE CELL POINTED TO BY ITS CONTENTS - "ADR"
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SPECIAL NOTES/SPECIAL FEATURES:

1. THE PROGRAM IS NOT A MAINTENANCE PROGRAM AND ASSUMES THE HARDWARE TO BE IN WORKING ORDER.
2. IT IS RECOMMENDED THAT AT LEAST 4 PASSES (WRI/REA/AREA) BE ALLOWED TO INSURE PACK QUALITY. IF TIME PERMITS, LONGER RUNS WILL FURTHER INSURE QUALITY.
3. READ, WRITE AND SEEK OPERATIONS ARE TIMED BY SPECIAL ROUTINES. WHEN THE PROGRAM IS FIRST STARTED, THE TIMING ROUTINE WILL TEST FOR THE PRESENCE OF A REAL TIME CLOCK (RTC) TO DERIVE TIMING FROM IT. IF NO RTC IS PRESENT, THE PROGRAM WILL TYPE "TTO BAUD RATE". THIS MESSAGE REFERS TO THE BAUD RATE OF THE CONSOLE TERMINAL (DEVICE 10 & 11). TYPE IN THE BAUD RATE. IF A TYPING ERROR OCCURS IN THE BAUD STRING (BEFORE THE CARRIAGE RETURN), SIMPLY TYPE A NON-NUMERIC CHARACTER AND THE REQUEST FOR THE BAUD RATE WILL BE REPEATED. IF THE CARRIAGE RETURN HAS BEEN GIVEN AFTER A TYPING ERROR, RELOAD THE PROGRAM.

PROGRAM RUNTIME:

PROGRAM RUNTIMES ARE SUBSTANTIALLY REDUCED WITH MEMORIES OF 16K OR LARGER.

TYPICAL RUNTIME (4 PASSES) IS APPROXIMATELY 12 MINUTES FOR A SINGLE DRIVE, TWO SURFACES USING A NOVA 3 CPU.

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111.3.2 MODIFICATION OF A CELL
ONCE A CELL HAS BEEN OPENED ITS CONTENTS CAN BE MODIFIED BY TYPING THE NEW VALUE THE CELL IS TO CONTAIN IN THE FORM OF AN OCTAL EXPRESSION FOLLOWED BY "CR" OR "LF". IF A + OR - IS TYPED AS THE FIRST CHARACTER OF THE EXPRESSION THEN THE VALUE OF THE EXPRESSION IS ADDED TO OR SUBTRACTED FROM THE OLD CONTENTS OF THE CELL. THE ADDRESS ITSELF OR AN EXPRESSION RELATIVE TO THE ADDRESS CAN BE DEPOSITED BY TYPING A " " OR " " .+/-OCTAL EXPRESSION. A RUBOUT COMMAND GIVEN RIGHT AFTER OPENING A CELL ALLOWS THE MODIFICATION OF ITS CONTENTS AS IF THEY WERE TYPED IN JUST BEFORE THE COMMAND WAS ISSUED.
111.3.3 OTHER ODT COMMANDS
RUBOUT THIS KEY IS USED TO DELETE ERRONEOUSLY TYPED DIGITS. EACH TIME THE KEY IS PRESSED THE RIGHT M DIGIT IS DELETED AND ECHOED ON THE TERMINAL. IF THE RUBOUT KEY IS PRESSED RIGHT AFTER OPENING A CALL THEN IT DELETES THE RIGHT MOST DIGIT OF THE CONTENTS. THIS ALLOWS THE MODIFICATION OF THE CE AS IF ITS CONTENTS WERE TYPED IN JUST BEFORE THE KEY WAS PRESSED.
"ADR"B INSERT A BREAK POINT AT LOCATION "ADR". ONLY ONE BREAK POINT CAN BE INSERTED AND ANY ENTRY TO ODT AFTER EXECUTING A BREAK POINT WILL CAUSE IT TO BE DELETED.
D DELETE THE BREAK POINT IF ANY.
P RESTART THE EXECUTION OF THE PROGRAM AT LOCATION POINTED BY 4A.
"ADR"R START EXECUTING THE PROGRAM AT "ADR" AFTER AN IO-RESET.
K KILL THE STRING TYPE SO FAR. THE ODT RESPONDS WITH A "2" AND THE OPEN CELL IS CLOSED WITHOUT MODIFICATION.
= PRINT THE OCTAL VALUE OF THE INPUT ONLY. THIS WILL CLOSE ANY OPEN CELLS WITHOUT MODIFICATION AND WILL NOT OPEN A CELL.
NOTE: IN PROGRAMS WITH RELOCATE THEMSELVES THE USER SHOULD PLACE BREAK POINTS ONLY IN THE ORIGINAL PROGRAM AREA. IF A BREAK POINT IS PLACED OUTSIDE THIS AREA THE RESULTS WILL BE UNPREDICTABLE.

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**00000 TOTAL ERRORS, 00000 PASS 1 ERRORS