

HEWLETT  PACKARD

MANUAL SUPPLEMENT
DIAGNOSTIC PROGRAM PROCEDURES
for
12606A
DISC MEMORY INTERFACE KIT

TABLE OF CONTENTS

Section	Page	Section	Page
I	GENERAL INFORMATION		
1-1.	Introduction	3-7.	Core Requirements for Test Program
1-3.	Equipment Required	3-9.	Octal Notation
1-4.	Instruments	3-11.	Looping Read or Write Routines
1-5.	Accessories	3-13.	Varied Test Patterns
1-6.	Diagnostic Tape and Programs	3-15.	Execution Message Suppression
		3-17.	Reading or Writing Blocks
		3-21.	Parameter Split Between Lines
		3-25.	Counting Errors Without the Teleprinter
II	PREPARATION	3-28.	Returning to "BINARY TEST PATTERN?"
2-1.	Introduction	3-30.	Glossary of Diagnostic Messages
2-3.	Printed Circuit Cards	3-59.	Switch Register Control Settings
2-4.	Punched Tape Reader Card		
2-6.	Teleprinter Card	IV	TEST PROCEDURE
2-8.	Disc Controller Cards	4-1.	Enabling and Loading
2-10.	Cables	4-3.	Track-Protect Test
2-11.	Interface Cable	4-5.	Track Address Test
2-13.	Power Interconnecting Cables	4-13.	Read/Write Test
2-15.	Main Power Cable	4-32.	Sector Timing Test
2-17.	Disc Memory	4-34.	Power Failure Tests
		4-36.	Power Failure, Read Cycle
		4-38.	Power Failure, Write Cycle
III	TEST INFORMATION		
3-1.	Introduction		
3-3.	Number of Tracks		
3-5.	Data Transfer Block Sizes		

LIST OF TABLES

Table	Title	Page	Table	Title	Page
3-1.	Table of Disc Memory Tracks	3-1	3-4.	Table of Control Settings for Looping Routines	3-1
3-2.	Table of Core Memory Data Transfer Block Capacity	3-1	3-5.	Table of Switch Register Control Settings	3-3
3-3.	Table of Core Requirements for Test Programs	3-1			

SECTION I

GENERAL INFORMATION

1-1. INTRODUCTION.

1-2. This is a diagnostic test program. It contains a series of routines that test the reliability of all program-mable features of a Hewlett-Packard 12606A Disc Memory Interface Kit and either an HP 2770A, 2770A-01, 2771A, or 2771A-01 Disc Memory.

1-3. EQUIPMENT REQUIRED.

1-4. INSTRUMENTS:

- a. Computer: HP computer with DMA option.
- b. Teleprinter: HP 2752A or equivalent.
- c. Punched Tape Reader: HP 2737A or equivalent.
- d. Disc Memory: HP 2770A, 2770A-01, 2771A, or 2771A-01.
- e. Disc Memory Power Supply: HP 2772A.

1-5. ACCESSORIES:

- a. Teleprinter Interface Kit, HP 12531B.
- b. Punched Tape Reader Interface Kit, HP 12532A.

c. Data Channel Interface Card, HP 12606-6001.

d. Command Channel Interface Card, HP 12606-6002.

e. Interface Cable, HP 12606-6003.

f. Main Power Cable, HP 8120-0078.

g. AC Power Interconnecting Cable, HP 02770-6003.

h. DC Power Interconnecting Cable, HP 02772-6003.

1-6. DIAGNOSTIC TAPE AND PROGRAMS:

a. Diagnostic Tape, HP 20346B.

b. SIO Buffered Teleprinter Driver:

4K Memory — HP 20322A

8K Memory — HP 20323A

16K Memory — HP 20330B

c. SIO Buffered Punched Tape Reader Driver:

4K Memory — HP 20303A

8K Memory — HP 20306A

16K Memory — HP 20319A

SECTION II

PREPARATION

2-1. INTRODUCTION.

2-2. This section contains instructions for assembling a complete disc memory system of Hewlett-Packard components.

2-3. PRINTED CIRCUIT CARDS.

CAUTION

Turn off computer power before removing or inserting cards to prevent damage to cards, computer, or both.

2-4. PUNCHED TAPE READER CARD.

2-5. Insert punched tape reader interface card into an appropriate I/O slot in the computer.

2-6. TELEPRINTER CARD.

2-7. Insert teleprinter interface card into an appropriate I/O slot in the computer.

2-8. DISC CONTROLLER CARDS.

2-9. Insert the data channel and command channel interface cards into any two adjacent I/O slots with the 12606-6001 card in the higher priority location of the two. The track-protect switch will be located between the interface cards when they are correctly inserted. Interrupt priority to the disc controller interface cards is not necessary.

2-10. CABLES.

2-11. INTERFACE CABLE.

2-12. Connect the Interface Cable (12606-6003) from the interface cards to the disc memory.

CAUTION

Do not connect the AC Power Interconnecting Cable (02770-6003) to a power source other than the disc memory power supply (connector J2).

2-13. POWER INTERCONNECTING CABLES.

2-14. Connect the DC Power Interconnecting Cable (02772-6003) and the AC Power Interconnecting Cable (02770-6003) between the disc memory and the disc memory power supply.

2-15. MAIN POWER CABLE.

2-16. Connect the Main Power Cable (8120-0078) from the disc memory power supply to 115 volts ac.

2-17. DISC MEMORY.

2-18. Turn on the disc memory power supply and the computer.

2-19. Adjust the helium pressure to the disc memory as follows:

a. Read the low pressure gauge on the regulator, visible from the right side of the disc memory; pressure should be 1/4 psi to 1/2 psi, cold.

b. If necessary, adjust the helium pressure by bleeding; bleed by pulling down on the plunger valve located on the chassis, above and in front of the low pressure gauge. Helium pressure will rise as the disc warms up.

SECTION III

TEST INFORMATION

3-1. INTRODUCTION.

3-2. This section contains general instructions and tables to be used with the test procedures in Section IV.

3-3. NUMBER OF TRACKS.

3-4. Data is stored on the disc in parallel on double-circle tracks. Each track contains 90 (132 octal) sectors and each sector 64 words. Each word has 16 bits plus a parity bit. To determine the number of tracks in a given disc memory, note the HP Model number on the back of the top plate, next to the pressurized housing, and compare it to those listed in table 3-1.

Table 3-1. Table of Disc Memory Tracks

HP MODEL NUMBER	NUMBER OF TRACKS
2770A	32 (40 octal)
2770A-01	64 (100 octal)
2771A	64 (100 octal)
2771A-01	128 (200 octal)

3-5. DATA TRANSFER BLOCK SIZES.

3-6. Table 3-2 lists the capacity of various core memories to store data en bloc. This characteristic of a core memory limits the quantity of data that can be written into the disc memory or read out of it in a single block.

Table 3-2. Table of Core Memory Data Transfer Block Capacity

CORE MEMORY SIZE	DATA TRANSFER BLOCK SIZE
4096 (4K) 16 bit words	11 (13 octal) sectors or 704 words
8192 (8K) 16 bit words	74 (112 octal) sectors or 4,736 words
16,384 (16K) 16 bit words	90 (132 octal) sectors or 5,760 words

3-7. CORE REQUIREMENTS FOR TEST PROGRAM.

3-8. Table 3-3 lists the core locations that will be used by the diagnostic test program.

3-9. OCTAL NOTATION.

3-10. While this diagnostic test program is running, all numbers contained in input parameters or output messages are expressed in octal notation.

Table 3-3. Table of Core Requirements for Test Programs

CORE MEMORY SIZE	LOCATIONS
All Sizes	000100 – 001726
All Sizes	002000 – 005737
PLUS ONE OF THE FOLLOWING	
4096 (4K) 16 bit words	007235 – 007677
8192 (8K) 16 bit words	017235 – 017677
16,384 (16K) 16 bit words	037235 – 037677

3-11. LOOPING READ OR WRITE ROUTINES.

3-12. Since some errors may not appear until after the disc has been running for several minutes, both read and write routines should be set to loop for at least 10 minutes when conducting any test (see table 3-4). The status of both read and write routines is shown by indicator lights on the computer. Indicator lights 6 through 15 in the B-register remain on steadily during a write routine. Indicator lights 6 through 15 in the B-register blink on and off during a read routine.

Table 3-4. Table of Control Settings for Looping Routines

SWITCH REGISTER BIT SET TO LOGIC "1"	REACTION UNTIL SWITCH REGISTER BIT SET TO LOGIC "0"
Bit 2	Read routine loops
Bit 1	Write routine loops
Bit 0	Both read and write routines loop

3-13. VARIED TEST PATTERNS.

3-14. Several binary test patterns should be tried during the read or write routines; for example, all ones, all zeros, an even number of ones, an odd number of ones, etc. The total test running time should be at least 30 minutes.

3-15. EXECUTION MESSAGE SUPPRESSION.

3-16. During execution of the read or write routines, switch register bit 3 set to logic "1" suppresses all execution error messages except "DISC NOT READY".

3-17. READING OR WRITING BLOCKS.

3-18. If it is desirable to read or write selected blocks of tracks or sectors, they may be specified in the following manner:

T000-001, T020-007, T040-010, T070-002

3-19. The above statement would read or write the following octal track addresses:

000, 020 021 022 023 024 025 026, 040
041 042 043 044 045 046 047, 070 071

3-20. Sector block S020-004 would write the following sector addresses:

020 021 022 023

3-21. PARAMETER SPLIT BETWEEN LINES.

3-22. A virgule (/) is used to continue a statement on the next 72 column line. It must appear prior to or in column 72. No parameter may be split between two lines, as shown in the following example:

T000-001- T060-/
001 etc.

3-23. If such a split is encountered, the following message is printed:

"WRITE PARAMETER INCOMPLETE".

3-24. The correct format for continuing a statement on the next line is as follows:

T000-001- T060-001 /
T061-003 etc.

3-25. COUNTING ERRORS WITHOUT THE TELE-PRINTER.

3-26. To run the diagnostic test program for long periods with the teleprinter off and still keep a record of accumulated word errors, it is only necessary to set switch register bits 0 and 3 to logic "1". Bit 0 set to logic "1" enables read and write routines to loop. Bit 3 set to logic "1" inhibits the teleprinter and enables each word error to increment an error counter, comprising memory locations 001700 and 001701. After 65,536 increments location 001700 overflows and each subsequent word error increments location 001701. When the total count of word errors is 131,072, the counter is reset and counting continues.

3-27. When switch register bits 0 and 3 are reset to logic "0", the teleprinter prints "BINARY TEST PATTERN?". The error counter (locations 001700 and 001701) must be read before entering a new binary test pattern. Entering a new pattern will reset the error counter.

3-28. RETURNING TO "BINARY TEST PATTERN?".

3-29. After the messages "DMA OCTAL CHANNEL #?" and "HIGH PRIORITY OCTAL ADDRESS?" have been initiated, address 002042 can be used at any time to return the program to the point where the teleprinter prints "BINARY TEST PATTERN?".

3-30. GLOSSARY OF DIAGNOSTIC MESSAGES.**3-31. "DISC NOT READY"**

3-32. After this message is printed, the routine halts and allows the user to ready the disc memory for data transfer. If RUN is pressed before the disc memory is ready, the teleprinter will continue printing the message. This message usually indicates a malfunction of the "disc ready" status bit. This message has the same meaning for both the write and read routines.

3-33. "ERROR BUSY STATUS BIT DURING WR/RD"

3-34. After this message is printed, the routine does not halt and the current operations are completed normally. The "busy" status bit is checked just before the initiation of a write or a read operation for a "not busy" condition. If either condition is false at the appropriate time, this message is printed.

**3-35. "WRITE (or READ) ABORT-TRACK"
020 (000-177)**

3-36. This message indicates one or more of the following: a malfunction of disc power, overheating of the disc unit, helium pressure low, a power failure has occurred, or a write or read was attempted on either a protected or a nonexistent track address.

**3-37. "WRITE (or READ) INTERRUPT MISSING"
"DMA WORD COUNT = " 16777**

3-38. This message indicates that, after a write operation is initiated, no interrupt occurred within approximately 100 ms. By inspecting the DMA word count, the user can determine whether any words were transferred and, if so, how many prior to time-out. The DMA word count is output in 2s complement form. The routine does not halt after printing this message.

3-39. "READ PARITY ERROR"

3-40. This message indicates that a parity error occurred while reading a word.

3-41. "READ (or WRITE) SECTOR BUFFER OVERFLOWED"

3-42. This message occurs when more than 92 entries into the write or read sector buffer are specified for any series of "S" parameters.

3-43. "READ PARAMETER INCOMPLETE"

3-44. This message occurs if an illegal character is used in, or a character is missing from, any read parameter.

3-45. "WR/RD WORD COUNT EXCESSIVE"

3-46. This message occurs if a data transfer block size greater than available core memory is specified by single "S" parameter.

3-47. "IMPROPER CHARACTER IN WR/RD PARAMETER"

3-48. This message occurs when a character in a write or a read parameter is missing or has been replaced by an illegal character.

3-49. "CHARACTER IN OCTAL PARAMETER ILLEGAL"

3-50. This message occurs when any character other than numerals 0 through 7 is used in an octal parameter. One example of an illegal character is the symbol @.

3-51. "WR/RD PARAMETER EXCEEDS 72 CHARACTERS"

3-52. This message occurs when a line has exceeded 72 columns.

3-53. "WRITE PARAMETER INCOMPLETE"

3-54. This message occurs when a parameter entry has been split between two lines.

3-55. "BINARY PARAMETER EXCEEDS 72 CHARACTERS"

3-56. This message occurs when a binary test pattern parameter contains an excessive amount of leading blanks. This usually happens while using a punched tape reader input.

3-57. "ILLEGAL CHARACTER IN TEST PATTERN PARAM"

3-58. This message occurs when a binary test pattern parameter contains a syntax error.

3-59. SWITCH REGISTER CONTROL SETTINGS.

3-60. Table 3-5 lists the various switch register settings that control execution of the diagnostic test program.

Table 3-5. Table of Switch Register Control Settings

BIT NUMBER	LOGIC SETTING	REACTION
15	0	Input from teleprinter
	1	Input from punched tape reader
14	0	Normal sector buffer input
	1	Preset sector buffer input
11	0	Bypass or exit track address test
	1	Loop on track address test
3	0	Execute write/read test error printout
	1	Bypass all write/read test error printout
2	0	Normal execution of read test routine
	1	Loop on read test routine
1	0	Normal execution of write test routine
	1	Loop on write test routine
0	0	Normal execution of read/write test routine
	1	Loop on read/write test routine

SECTION IV

TEST PROCEDURE

4-1. ENABLING AND LOADING.

4-2. Start the diagnostic test procedure as follows:

- a. Turn on power to the entire system.
- b. Allow several minutes for the disc to reach full speed, then check the three lamps on the left side of the disc memory.
- c. When all three lamps are out, load and configure the SIO buffered teleprinter driver and the SIO buffered punched tape reader driver tapes if necessary.
- d. Load the diagnostic tape. When loading is completed, check for HLT 77B, 102077 (octal) in the T-register. If the T-register does not read 102077 (octal) reload the diagnostic tape and check again.
- e. When the T-register reads 102077 (octal), turn on the teleprinter.

4-3. TRACK-PROTECT TEST.

4-4. Test the track-protect circuit as follows:

- a. Set track-protect switch to the up position, away from the center of the card (PROTECTED). The switch is located on the Data Channel card (12606-6001). Load address 002000, set all switch register switches to "zero," press PRESET and RUN.
- b. "DMA OCTAL CHANNEL #?" will be printed by the teleprinter. The answer input should be a two digit number 06 or 07 followed by pressing RETURN and LINE FEED. If inputs other than these two are given, the program repeats the inquiry message and waits for a proper input.
- c. "HIGH PRIORITY OCTAL DISC ADDRESS?" will be printed by the teleprinter. The answer input should be the I/O Select Code of the Data Channel card (12606-6001). Each answer input must be followed by pressing RETURN and LINE FEED. "NO. OF PROTECTED TRACKS —" followed by a three digit octal number, should be printed by the teleprinter to indicate the total number of protected tracks.
- d. Press HALT. Set the track-protect switch to the down position, toward the center of the card (no tracks protected).
- e. Load address 002000.

4-5. TRACK ADDRESS TEST.

4-6. This test routine checks all track heads for opens and shorts. It writes the self-address of each track, sector 000, and then reads each track, checking for self-address. The routine assumes the tracks start with 000 and end with the maximum number, in a sequential manner.

4-7. If switch register bit 11 is set to logic "0" before the program reaches this routine, when it does reach it the routine will be bypassed. If switch register bit 11 is set to logic "0" after entering the routine, the routine will be exited. Initialize this routine as follows:

- a. Set switch register bit 11 to logic "1".
 - b. Press PRESET and RUN.
 - c. Enter the correct answer inputs in response to "DMA OCTAL CHANNEL #?" and "HIGH PRIORITY OCTAL DISC ADDRESS?" (see paragraph 4-4, "b" and "c").
- 4-8. The initial inquiry message printed by the teleprinter is:

"NO. OF TRACKS?"

4-9. The answer input should be a three-digit octal number representing the total number of tracks (see table 3-1), not the last track address.

4-10. If an error is encountered, a message similar to the following example is printed:

"TRACK ADDRESS ERROR
EXPECTED TRACK—006 ACTUAL TRACK—014"

4-11. The octal values in the example mean track 006 was addressed, but track 014 was actually read; or when writing track 014, it was actually written on track 006.

4-12. Switch register bit 11 may be set to logic "0" immediately after the routine is entered into, since one execution of the routine provides a sufficient test. When the routine is exited, the following message is printed:

"TRACK ADDRESS CHECK COMPLETE"

4-13. READ/WRITE TEST.

4-14. This is the main routine in the diagnostic test program. It writes and reads user-selected word patterns on any sector or group of sectors and on any track or group of

tracks. After reading word patterns from the disc, the routine compares them to the word patterns that were written. When errors are encountered, messages describing them are printed by the teleprinter. The user selects word pattern content and specifies write and read parameters in response to the following messages printed by the teleprinter: "BINARY TEST PATTERN?", "WRITE TRACKS?", "WRITE SECTORS?", "READ TRACKS?", and "READ SECTORS?".

4-15. The word patterns used in this routine are composed of 16-bit binary words in 64-word sector buffers. Any combination of sixteen logic "0s" and "1s" can be used in a word. A sector buffer can be formed in any of the following optional ways:

- a. A 64-word series of one 16-bit word repeated.
- b. A 64-word series of one 16-bit word and its complement repeated alternately.
- c. A 64-word series of any combination of 16-bit words.

4-16. The first two 64-word sector buffers, option "a" and option "b", are written into core memory from the teleprinter keyboard. The third, option "c", is written into core memory from the switch register.

4-17. If switch register bit 15 is set to logic "1", the punched tape reader will input answers to read and write parameter requests (such as "WRITE TRACKS?"). Errors encountered on the tape can be corrected via the teleprinter as follows:

- a. Set switch register bit 15 to logic "0".
- b. After the diagnostic message is printed, press RUN.
- c. Enter the corrected parameter from the teleprinter.
- d. Set switch register bit 15 to logic "1".
- e. Press RETURN or LINE FEED on the teleprinter.

4-18. The Read/Write Test routine starts by checking switch register bit 14. If bit 14 is a logic "0", the teleprinter prints the following initial message:

"BINARY TEST PATTERN?"

4-19. At this point the user can form either of two 64-word sector buffer options described in paragraph 4-15, option "a" or option "b". The answer input in response to this message is contained in an 18-character field, as shown in the following example:

1100110011001100CC

4-20. The first sixteen characters are any combination of logic "0s" and "1s". The last two characters can be either "Cs" or blanks. In the example, the first "C" (character 17) indicates every alternate word of the 64-word sector buffer

will be the complement of the initial word in the sector buffer (option "b"). The second "C" (character 18) indicates every sector will be the complement of the preceding sector. If both characters 17 and 18 are blanks, one 16-bit word will be repeated 64 times (option "a") and all sectors will be the same. Any syntax error in the binary test pattern parameter causes the teleprinter to print the following message:

"ILLEGAL CHARACTER IN TEST PATTERN PARAM"

4-21. When the Read/Write Test routine starts, if switch register bit 14 is a logic "1", the computer halts. At this point the user can form the third 64-word sector buffer option described in paragraph 4-15, option "c", as follows:

a. Set in the switch register and load into core memory a 64-word series of any combination of 16-bit words.

b. After sixty-four switch register words are loaded into memory, press RUN twice. The routine will proceed to request write and read parameters.

4-22. After the sector buffer is formed, the teleprinter prints the following message:

"WRITE TRACKS?"

4-23. The answer input depends on the number of tracks in the disc memory (see table 3-1). It consists of the character "T" followed by two groups of three digits each. For example, T000-200. The character "T" identifies the instruction as a track location. The first three digits are the octal value of the starting track address (range 000-177). The second group of three digits is the octal value of the number of consecutive tracks to be written. The example, T000-200, would write 200 tracks (128 decimal) starting at track zero.

4-24. The next message printed by the teleprinter is the following:

"WRITE SECTORS?"

4-25. With a computer that has an 8K (8192 words) memory, one possible answer input is S000-100, S100-032. This will write sectors 0 through 77 octal, and then sectors 100 through 131. The character "S" identifies the instruction as a sector location. The first and second groups of three digits carry the same information as they do in the response to "WRITE TRACKS?". To cover the entire 132 sectors, the answer input must be made in two statements because the sector buffer can handle only 112 octal locations in one transfer. See table 3-2 for data transfer block capacities of other memory sizes.

4-26. The teleprinter next prints the following message:

"READ TRACKS?"

4-27. The answer input for this message is identical to the response to "WRITE TRACKS?". See paragraph 4-23.

4-28. The final read parameter message printed by the teleprinter is the following:

“READ SECTORS?”

4-29. The answer input for this message is identical to the response to “WRITE SECTORS?”. See paragraph 4-25.

4-30. After a read operation is executed, a comparison of input data is made and any error conditions are printed in the following format:

“TRACK” 000 “SECTOR” 000 “WORD NO.” 00
“OUTPUT” 000000 “INPUT” 000001

4-31. “TRACK” will range from 000 to 177, “SECTOR” from 000 to 131, and “WORD” from 00 to 77. “OUTPUT” is the octal equivalent of a 6-digit word output from the computer to the disc. “INPUT” is the octal equivalent of a 6-digit word input to the computer from the disc (error).

4-32. SECTOR TIMING TEST.

4-33. Write a pattern over the entire disc. Read the disc in overlapping blocks and sectors as in the following example of an overlapping test. (See paragraphs 3-18, 3-19, and 3-20 for further information.)

“BINARY TEST PATTERN?”
111000001111000000
“WRITE TRACKS?”
T000-040
“WRITE SECTORS?”
S000-100, S100-032
“READ TRACKS?”
T000-040, T000-020, T020-020, T007-023
“READ SECTORS?”
S000-100, S100-032, S011-100

4-34. POWER FAILURE TESTS.

4-35. Primary power to the disc memory should be turned off and back on during a read cycle and during a write cycle. When power is turned off during a read cycle, there must be no resulting errors. When power is turned off during a write cycle, the entire data transfer may have errors. This is the only time, however, during the entire diagnostic test program that errors are permissible. Every failure of primary power to the disc memory should result in the teleprinter printing one or more of the following: “DISC NOT READY”, “WRITE ABORT-TRACK”, “READ ABORT-TRACK”, “WRITE INTERRUPT MISSING”, “READ INTERRUPT MISSING”.

4-36. POWER FAILURE, READ CYCLE.

4-37. To check the power failure circuits the binary test pattern must be identical for both the read and write cycles. Proceed with the test as follows:

a. On completion of the last binary test pattern check, set all switch register switches to logic “0”. When the teleprinter prints “BINARY TEST PATTERN?”, enter 1100110011001100CC.

b. When the teleprinter prints “WRITE TRACKS?”, enter the total number of tracks available (see paragraph 4-23).

c. When the teleprinter prints “WRITE SECTORS?”, enter the total number of sectors (see paragraph 4-25).

d. After the write statements have been executed, when the teleprinter prints “READ TRACKS?”, enter the same answer input as for “WRITE TRACKS?”.

e. When the teleprinter prints “READ SECTORS?”, set switch register bit 2 to logic “1” and enter the same answer input as for “WRITE SECTORS?”.

f. While the read routine is looping, turn off the power switch on the disc memory power supply.

g. Wait for the teleprinter to print “DISC NOT READY”, then turn on the power switch.

h. Allow the disc to reach full speed, then press RUN.

i. Wait 2 minutes, then set switch register bit 2 to logic “0”.

4-38. POWER FAILURE, WRITE CYCLE.

4-39. To check the power failure circuits during a write cycle proceed as follows:

a. When the teleprinter prints “BINARY TEST PATTERN?”, enter 1100110011001100CC.

b. When the teleprinter prints “WRITE TRACKS?”, enter one track address, for example, T050-001.

c. When the teleprinter prints “WRITE SECTORS?”, set switch register bit 1 to logic “1” and enter one sector address, for example, S050-001.

d. While the write routine is looping on one track and one sector, turn off the power switch on the disc memory power supply.

e. With the computer halted, wait for the teleprinter to print “DISC NOT READY”, then turn on the power switch and allow the disc to reach full speed.

f. Set switch register bit 1 to logic “0”, load address 002042, then press PRESET and RUN.

g. Enter the binary test pattern: 1100110011001100CC.

h. When the teleprinter prints "WRITE TRACKS?" and "WRITE SECTORS?", the answer input for both should be SPACE, RETURN, and LINE FEED. Do not enter a track or a sector address.

i. When the teleprinter prints "READ TRACKS?",

enter the total number of tracks available (see paragraph 4-23).

j. When the teleprinter prints "READ SECTORS?", enter the total number of sectors available (see paragraph 4-25). Errors must be confined to a chosen track and sector, for example, Track 50, Sector 50.

SECTION V
DIAGNOSTIC LISTINGS

5-1. INTRODUCTION.

5-2. This section contains diagnostic program listings HP 20346BL and HP 20346CL. These listings provide a

printout of the data and instructions contained in diagnostic tapes HP 20346B and HP 20346C, respectively. Listing HP 20346BL is presented first, followed by listing HP 20346CL.

DDC DISC DIAGNOSTIC

BINARY TAPE - HP20346B

SOURCE TAPES - HP20862B
- HP20863B
- HP20864B

SOURCE LISTING - HP20346BL

PAGE 0001

0001

ASPB, A.B.L

** NO ERRORS*

0001			ASPB, A.B.L		
0003	00107		CRG	1078	
0004	00107	177700	MASK1	OCT 177700	A6-A15 MASK
0005	00110	000000	CARRY	BSS 3	
0006	00113	001407	CONV	DEF CONV1	
0007	00114	000007	MASK2	OCT 7	A0-A2 MASK
0008	00115	000060	MASK3	OCT 60	ASCII CONSTANT
0009	00116	030000	MASK4	OCT 30000	ASCII 0
0010	00117	030400	MASK5	OCT 30400	ASCII 1
0011	00120	000110	CHARY	DEF CARRY	BUFFER ADDR.
0012	00121	000110	CHARW	DEF CARRY	BUFFER ADDR. WORKING
0013	00122	000000	DALR1	OCT 0	HIGHEST PRIORITY DISK ADDRESS
0014	00123	000000	DMADR	OCT 0	DMA ADDRESS IN ASCII
0015	00124	000123	ARIMA	DEF DMADR	BUFFER ADDR.
0016	00125	000002	S100	OCT 2	CHAR. COUNT
0017	00126	000122	ADIAD	DEF DADR1	BUFFER ADDR.
0018	00127	000130	IAD11	DEF MES11	BUFFER ADDR.
0019	00130	042115	MES11	ASC 11, DMA	UCTAL CHANNEL # ?
	00131	040440			
	00132	047503			
	00133	052101			
	00134	046040			
	00135	041510			
	00136	040516			
	00137	047105			
	00140	046040			
	00141	021440			
	00142	037440			
0020	00143	000025	CHA11	OCT 25	CHAR. COUNT
0021	00144	030066	DMA06	ASC 1,06	
0022	00145	030067	DMA07	ASC 1,07	
0023	00146	000147	IAD12	DEF MES12	BUFFER ADDR.
0024	00147	044111	MES12	ASC 17, HIGH	PRIORITY OCTAL DISC ADDRESS ?
	00150	043510			
	00151	020120			
	00152	051111			
	00153	047522			
	00154	044524			
	00155	054440			
	00156	047503			
	00157	052101			
	00160	046040			
	00161	042111			
	00162	051503			
	00163	020101			
	00164	042104			
	00165	051105			
	00166	051523			
	00167	020077			
0025	00170	000042	CHA12	OCT 42	CHAR. COUNT
0026	00171	000000	TOPT2	OCT 0	TEST OPTION IN ASCII
0027	00172	000733	S000	DEF BUFF	INPUT BUFFER ADDR. -WORKING
0028	00173	000733	S001	DEF BUFF	INPUT BUFFER ADDR.
0029	00174	177734	S002	OCT 177734	BUFFER WORD COUNT-36
0030	00175	020040	S003	OCT 020040	ASCII BLANKS
0031	00176	000000	SEXT	OCT 0	EXIT FLAG
0032	00177	000000	S004	OCT 0	INPUT CHAR. LENGTH

0033	00200	000120	S805	OCT	120	80 CHAR. COUNT
0034	00201	000000	S807	OCT	0	ACTUAL INPUT CHAR. COUNT
0035	00202	077777	S808	OCT	77777	RETAIN A0-A14
0036	00203	000000	S809	OCT	0	LAST WORD BUFFER ADDRESS
0037	00204	000000	S810	OCT	0	WORKING U/L CHAR. MASK
0038	00205	125252	S811	OCT	125252	UPPER/LOWER CHAR. MASK
0039	00206	000377	S812	OCT	377	A0-A7 MASK
0040	00207	000000	S813	OCT	0	TEMP. CHAR. SAVE
0041	00210	005737	S814	DEF	S000	ST. ADDR. OF BUFFER AREA-R/W
0042	00211	000212	IAL16	DEF	MES16	BUFFER ADDR.
0043	00212	041111	MES16	ASC	11,BINARY	TEST PATTERN ?
	00213	047101				
	00214	051131				
	00215	020124				
	00216	042523				
	00217	052040				
	00220	050101				
	00221	052124				
	00222	042522				
	00223	047040				
	00224	037440				
0044	00225	000025	CHA16	OCT	25	CHAR. COUNT
0045	00226	177667	S816	OCT	177667	-73 CHAR. COUNT
0046	00227	000000	PWORD	OCT	0	BINARY PATTERN WORD
0047	00230	000000	CWORD	OCT	0	COMPLEMENT ALTERNATE WORD FLAG
0048	00231	000000	CBLFF	OCT	0	COMPL. ALTERNATE BUFFERS FLAG
0049	00232	177760	S817	OCT	177760	-16 WORKING
0050	00233	177760	S818	OCT	177760	-16 RESET
0051	00234	000060	S819	OCT	60	ASCII 0
0052	00235	000061	S820	OCT	61	ASCII 1
0053	00236	000237	IAL18	DEF	MES18	BUFFER ADDR.
0054	00237	044514	MES18	ASC	22,ILLEGAL	CHARACTER IN TEST PATTERN PARAM
	00240	046105				
	00241	043501				
	00242	046040				
	00243	041510				
	00244	040522				
	00245	040503				
	00246	052105				
	00247	051040				
	00250	044516				
	00251	020124				
	00252	042523				
	00253	052040				
	00254	050101				
	00255	052124				
	00256	042522				
	00257	047040				
	00260	050101				
	00261	051101				
	00262	046505				
	00263	052105				
	00264	051040				
0055	00265	000053	CHA18	OCT	53	CHAR. COUNT
0056	00266	000271	S822	DEF	SBUFF	SECTOR BUFFER ADDRESS-WORKING
0057	00267	000271	S823	DEF	SBUFF	SECTOR BUFFER ADDRESS
0058	00270	102001	S824	HLT	01	MANUAL BUFFER PRESET

0059	00271	000000	SBLFF	HSS	64	SECTOR BUFFER
0060	00371	102001	S825	HLT	01	SAFETY FACTOR
0061	00372	124373	S826	JMF	S827.1	RETURN TO MAIN PROCESSOR
0062	00373	002201	S827	DEF	S708	MAIN PROGRAM
0063	00374	177700	S828	OCT	177700	-64 WORKING
0064	00375	177700	S829	OCT	177700	-64
0065	00376	000377	IAI19	DEF	MES10	BUFFER ADDR.
0066	00377	053522	MES19	ASC	7,WRITE	TRACKS ?
	00400	044524				
	00401	042440				
	00402	052122				
	00403	040503				
	00404	045523				
	00405	020077				
0067	00406	000016	CHA19	OCT	16	CHAR. COUNT
0068	00407	000410	IAI20	DEF	MES20	BUFFER ADDR.
0069	00410	053522	MES20	ASC	8,WRITE	SECTORS ?
	00411	044524				
	00412	042440				
	00413	051505				
	00414	041524				
	00415	047522				
	00416	051440				
	00417	037440				
0070	00420	000017	CHA20	OCT	17	CHAR. COUNT
0071	00421	000422	IAI21	DEF	MES21	BUFFER ADDR.
0072	00422	053522	MES21	ASC	19,WR/RD	PARAMETER EXCEEDS 72 CHARACTERS
	00423	027522				
	00424	042040				
	00425	050101				
	00426	051101				
	00427	046505				
	00430	052105				
	00431	051040				
	00432	042530				
	00433	041505				
	00434	042504				
	00435	051440				
	00436	033462				
	00437	020103				
	00440	044101				
	00441	051101				
	00442	041524				
	00443	042522				
	00444	051440				
0073	00445	000045	CHA21	OCT	45	CHAR. COUNT
0074	00446	000070	S830	OCT	70	ASCII 8
0075	00447	000450	IAI22	DEF	MES22	BUFFER ADDR.
0076	00450	020040	MES22	ASC	20,	CHARACTER IN OCTAL PARAMETER ILLEGAL
	00451	020103				
	00452	044101				
	00453	051101				
	00454	041524				
	00455	042522				
	00456	020111				
	00457	047040				
	00460	047503				

00461	052101			
00462	046040			
00463	050101			
00464	051101			
00465	046505			
00466	052105			
00467	051040			
00470	044514			
00471	046105			
00472	043501			
00473	040040			
0077	00474	000047	CHA22 OCT 47	CHAR. COUNT
0078	00475	177400	S831 OCT 177400	A8-A15 MASK
0079	00476	000040	S832 OCT 40	BLANK
0080	00477	000054	S833 OCT 54	COMMA
0081	00500	000057	S834 OCT 57	SLASH
0082	00501	000055	S835 OCT 55	-
0083	00502	004557	AWTBF DEF WTBUF	
0084	00503	004557	WAWTB DEF WTRUF	WORKING ADDRESS
0085	00504	004757	AWSBF DEF WSBUF	
0086	00505	004757	WAWSB DEF WSRUF	WORKING ADDRESS
0087	00506	005247	ARTBF DEF RTBUF	
0088	00507	005247	WARTB DEF RTBUF	WORKING ADDRESS
0089	00510	005447	ARSBF DEF RSBUF	
0090	00511	005447	WARSB DEF RSRUF	WORKING ADDRESS
0091	00512	000124	S836 OCT 124	ASCII T
0092	00513	000123	S837 OCT 123	ASCII S
0093	00514	000515	IAI23 DEF MES23	
0094	00515	044515	MES23 ASC 19, IMPROPER CHARACTER IN WR/RD PARAMETER	
	00516	050122		
	00517	047520		
	00520	042522		
	00521	020103		
	00522	044101		
	00523	051101		
	00524	041524		
	00525	042522		
	00526	020111		
	00527	047040		
	00530	053522		
	00531	027522		
	00532	042040		
	00533	050101		
	00534	051101		
	00535	046505		
	00536	052105		
	00537	051040		
0095	00540	000000	S840 OCT 0	CHAR. STORAGE-ST. TRACK
0096	00541	000000	S841 OCT 0	SEQ. TRACK VALUE-CHAR. STORAGE
0097	00542	000543	IAI24 DEF MES24	BUFFER ADDR.
0098	00543	053522	MES24 ASC 13, WRITE PARAMETER INCOMPLETE	
	00544	044524		
	00545	042440		
	00546	050101		
	00547	051101		
	00550	046505		
	00551	052105		

	00552	051040			
	00553	044516			
	00554	041517			
	00555	046520			
	00556	046105			
	00557	052105			
0099	00560	000032	CHA24	OCT 32	CHAR. COUNT
0100	00561	000562	IAI25	DEF MES25	BUFFER ADDR.
0101	00562	053522	MES25	ASC 15,WRITE	TRACK BUFFER OVERFLOWED
	00563	044524			
	00564	042440			
	00565	052122			
	00566	040503			
	00567	045440			
	00570	041125			
	00571	043106			
	00572	042522			
	00573	020117			
	00574	053105			
	00575	051106			
	00576	046117			
	00577	053505			
	00600	042040			
0102	00601	000035	CHA25	OCT 35	CHAR. COUNT
0103	00602	177775	S842	OCT 177775	-3 COUNTER
0104	00603	177775	S843	OCT 177775	-3 COUNTER-WORKING
0105	00604	000000	LAWTB	OCT 0	LAST TRACK WRITE BUFFER ADDR.+1
0106	00605	000000	LAWSB	OCT 0	LAST SECTOR WRITE BUFF. ADDR.+1
0107	00606	000607	IAI26	DEF MES26	BUFFER ADDR.
0108	00607	053522	MES26	ASC 15,WRITE	SECTOR BUFFER OVERFLOWED
	00610	044524			
	00611	042440			
	00612	051505			
	00613	041524			
	00614	047522			
	00615	020102			
	00616	052506			
	00617	043105			
	00620	051040			
	00621	047526			
	00622	042522			
	00623	043114			
	00624	047527			
	00625	042504			
0109	00626	000036	CHA26	OCT 36	CHAR. COUNT
0110	00627	000006	MASK6	OCT 6	DMA ADDR.
0111	00630	000002	MAS6A	OCT 2	MAR/WCR ADDR. FOR CHAN.6
0112	00631	000003	MAS7A	OCT 3	MAR/WCR ADDR. FOR CHAN.7
0113	00632	000000	WCCMP	OCT 0	WRITE COMPLETE FLAG
0114	00633	100377	S844	OCT 100377	TRACK MASK
0115	00634	100000	WCCMW	OCT 100000	TRACK/SECTOR ADDRESS
0116	00635	020000	WDPAW	OCT 020000	H.P. DISK ADDR. AND CLC BIT
0117	00636	000000	WDIR	OCT 0	STARTING ADDRESS
0118	00637	000000	WDCNT	OCT 0	2'S COMPL. WD. COUNT
0119	00640	177600	S845	OCT 177600	SECTOR MASK
0120	00641	000000	SCCMP	OCT 0	SECTOR STRING COMPLETE FLAG
0121	00642	000000	S847	OCT 0	2'S COMPL. # OF SECTORS

0122	00643	000000	S848	OCT 0	TEST. OF AVAILABLE MEM.
0123	00644	000645	IAL27	DEF MES27	BUFFER ADDR.
0124	00645	053522	MES27	ASC 13,WR/RD	WORD COUNT EXCESSIVE
	00646	027522			
	00647	042040			
	00650	053517			
	00651	051104			
	00652	020103			
	00653	047525			
	00654	047124			
	00655	020105			
	00656	054103			
	00657	042523			
	00660	051511			
	00661	053105			
0125	00662	000032	CHA27	OCT 32	CHAR. COUNT
0126	00663	124664	S849	JMP S850.I	RETURN FROM INTERRUPT
0127	00664	003032	S850	DEF WAIT1+1	RETURN ADDRESS
0128	00665	000000	BUFLG	OCT 0	DISK BUSY ERROR FLAG
0129	00666	000667	IAL28	DEF MES28	BUFFER ADDR.
0130	00667	042522	MES28	ASC 17,ERROR	BUSY STATUS BIT DURING WR/RD
	00670	051117			
	00671	051040			
	00672	041125			
	00673	051531			
	00674	020123			
	00675	052101			
	00676	052125			
	00677	051440			
	00700	041111			
	00701	052040			
	00702	042125			
	00703	051111			
	00704	047107			
	00705	020127			
	00706	051057			
	00707	051104			
0131	00710	000042	CHA28	OCT 42	CHAR. COUNT
0132	00711	000712	IAL29	DEF MES20	BUFFER ADDR.
0133	00712	042111	MES29	ASC 7,DISC	NOT READY
	00713	051503			
	00714	020116			
	00715	047524			
	00716	020122			
	00717	042501			
	00720	042131			
0134	00721	000016	CHA29	OCT 16	CHAR. COUNT
0135	00722	000723	IAL30	DEF MES30	BUFFER ADDR.
0136	00723	051105	MES30	ASC 7,READ	TRACKS ?
	00724	040504			
	00725	020124			
	00726	051101			
	00727	041513			
	00730	051440			
	00731	037440			
0137	00732	000015	CHA30	OCT 15	CHAR. COUNT
0138	00733	000000	BUFL	MSB 36	INPUT BUFFER

0139	00777	001000	IAI31 DEF MES31	BUFFFFR ADDR.
0140	01000	051105	MES31 ASC 13, READ	PARAMETER INCOMPLETE
	01001	040504		
	01002	020120		
	01003	040522		
	01004	040515		
	01005	042524		
	01006	042522		
	01007	020111		
	01010	047103		
	01011	047515		
	01012	050114		
	01013	042524		
	01014	042440		
0141	01015	000031	CHA31 OCT 31	CHAR. COUNT
0142	01016	000000	LARTB LCT 0	LAST TRACK READ BUFFER ADDR.+1
0143	01017	000000	LARSB CCT 0	LAST SECTOR READ BUFF. ADDR.+1
0144	01020	001021	IAI32 DEF MES32	BUFFFFR ADDR.
0145	01021	051105	MES32 ASC 14, READ	TRACK BUFFER OVERFLOWED
	01022	040504		
	01023	020124		
	01024	051101		
	01025	041513		
	01026	020102		
	01027	052506		
	01030	043105		
	01031	051040		
	01032	047526		
	01033	042522		
	01034	043114		
	01035	047527		
	01036	042504		
0146	01037	000034	CHA32 OCT 34	CHAR. COUNT
0147	01040	001041	IAI33 DEF MES33	BUFFFFR ADDR.
0148	01041	051105	MES33 ASC 7, READ	SECTORS ?
	01042	040504		
	01043	020123		
	01044	042503		
	01045	052117		
	01046	051123		
	01047	020077		
0149	01050	000016	CHA33 OCT 16	CHAR. COUNT
0150	01051	001052	IAI34 DEF MES34	BUFFFFR ADDR.
0151	01052	051105	MES34 ASC 15, READ	SECTOR BUFFER OVERFLOWED
	01053	040504		
	01054	020123		
	01055	042503		
	01056	052117		
	01057	051040		
	01060	041125		
	01061	043106		
	01062	042522		
	01063	020117		
	01064	053105		
	01065	051106		
	01066	046117		
	01067	053505		

	01070	042040			
0152	01071	000035	CHA34	OCT 35	CHAR. COUNT
0153	01072	000000	RCCMP	OCT 0	READ COMPLETE FLAG
0154	01073	000000	RCCMR	OCT 0	TRACK/SECTOR ADDRESS
0155	01074	125075	S852	JMF S853.1	RETURN FROM INTERRUPT
0156	01075	003744	S853	DEF WAIT2+1	RETURN ADDRESS
0157	01076	000000	CTFCK	OCT 0	TRACK VALUE OF INPUT BUFFER
0158	01077	000000	CSECT	OCT 0	STARTING SECTOR VALUE OF INPUT
0159	01100	000000	CMEM	OCT 0	ST. ADDR. OF INPUT BUFFER
0160	01101	000000	SEWD	OCT 0	WORD # WITHIN SECTOR
0161	01102	000000	SECTC	OCT 0	2'S COMPL. # OF SECTORS
0162	01103	003125	S854	DEF S743	LOOP LOCN.
0163	01104	000000	RDIR	OCT 0	STARTING ADDRESS
0164	01105	002574	S856	DEF WRITE	LOOP CONTROL
0165	01106	001107	IAL35	DEF MES35	BUFFER ADDR.
0166	01107	042105	MES35	ASC 6, DECODE ERROR	
	01110	041517			
	01111	042105			
	01112	020105			
	01113	051122			
	01114	047522			
0167	01115	000014	CHA35	OCT 14	CHAR. COUNT
0168	01116	001117	IAL36	DEF MES36	BUFFER ADDR.
0169	01117	051105	MES36	ASC 9, READ PARITY ERROR	
	01120	040504			
	01121	020120			
	01122	040522			
	01123	044524			
	01124	054440			
	01125	042522			
	01126	051117			
	01127	051040			
0170	01130	000021	CHA36	OCT 21	CHAR. COUNT
0171	01131	000000	S857	OCT 0	TEMP.
0172	01132	001133	IAL37	DEF MES37	BUFFER ADDRESS
0173	01133	052122	MES37	ASC 16, TRACK	SECTOR WORD NO.
	01134	040503			
	01135	045440			
	01136	020040			
	01137	020040			
	01140	051505			
	01141	041524			
	01142	047522			
	01143	020040			
	01144	020040			
	01145	020127			
	01146	047522			
	01147	042040			
	01150	047117			
	01151	027040			
	01152	020040			
0174	01153	000040	CHA37	OCT 40	CHAR. COUNT
0175	01154	001155	IAL38	DEF MES38	BUFFER ADDRESS
0176	01155	047525	MES38	ASC 14, OUTPUT	INPUT
	01156	052120			
	01157	052524			
	01160	020040			

01161	020040				
01162	020040				
01163	020040				
01164	020111				
01165	047120				
01166	052524				
01167	020040				
01170	020040				
01171	020040				
01172	020040				
0177	01173	000034	CHA38	OCT 34	CHAR. COUNT
0178	01174	003126	I743	DEF S743+1	
0179	01175	001574	PRCT	DEF PROTC	IND.
0180	01176	003506	I855	DEF S855	IND.
0181	01177	003607	S858	DEF S769A	IND.
0182	01200	003572	S859	DEF S769	IND.
0183	01201	003570	S860	DEF S769-2	IND.
0184	01202	002042	S861	DEF T4	IND.
0185	01203	004025	I776	DEF S776	
0186	01204	177577	S862	OCT 177577	-129 WORKING
0187	01205	177577	S863	OCT 177577	-129
0188	01206	177643	S864	OCT 177643	-93 WORKING
0189	01207	177643	S865	OCT 177643	-93
0190	01210	077777	S869	OCT 77777	INTERRUPT TIME-OUT CONSTANT
0191	01211	001457	S870	DEF S903	WRITE INT. MISSING
0192	01212	001464	S871	DEF S904	READ INT. MISSING
0193	01213	000000	PFLAG	OCT 0	SUPPRESS PRINT FLAG
0194	01214	001215	IAL43	DEF MES43	BUFFER ADDR.
0195	01215	053522	MES43	ASC 11,WRITE	ABORT-TRACK
	01216	044524			
	01217	042440			
	01220	040502			
	01221	047522			
	01222	052055			
	01223	052122			
	01224	040503			
	01225	045440			
	01226	020040			
	01227	020040			
0196	01230	000025	CHA43	OCT 25	CHAR. COUNT
0197	01231	001232	IAL44	DEF MES44	BUFFER ADDR.
0198	01232	051105	MES44	ASC 10,READ	ABORT-TRACK
	01233	040504			
	01234	020101			
	01235	041117			
	01236	051124			
	01237	026524			
	01240	051101			
	01241	041513			
	01242	020040			
	01243	020040			
0199	01244	000024	CHA44	OCT 24	CHAR. COUNT
0200	01245	077400	S872	OCT 77400	BIT 8 TO BIT 14MASK
0201	01246	004217	TRV	DEF TRVER	IND. ADDR.
0202	01247	000000	S500	OCT 0	ACTIVE TRACK COUNTER
0203	01250	003510	S507	DEF READ	IND. ADDR.
0204	01251	004024	S509	DEF S603	IND. ADDR.

0205	01252	177577	S510	OCT 177577	-201 OCTAL
0206	01253	020000	S880	OCT 20000	UPPER BLANK
0207	01254	177600	S881	OCT 177600	WORKING -128
0208	01255	177600	S882	OCT 177600	-128
0209	01256	004020	1775	DEF S775	IND.
0210	01257	004012	17730	DEF S7730	IND.
0211	01260	103510	READ1	DEF READ.1	DOUBLE IND.
0212	01261	060206	S883	LDA S812	377 TO A
0213	01262	010111		AND CARRY+1	RETAIN M.S. DIGIT
0214	01263	001727		ALF,ALF	
0215	01264	070001		STA 1	
0216	01265	060475		LDA S831	177400 TO A
0217	01266	010112		AND CARRY+2	RETAIN MIDDLE DIGIT
0218	01267	001727		ALF,ALF	
0219	01270	030001		TOR 1	
0220	01271	071226		STA MES43+9	SETUP PRINT MESSAGE
0221	01272	060206		LDA S812	377 TO A
0222	01273	010112		AND CARRY+2	RETAIN LOW DIGIT
0223	01274	001727		ALF,ALF	
0224	01275	071227		STA MES43+10	SETUP PRINT MESSAGE
0225	01276	125277		JMP S884.1	
0226	01277	003055	S884	DEF S885+1	
0227	***** INPUT SUBROUTINE- TTY OR PR *****				
0228	01300	000000	S900	NOP	RETURN-ENTERED WITH S804 SETUP
0229	01301	060173		LDA S801	BUFFER ADDR. TO A
0230	01302	070172		STA S800	RESTORE BUFFER ADDR.
0231	01303	064174		LDR S802	R=FULL BUFFER COUNTER
0232	01304	060175		LDA S803	A=2 ASCII BLANKS
0233	01305	170172	S700	STA S800.1	FILL LOCN. WITH BLANKS
0234	01306	034172		ISZ S800	INCR. BUFFER ADDRESS
0235	01307	034001		ISZ 1	INCR. BUFFER COUNT
0236	01310	025305		JMP S700	LOOP
0237	01311	006400		CLB	CLEAR B
0238	01312	074176		STR SEXT	CLEAR EXIT FLAG
0239	01313	102501		LIA 1	SW. REG. TO A
0240	01314	000066		CLE,ELA	DEC. BIT TO E
0241	01315	064173		LDR S801	BUFFER ADDR. TO B
0242	01316	060177		LDA S804	INPUT CHAR. LENGTH TO A
0243	01317	002041		SEZ,RSS	E=1,PR INPUT
0244	01320	025323		JMP **+3	E=0,TTY INPUT
0245	01321	114101		JSH 101B.1	PR INPUT
0246	01322	025324		JMP **+2	COMPLETE
0247	01323	114104		JSP 104B.1	TTY INPUT
0248	01324	070201		STA S807	SAVE INPUT CHAR. COUNT
0249	01325	001300		WAR	LSB TO MSB
0250	01326	002020		SSA	SKIP IF CHAR. COUNT EVEN
0251	01327	002004		INA	IF,NOT-ADD ONE
0252	01330	010202		ANI S808	RETAIN A0-A14
0253	01331	040173		ADA S801	ADD 1ST WORD BUFFER ADDRESS
0254	01332	070203		STA S809	LAST WORD BUFFER ADDRESS
0255	01333	060173		LDA S801	
0256	01334	070172		STA S800	RESTORE BUFFER ADDRESS
0257	01335	060205		LDA S811	UPPER/LOWER CHAR. MASK TO A
0258	01336	070204		STA S810	WORKING U/L CHAR. MASK
0259	01337	060201		LDA S807	ACTUAL INPUT CHAR. COUNT TO A
0260	01340	125300		JMP S900.1	EXIT-ACTUAL INPUT CHAR. COUNT=A
0261	***** GET A CHARACTER SUBROUTINE *****				

0262	01341	000000	S901	NOP	RETURN
0263	01342	064204		LDR S810	WORKING U/L CHAR. MASK TO B
0264	01343	160172		LDA S800.1	PICKUP BUFFER WORD
0265	01344	006020		SSH	SKIP IF LOWER HALF CHAR.
0266	01345	001727		ALF,ALF	ROTATE A LEFT 8
0267	01346	010206		ANC S812	RETAIN A0-A7
0268	01347	006021		SSB,RSS	SKIP IF UPPER CHAR.
0269	01350	034172		ISZ S800	INCR. BUFFER ADDR.
0270	01351	005200		RBL	ROTATE UPPER-LOWER MASK
0271	01352	074204		STF S810	RESTORE U/L CHAR. MASK
0272	01353	070207		STA S813	SAVE CHAR. IN TEMP. LOCN.
0273	01354	060172		LDA S800	CURRENT BUFFER ADDR.
0274	01355	050203		CPA S809	COMPARE WITH LAST BUFFER ADDR.
0275	01356	025361		JMF S701	YES,SET EXIT FLAG
0276	01357	060207	S702	LDA S813	RESTORE CHAR. IN A
0277	01360	125341		JMP S901.1	'EXIT-CHAR. IN A0-A7
0278	01361	034176	S701	ISZ SEXT	SET EXIT FLAG
0279	01362	025357		JMF S702	RETURN
0280	***** ASCII-OCTAL VERIFICATION ROUTINE *****				
0281	01363	000000	S902	NOP	ENTERED WITH CHAR. IN A0-A7
0282	01364	064234		LDR S819	ASCII 0 TO A
0283	01365	050001		CPA 1	COMPARE A TO B
0284	01366	025405		JMP S902A	CHAR. LEGAL-EXIT
0285	01367	006004		INH	
0286	01370	054446		CPH S830	B=000070?
0287	01371	002001		RSS	FINISHED-CHAR. ILLEGAL
0288	01372	025365		JMP S902+2	NOT FINISHED
0289	01373	070001		STA 1	A TO B
0290	01374	060475		LDA S831	A8-A15 MASK
0291	01375	010450		ANC MES22	RETAIN A8-A15
0292	01376	030001		IOR 1	B0-B7 TO A
0293	01377	070450		STA MES22	RESTORE MESSAGE
0294	01400	060474		LDA CHA22	NO. OF CHAR.=39
0295	01401	064447		LDR IAD22	ST. ADDR. OF PRINT BUFFER
0296	01402	114102		JSE 1020.I	OUTPUT ERROR MESSAGE
0297	01403	102001		HLT 01	TURN SW.15 OFF IF ON
0298	01404	125363		JMP S902.1	ERROR RETURN
0299	01405	035363	S902A	ISZ S902	INCR. EXIT ADDRESS
0300	01406	025404		JMP S902A-1	EXIT
0301	***** OCTAL TO ASCII CONVERSION - 6 DIGITS *****				
0302	01407	000000	CONV1	NOP	OCTAL TO ASCII CONV. SUBR.
0303	*ENTERED WITH B=6 DIGIT OCTAL NUMBER				
0304	01410	060120		LDA CHARY	
0305	01411	070121		STA CHARW	RESET ARRAY ADDRESS
0306	01412	060116		LDA MASK4	ASCII 0 TO A
0307	01413	006020		SSB	MSB=0?
0308	01414	060117		LDA MASK5	ASCII 1 TO A
0309	01415	170121		STA CHARW,1	1ST DIGIT COMPLETE
0310	01416	005700		RLF	ROTATE 4 LEFT
0311	01417	060114		LDA MASK2	77 TO A
0312	01420	010001		ANC 1	B0-B2 TO A
0313	01421	030115		IOR MASK3	6X IN A0-A7
0314	01422	130121		IOR CHARW,1	COMPLETE 2ND DIGIT
0315	01423	170121		STA CHARW,1	RESTORE 1ST WORD
0316	01424	034121		ISZ CHARW	INCR. ARRAY ADDR.
0317	01425	005723		ALF,RBR	ROTATE 3 LEFT
0318	01426	060114		LDA MASK2	77 TO A

0319	01427	010001	AND 1	B0-B2 TO A	
0320	01430	030115	IOR MASK3	6X IN A0-A7	
0321	01431	001727	ALF,ALF	ROTATE A LEFT 8	
0322	01432	170121	STA CHARW,I	3RD DIGIT COMPLETE	
0323	01433	005723	HLF,RBR	ROTATE 3 LEFT	
0324	01434	060114	LDA MASK2	77 TO A	
0325	01435	010001	AND 1	B0-B2 TO A	
0326	01436	030115	IOR MASK3	6X IN A0-A7	
0327	01437	130121	IOR CHARW,I	COMPLETE 4TH DIGIT	
0328	01440	170121	STA CHARW,I	RESTORE 2ND WORD	
0329	01441	034121	ISZ CHARW	INCR. ARRAY ADDR.	
0330	01442	005723	HLF,RBR	ROTATE 3 LEFT	
0331	01443	060114	LDA MASK2	77 TO A	
0332	01444	010001	AND 1	B0-B2 TO A	
0333	01445	030115	IOR MASK3	6X IN A0-A7	
0334	01446	001727	ALF,ALF	ROTATE A LEFT 8	
0335	01447	170121	STA CHARW,I	5TH DIGIT COMPLETE	
0336	01450	005723	HLF,RBR	ROTATE 3 LEFT	
0337	01451	060114	LDA MASK2	77 TO A	
0338	01452	010001	AND 1	B0-B2 TO A	
0339	01453	030115	IOR MASK3	6X IN A0-A7	
0340	01454	130121	IOR CHARW,I	6TH DIGIT COMPLETE	
0341	01455	170121	STA CHARW,I	RESTORE 3RD WORD	
0342	01456	125407	JMP CONV1,I	RETURN	
0343	***** INTERRUPT ERROR SUBROUTINE *****				
0344	01457	000000	S903	NOF	WRITE INTERRUPT ERROR
0345	01460	061541	LDA CHA40		NO. OF CHAR.=23
0346	01461	065524	LDR IAD40		ST. ADDR. OF PRINT BUFFER
0347	01462	114102	JSH 102B.I		OUTPUT MESSAGE
0348	01463	025471	JMP S905		CONTINUE
0349	01464	000000	S904	NOF	
0350	01465	061556	LDA CHA41		NO. OF CHAR.=22
0351	01466	065542	LDR IAD41		ST. ADDR. OF PRINT BUFFER
0352	01467	114102	JSE 102B.I		OUTPUT MESSAGE
0353	01470	025473	JMP S906		CONTINUE
0354	01471	015475	S905	JSE S907	GET DMA WORD COUNT
0355	01472	125457	JMP S903-I		RETURN FROM WRITE INT. ERROR
0356	01473	015475	S906	JSE S907	GET DMA WORD COUNT
0357	01474	125464	JMP S904-I		RETURN FROM READ INT. ERROR
0358	01475	000000	S907	NOF	
0359	01476	064123	LDR DMADR		DMA OCTAL ADDR. TO B
0360	01477	054627	CPH MASK6		DMA CHAN.=6?
0361	01500	025503	JMP *+3		YES
0362	01501	064631	LDR MAS7A		NO-ADDR.=3
0363	01502	025504	JMP *+2		
0364	01503	064630	LDR MAS6A		ADDR.=2
0365	01504	060107	LDA MASK1		177700 TO A
0366	01505	011510	AND S908		RETAIN A6-A15
0367	01506	030001	IOR 1		IOR WCR ADDRESS
0368	01507	071510	STA S908		RESTORE S908
0369	01510	106500	S908	LIE 0	INPUT WORD COUNT
0370	01511	114113	JSP CONV.I		OCTAL TO ASCII CONVERSION
0371	01512	060110	LDA CARRY		SETUP PRINT MESSAGE
0372	01513	071570	STA MES42+8		
0373	01514	060111	LDA CARRY+1		
0374	01515	071571	STA MES42+9		
0375	01516	060112	LDA CARRY+2		

0376	01517	071572	STA	MES40+10	
0377	01520	061573	LDA	CHA40	NO. OF CHAR.=22
0378	01521	065557	LDR	IAD40	ST. ADDR. OF PRINT BUFFER
0379	01522	114102	JSR	1028.I	OUTPUT MESSAGE
0380	01523	125475	JMP	S907.I	EXIT
0381	01524	001525	IAD40	DEF MES40	BUFFER ADDR.
0382	01525	053522	MES40	ASC 12,WRITE	INTERRUPT MISSING
	01526	044524			
	01527	042440			
	01530	044516			
	01531	052105			
	01532	051122			
	01533	052520			
	01534	052040			
	01535	046511			
	01536	051523			
	01537	044516			
	01540	043440			
0383	01541	000027	CHA40	OCT 27	CHAR. COUNT
0384	01542	001543	IAD41	DEF MES41	BUFFER ADDR.
0385	01543	051105	MES41	ASC 11,READ	INTERRUPT MISSING
	01544	040504			
	01545	020111			
	01546	047124			
	01547	042522			
	01550	051125			
	01551	050124			
	01552	020115			
	01553	044523			
	01554	051511			
	01555	047107			
0386	01556	000026	CHA41	OCT 26	CHAR. COUNT
0387	01557	001560	IAD42	DEF MES42	BUFFER ADDR.
0388	01560	042115	MES42	ASC 11,DMA	WORD COUNT=
	01561	040440			
	01562	053517			
	01563	051104			
	01564	020103			
	01565	047525			
	01566	047124			
	01567	036440			
	01570	020040			
	01571	020040			
	01572	020040			
0389	01573	000026	CHA42	OCT 26	CHAR. COUNT
0390	***** PROTECT SUBROUTINE *****				
0391	01574	000000	PRCTC	NOF	PROTECT CHECK SUBROUTINE
0392	01575	002400	CLA		
0393	01576	071663	STA	S912	CLEA
0394	01577	071662	STA	S910	CLEAR TRACK ADDR. COUNTER
0395	01600	061255	LDA	S882	-128 TO A
0396	01601	071254	STA	S881	RESET COUNTER
0397	01602	064122	LDR	DADR1	H.P. DISK ADDR. TO B
0398	01603	006004	INB		SET TO L.P. ADDR.
0399	01604	060107	LDA	MASK1	177700 TO A
0400	01605	011616	AND	S911+2	RETAIN A6-A15
0401	01606	030001	IOR	1	B TO A

0402	01607	071616		STA S911+2	RESTORE S911+2
0403	01610	060107		LDA MASK1	177700 TO A
0404	01611	011617		AND S911+3	RETAIN A6-A15
0405	01612	030001		IOR 1	B TO A
0406	01613	071617		STA S911+3	RESTORE S911+3
0407	01614	061662	S911	LDA S910	TR. ADDR. COUNTER TO A
0408	01615	001727		ALF,ALF	A0-A5 TO A8-A13
0409	01616	102600		OTA 0	TRACK ADDR. TO DISK
0410	01617	102500		LIA 0	INPUT STATUS
0411	01620	001323		WAN,RAR	BIT2 TO BIT0
0412	01621	002011		SLA,RSS	WRITE ENABLE=1?
0413	01622	035663		ISZ S912	NO-PROTECT COUNTER
0414	01623	035662		ISZ S910	INCR. TRACK ADDRESS
0415	01624	035254		ISZ S881	128 TRACKS FINISHED?
0416	01625	025614		JMF S911	NO-LOOP
0417	01626	065663		LDE S912	ACTUAL PROTECT COUNT
0418	01627	114113		JSP CONV.1	CONVERT OCTAL TO ASCII
0419	01630	060206		LDA S812	377 TO A
0420	01631	010111		AND CARRY+1	RETAIN M.S. DIGIT
0421	01632	031253		IOR S880	BLANK A8-A15
0422	01633	071657		STA MES45+12	SETUP PRINT MESSAGE
0423	01634	060112		LDA CARRY+2	PICKUP ASCII COUNT
0424	01635	071660		STA MES45+13	PREPARE MESSAGE
0425	01636	061661		LDA CHA45	CHAR. COUNT=28
0426	01637	065642		LDE IAD45	ST. ADDR. OF PRINT BUFFER
0427	01640	114102		JSH 102B.1	OUTPUT MESSAGE
0428	01641	125574		JMF PROT0,1	RETURN
0429	01642	001643	IAD45	DEF MES45	BUFFER ADDR.
0430	01643	047117	MES45	ASC 14,NO. OF	PROTECTED TRACKS-
	01644	027040			
	01645	047506			
	01646	020120			
	01647	051117			
	01650	052105			
	01651	041524			
	01652	042504			
	01653	020124			
	01654	051101			
	01655	041513			
	01656	051455			
	01657	020040			
	01660	020040			
0431	01661	000034	CHA45	OCT 34	CHAR. COUNT
0432	01662	000000	S910	OCT 0	TRACK ADDRESS COUNTER
0433	01663	000000	S912	OCT 0	PROTECT COUNTER
0434	01700			ORG 1700H	
0435	01700	000000	S999	NOP	ERROR COUNT
0436	01701	000000		NOP	ERROR COUNT OVERFLOW
0437	01702	001703	IAD52	DEF MES52	BUFFER ADDR.
0438	01703	041111	MES52	ASC 19,BINARY	PARAMETER EXCEEDS 72 CHARACTERS
	01704	047101			
	01705	051131			
	01706	020120			
	01707	040522			
	01710	040515			
	01711	042524			
	01712	042522			

01713	020105			
01714	054103			
01715	042505			
01716	042123			
01717	020067			
01720	031040			
01721	041510			
01722	040522			
01723	040503			
01724	052105			
01725	051123			
0439	01726	000046	CHA52	OCT 46
0440	02000			ORG 20000
0441	02000	060143	START	LDA CHA11
0442	02001	064127		LDB IAD11
0443	02002	114102		JSB 1020.I
0444	02003	060125		LDA S100
0445	02004	064124		LDB ARDMA
0446	02005	114104		JSB 1040.I
0447	02006	060123		LDA DMADR
0448	02007	050144		CPA DMA06
0449	02010	026014		JMP S300
0450	02011	050145		CPA DMA07
0451	02012	026014		JMP S300
0452	02013	026000		JMP START
0453	02014	010114	S300	AND MASK0
0454	02015	070123		STA DMADR
0455	02016	060170		LDA CHA12
0456	02017	064146		LDB IAD12
0457	02020	114102		JSB 1020.I
0458	02021	060125		LDA S100
0459	02022	064126		LDB ADIAN
0460	02023	114104		JSB 1040.I
0461	02024	060114		LDA MASK0
0462	02025	010122		AND DADR1
0463	02026	070001		STA 1
0464	02027	060122		LDA DADR1
0465	02030	001727		ALF,ALF
0466	02031	010114		AND MASK0
0467	02032	001723		ALF,RAR
0468	02033	030001		IOR 1
0469	02034	070122		STA DADR1
0470	02035	115175		JSB PROT.1
0471	02036	102501		LIA 01
0472	02037	001700		ALF
0473	02040	002020		SSA
0474	02041	115246		JSB TRV,1
0475	02042	060502	T4	LDA AWTBF
0476	02043	006400		CLB
0477	02044	174000		STR 0,1
0478	02045	002004		INA
0479	02046	050106		CPA 1068
0480	02047	026051		JMP ++2
0481	02050	026044		JMP T4+2
0482	02051	075213		STR PFLAW
0483	02052	175103		STR S854.I
0484	02053	076574		STR WRITE

CHAR. COUNT

NO. OF CHAR.=14

ST. ADDR. OF PRINT BUFFER

OUTPUT MESSAGE

NO. OF CHAR.=2

BUFFER ADDR.

INPUT DMA ADDR.

ASCII DMA ADDR. TO A

EQUAL 06

YES

EQUAL 07

YES

NO-GET GOOD ADDRESS

A0-A2 MASK

RESTORE OCTAL DMA ADDRESS

NO. OF CHAR.=28

ST. ADDR. OF PRINT BUFFER

OUTPUT MESSAGE

NO. OF CHAR.=2

BUFFER ADDR.

INPUT H.P. DISK ADDR.

A0-A2 MASK

RETAIN 10-A2

A TO B

ASCII ADDR. TO A

LEFT 8

RETAIN A0-A2

LEFT 3

B TO A

RESTORE OCTAL H.P. DISK ADDRESS

CHECK PROTECT FEATURE

SW. REG. TO A

BIT11 TO BIT15

SW.11=0?

TRACK ADDR. CHECK SUBR.

START OF BUFFER AREA

LAST ADDR. OF BUFFER AREA

FINISHED

NOT FINISHED

CLEAR FLAGS

0485	02054	077102		STP	S601	
0486	02055	077510		STB	READ	
0487	02056	175251		STP	S509.1	CLEAR NOP'S
0488	02057	102501		LIA	01	SW. REG. TO A
0489	02060	001200		HAL		BIT 14 TO BIT 15
0490	02061	002020		SSA		BIT 15=0?
0491	02062	024270		JMP	S824	MANUAL PRESET
0492	02063	102501		LIA	01	SW. REG. TO A
0493	02064	002020		SSA		BIT 15=0?
0494	02065	026071		JMP	S703	NO-PR INPUT
0495	02066	060225		LDA	CHA16	NO. OF CHAR.=21
0496	02067	064211		LDB	IAD16	ST. ADDR. OF PRINT BUFFER
0497	02070	114102		JSE	102B.1	OUTPUT MESSAGE
0498	02071	060200	S703	LDA	S805	CHAR. COUNT=72
0499	02072	070177		STA	S804	SETUP INPUT CHAR. LENGTH
0500	02073	015300		JSE	S900	CALL INPUT SUBROUTINE
0501	02074	040226		ADA	S816	ADD -73 TO CHAR. COUNT
0502	02075	002020		SSA		POS.=ERROR
0503	02076	026104		JMP	S704	NO ERROR
0504	02077	061726		LDA	CHA50	CHAR. COUNT=38
0505	02100	065702		LDR	IAD50	ST. BUFFER ADDR.
0506	02101	114102		JSE	102B.1	OUTPUT MESSAGE
0507	02102	102001		HLT	01	TURN SW.15 OFF IF ON
0508	02103	026071		JMP	S703	RETURN FOR NEW INPUT
0509	02104	002400	S704	CLA		
0510	02105	070227		STA	PWORD	CLEAR BINARY PATTERN WORD
0511	02106	070230		STA	CWORD	WORK COMPLEMENT FLAG
0512	02107	070231		STA	CBUFF	COMPLEMENT BUFFER WORD
0513	02110	060233		LDA	S818	
0514	02111	070232		STA	S817	SET COUNTER TO -16
0515	02112	015341		JSE	S901	GET A CHAR.
0516	02113	050476		CPA	S832	CHAR.=BLANK?
0517	02114	002001		RSS		MORE BLANKS-TAPE LEADER
0518	02115	026122		JMP	S704A	BLANKS FINISHED?
0519	02116	064176		LDR	SEXT	EXIT FLAG TO B
0520	02117	006011		SLB,RSS		FLAG=1?
0521	02120	026112		JMP	*-6	NO-GET ANOTHER CHAR.
0522	02121	026077		JMP	S704-5	PRINT ERROR MESSAGE
0523	02122	064176	S704A	LDR	SEXT	EXIT FLAG TO B
0524	02123	004010		SLB		FLAG=0?
0525	02124	026077		JMP	S704-5	NO-PRINT ERROR MESSAGE
0526	02125	002001		RSS		BLANKS FINISHED
0527	02126	015341	S705	JSP	S901	GET A CHAR.
0528	02127	050234		CPA	S819	CHAR.=0
0529	02130	026140		JMP	S706	YES
0530	02131	050235		CPA	S820	CHAR.=1
0531	02132	026140		JMP	S706	YES
0532	02133	060265		LDA	CHA1A	ERROR-CHAR. COUNT=43
0533	02134	064236		LDB	IAD1A	ST. ADDR. OF PRINT BUFFER
0534	02135	114102		JSE	102B.1	OUTPUT ERROR MESSAGE
0535	02136	102001		HLT	01	TURN SW. 15 OFF IF ON
0536	02137	026066		JMP	S703-3	GET NEW PATTERN FROM TTY
0537	02140	006404	S706	CLB,INB		B MASK=000001
0538	02141	010001		AND	1	RETAIN A0
0539	02142	064227		LDR	PWORD	PATTERN WORD TO B
0540	02143	001200		RAL		A LEFT 1
0541	02144	005200		RBL		B LEFT 1

0542	02145	030001		IOR 1	INCL. OR B TO A
0543	02146	070227		STA PWORH	RESTORE PATTERN WORD
0544	02147	034232		ISZ S817	INCR. BIT COUNTER
0545	02150	026126		JMP S705	16 BITS NOT FINISHED
0546	02151	060227		LDA PWORH	PATTERN WORD TO A
0547	02152	001300		RAR	ADJUST WORD RIGHT 1
0548	02153	070227		STA PWORH	RESTORE FINAL BIN. PATTERN WORD
0549	02154	015341		JSH S901	GET A CHAR.
0550	02155	050476		CPA S832	CHAR.=BLANK?
0551	02156	002001		RSS	YES
0552	02157	034230		ISZ CWORH	SET COMPLEMENT WORD FLAG
0553	02160	015341		JSH S901	GET A CHAR.
0554	02161	050476		CPA S832	CHAR.=BLANK?
0555	02162	002001		RSS	YES
0556	02163	034231		ISZ CBUFF	SET COMPLEMENT BUFFER FLAG
0557	02164	060267		LDA S823	
0558	02165	070266		STA S822	RESET SECTOR BUFFER ADDRESS
0559	02166	060230		LDA CWORH	COMPL. WORD FLAG TO A
0560	02167	001500		FRA	A0 TO F
0561	02170	060375		LDA S829	-64 TO A
0562	02171	070374		STA S828	RESET WORKING COUNT
0563	02172	060227		LDA PWORH	BIN. PATTERN WORD TO A
0564	02173	002040	S707	SEZ	E=0?
0565	02174	003000		CMA	NO-COMPL. EVERY WORD
0566	02175	170266		STA S822.I	STORE IN BUFFER
0567	02176	034266		ISZ S822	INCR. BUFFER ADDRESS
0568	02177	034374		ISZ S828	INCR. WORD COUNT
0569	02200	026173		JMP S707	BUFFER NOT FINISHED
0570	02201	000000	S708	NOP	BEGINNING OF WRITE PROCESSOR
0571	02202	060502		LDA AWTBF	ST. ADDR.-BUFFER
0572	02203	006400		CLR	
0573	02204	174000		STB 0,I	
0574	02205	002004		INA	
0575	02206	050506		CPA ARTBF	LAST ADDR.+1
0576	02207	026211		JMF ++2	FINISHED
0577	02210	026204		JMP S708+3	NOT FINISHED
0578	02211	075700		STB S999	CLEAR ERROR COUNT
0579	02212	075701		STB S999+1	CLEAR ERROR COUNT OVERFLOW
0580	02213	060502		LDA AWTBF	
0581	02214	070503		STA WAWTR	RESET ARRAY ADDR.
0582	02215	061205		LDA S863	-65 TO A
0583	02216	071204		STA S862	-65 TO WORKING
0584	02217	102501		LIA 01	SW. REG. TO A
0585	02220	002020		SSA	BIT 15=0?
0586	02221	026225		JMP S709	NO-PR INPUT
0587	02222	060406		LDA CHA10	NO. OF CHAR.=14
0588	02223	064376		LDB IAD10	ST. ADDR. OF PRINT BUFFER
0589	02224	114102		JSH 1020.I	OUTPUT MESSAGE
0590	02225	060200	S709	LDA S805	CHAR. COUNT=72
0591	02226	070177		STA S804	SETUP INPUT CHAR. LENGTH
0592	02227	015300		JSH S900	CALL INPUT SUBROUTINE
0593	02230	040226		ADA S816	ADD -73 TO CHAR. COUNT
0594	02231	002020		RSA	POS.=ERROR
0595	02232	026240		JMP S710	NO ERROR
0596	02233	060445		LDA CHA21	CHAR. COUNT=37
0597	02234	064421		LDB IAD21	ST. ADDR. OF PRINT BUFFER
0598	02235	114102		JSH 1020.I	OUTPUT MESSAGE

0599	02236	102001		HLT 01	TURN SW. 15 OFF IF ON
0600	02237	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0601	02240	015341	S710	JSH S901	GET A CHAR.
0602	02241	050476		CPA S832	IS CHAR. A BLANK?
0601	02242	026256		JMP S711	YES-CHECK EXIT FLAG
0602	02243	050477		CPA S833	IS CHAR. A COMMA?
0603	02244	026256		JMP S711	YES-CHECK EXIT FLAG
0604	02245	050500		CPA S834	IS CHAR. A SLASH?
0605	02246	026225		JMP S709	PROCESS CONTINUATION
0606	02247	050512		CPA S836	IS CHAR. A T ?
0607	02250	026265		JMP S712	YES-PROCESS PARAMETER
0608	02251	060445		LDA CHA21	CHAR. COUNT=37
0609	02252	064514		LDE IAD23	ST. ADDR. OF PRINT BUFFER
0610	02253	114102		JSH 102B.1	OUTPUT MESSAGE
0611	02254	102001		HLT 01	TURN SW. 15 OFF IF ON
0612	02255	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0613	02256	064176	S711	LDB SEXT	EXIT FLAG TO B
0614	02257	006011		SLP,RSS	EXIT FLAG=1?
0615	02260	026240		JMP S710	NO
0616	02261	060502		LDA AWTBF	YES
0617	02262	050503		CPA WAWTR	ANY ENTRIES?
0618	02263	027125		JMP S743	NO-JUMP TO READ PROCESSOR
0619	02264	026376		JMP S720-3	YES-GET WRITE SECTOR PARAMERS.
0620	02265	060602	S712	LDA S842	-3 TO A
0621	02266	070603		STA S843	RESET CHAR. COUNTER
0622	02267	002400		CLA	
0623	02270	070540		STA S840	CLEAR CHAR. HOLD
0624	02271	015341		JSP S901	GET A CHAR.
0625	02272	050476		CPA S832	IS CHAR. A BLANK?
0626	02273	026307		JMP S713	CHECK EXIT FLAG
0627	02274	015363		JSH S902	CHECK LEGALITY-0-7
0628	02275	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0629	02276	064114		LDB MASK2	7 TO B
0630	02277	010001		AND 1	RETAIN A0-A2
0631	02300	064540		LDB S840	PARTIAL TO B
0632	02301	005723		RLF,RBR	ROTATE LEFT 3
0633	02302	030001		IOR 1	IOR A TO A
0634	02303	070540		STA S840	RESTORE RESULTS
0635	02304	034603		ISZ S843	TRACK ADDR. FINISHED?
0636	02305	026271		JMP S712+4	NO-GET ANOTHER CHARACTER
0637	02306	026317		JMP S715	CONTINUE PARAMETER
0638	02307	064176	S713	LDB SEXT	EXIT FLAG TO B
0639	02310	006011		SLP,RSS	EXIT FLAG=1?
0640	02311	026271		JMP S712+4	NO-GET A CHAR.
0641	02312	060560	S714	LDA CHA24	CHAR. COUNT=26
0642	02313	064542		LDB IAD24	ST. ADDR. OF PRINT BUFFER
0643	02314	114102		JSH 102B.1	OUTPUT ERROR MESSAGE
0644	02315	102001		HLT 01	TURN SW. 15 OFF IF ON
0645	02316	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0646	02317	015341	S715	JSH S901	GET A CHAR.
0647	02320	050476		CPA S832	IS CHAR. A BLANK?
0648	02321	026325		JMP S716	YES-CHECK EXIT FLAG
0649	02322	050501		CPA S835	IS CHAR. A - ?
0650	02323	026331		JMP S717	YES
0651	02324	026312		JMP S714	NO-PRINTOUT ERROR MESSAGE
0652	02325	064176	S716	LDB SEXT	EXIT FLAG TO B
0653	02326	004010		SLP	EXIT FLAG=0?

0054	02327	026312		JMP S714	NO-ERROR PRINTOUT
0055	02330	026317		JMP S715	GET A CHAR.
0056	02331	060602	S717	LDA S842	-3 TO A
0057	02332	070603		STA S843	RESET CHAR. COUNTER
0058	02333	002400		CLA	
0059	02334	070541		STA S841	CLEAR CHAR. HOLD
0060	02335	015341		JSB S901	GET A CHAR.
0061	02336	050476		CP# S832	IS CHAR. A BLANK?
0062	02337	026353		JMP S718	CHECK EXIT FLAG
0063	02340	015363		JSB S902	CHECK LEGALITY-0-7
0064	02341	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0065	02342	064114		LDB MASK2	7 TO B
0066	02343	010001		AND 1	RETAIN A0-A2
0067	02344	064541		LDB S841	PARTIAL TO B
0068	02345	005723		RLF,RBR	ROTATE LEFT 3
0069	02346	030001		IOR J	IOR B TO A
0070	02347	070541		STA S841	RESTORE RESULTS
0071	02350	034603		ISZ S843	TRACK SEQ. CHAR. FINISHED?
0072	02351	026335		JMP S717+4	NO-GET ANOTHER CHARACTER
0073	02352	026357		JMP S719	CONTINUE PARAMETER
0074	02353	064176	S718	LDB SEXT	EXIT FLAG TO B
0075	02354	006011		SLR,RSS	EXIT FLAG=1?
0076	02355	026335		JMP S717+4	NO-GET ANOTHER CHAR.
0077	02356	026312		JMP S714	OUTPUT ERROR MESSAGE
0078	02357	060541	S719	LDA S841	SEQ. #
0079	02360	003004		CMA,INA	2'S COMPL.
0080	02361	070541		STA S841	BLOCK SEQ. FOR TRACKS
0081	02362	060540		LDA S840	ST. TRACK ADDR. OF BLOCK
0082	02363	170503		STA WAWTR,I	STORE TRACK ADDRESS
0083	02364	034503		ISZ WAWTR	INCR. ARRAY ADDRESS
0084	02365	002004		INA	INCR. TRACK ADDRESS
0085	02366	035204		ISZ S862	64 ADDR. ENTERED?
0086	02367	026371		JMP **+2	NO
0087	02370	026401		JMP S720	YES
0088	02371	034541		ISZ S841	INCR. # OF TRACKS
0089	02372	026363		JMP S719+4	NOT FINISHED
0090	02373	064176		LDB SEXT	EXIT FLAG TO B
0091	02374	006011		SLR,RSS	EXIT FLAG=1?
0092	02375	026240		JMP S710	GET ANOTHER WRITE TRACK PAREM.
0093	02376	060503		LDA WAWTR	
0094	02377	070604		STA LAWTR	
0095	02400	026406		JMP S721	GET WRITE SECTOR PARAMETERS
0096	02401	060601	S720	LDA CHA25	CHAR. COUNT=29
0097	02402	064561		LDB IAD25	ST. ADDR. OF PRINT BUFFER
0098	02403	114102		JSB 102B.I	ERROR PRINTOUT
0099	02404	102001		HLT 01	TURN SW. 15 OFF IF ON
0100	02405	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0101	02406	060504	S721	LDA AWSBF	
0102	02407	070505		STA WAWSR	RESET ARRAY ADDRESS
0103	02410	061207		LDA S865	-86 TO A
0104	02411	071206		STA S864	-86 TO WORKING
0105	02412	102501		LIA 01	SW. REG. TO A
0106	02413	002020		SSA	BIT 15=0?
0107	02414	026420		JMP S722	NO-PR INPUT
0108	02415	060420		LDA CHA20	NO. OF CHAR.=15
0109	02416	064407		LDB IAD20	ST. ADDR. OF PRINT BUFFER
0110	02417	114102		JSE 102B.I	OUTPUT MESSAGE

0111	02420	060200	S722	LDA S805	CHAR. COUNT=72
0112	02421	070177		STA S804	SETUP INPUT CHAR. LENGTH
0113	02422	015300		JSR S900	CALL INPUT SUBROUTINE
0114	02423	040226		ADA S816	ADD -73 TO CHAR. COUNT
0115	02424	002020		SSA	POS.=ERROR
0116	02425	026433		JMP S723	NO ERROR
0117	02426	060445		LDA CHA21	CHAR. COUNT=37
0118	02427	064421		LDE IAD21	ST. ADDR. OF PRINT BUFFER
0119	02430	114102		JSR 102B.1	OUTPUT ERROR MESSAGE
0120	02431	102001		HLT 01	TURN SW.15 OFF IF ON
0121	02432	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0122	02433	015341	S723	JSR S901	GET A CHAR.
0123	02434	050476		CPA S832	IS CHAR. A BLANK?
0124	02435	026451		JMP S724	YES-CHECK EXIT FLAG
0125	02436	050477		CPA S833	IS CHAR. A COMMA?
0126	02437	026451		JMP S724	YES-CHECK EXIT FLAG
0127	02440	050500		CPA S834	IS CHAR. A SLASH?
0128	02441	026420		JMP S722	PROCESS CONTINUATION
0129	02442	050513		CPA S837	IS CHAR. A S?
0130	02443	026455		JMP S725	YES-PROCESS PARAMETER
0131	02444	060445		LDA CHA21	CHAR. COUNT=37
0132	02445	064514		LDE IAD23	ST. ADDR. OF PRINT BUFFER
0133	02446	114102		JSR 102B.1	OUTPUT ERROR MESSAGE
0134	02447	102001		HLT 01	TURN SW. 15 OFF IF ON
0135	02450	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0136	02451	064176	S724	LDR SEXT	EXIT FLAG TO B
0137	02452	006011		SLR,RSS	EXIT FLAG=1?
0138	02453	026433		JMP S723	NO
0139	02454	026563		JMP S733-3	YES-JUMP TO WRITE OPERATION
0140	02455	060602	S725	LDA S842	-3 TO A
0141	02456	070603		STA S843	RESET CHAR. COUNTER
0142	02457	002400		CLA	
0143	02460	070540		STA S840	CLEAR CHAR. HOLD
0144	02461	015341		JSR S901	GET A CHAR.
0145	02462	050476		CPA S832	IS CHAR. A BLANK?
0146	02463	026477		JMP S726	CHECK EXIT FLAG
0147	02464	015363		JSR S902	CHECK LEGALITY-0-7
0148	02465	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0149	02466	064114		LDR MASK2	7 TO B
0150	02467	010001		ANI 1	RETAIN A0-A2
0151	02470	064540		LDR S840	PARTIAL TO B
0152	02471	005723		RLF,RBR	ROTATE LEFT 3
0153	02472	030001		IOR 1	IOR B TO A
0154	02473	070540		STA S840	RESTORE RESULTS
0155	02474	034503		ISZ S843	SECTOR ADDR. FINISHED?
0156	02475	026461		JMP S725+4	NO-GET ANOTHER CHARACTER
0157	02476	026507		JMP S728	CONTINUE PARAMETER
0158	02477	064176	S726	LDR SEXT	EXIT FLAG TO 3
0159	02500	006011		SLR,RSS	EXIT FLAG=1?
0160	02501	026461		JMP S725+4	NO-GET A CHAR.
0161	02502	060560	S727	LDA CHA24	CHAR. COUNT=26
0162	02503	064542		LDE IAD24	ST. ADDR. OF PRINT BUFFER
0163	02504	114102		JSR 102B.1	OUTPUT ERROR MESSAGE
0164	02505	102001		HLT 01	TURN SW.15 OFF IF ON
0165	02506	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0166	02507	015341	S728	JSR S901	GET A CHAR.
0167	02510	050476		CPA S832	IS CHAR. A BLANK?

0168	02511	026515		JMP S729	YES-CHECK EXIT FLAG
0169	02512	050501		CPA S835	IS CHAR. A - ?
0170	02513	026521		JMP S730	YES
0171	02514	026502		JMP S727	NO-PRINTOUT ERROR MESSAGE
0172	02515	064176	S729	LDB SEXT	EXIT FLAG TO B
0173	02516	004010		SLR	EXIT FLAG=0?
0174	02517	026502		JMP S727	NO-ERROR PRINTOUT
0175	02520	026507		JMP S720	GET A CHAR.
0176	02521	060502	S730	LDA S842	-3 TO A
0177	02522	070603		STA S843	RESET CHAR. COUNTER
0178	02523	002400		CLA	
0179	02524	070541		STA S841	CLEAR CHAR. HOLD
0180	02525	015341		JSR S901	GET A CHAR.
0181	02526	050476		CPA S832	IS CHAR. A BLANK?
0182	02527	026543		JMP S731	CHECK EXIT FLAG
0183	02530	015363		JSR S902	CHECK LEGALITY-0-7
0184	02531	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0185	02532	064114		LDB MASK2	7 TO B
0186	02533	010001		AND 1	RETAIN A0-A2
0187	02534	064541		LDB S841	PARTIAL TO B
0188	02535	005723		RLF, RBR	ROTATE LEFT 3
0189	02536	030001		IOR 1	IOR B TO A
0190	02537	070541		STA S841	RESTORE RESULTS
0191	02540	034603		ISZ S843	SECTOR SEQ. CHAR. FINISHED?
0192	02541	026525		JMP S730+4	NO-GET ANOTHER CHARACTER
0193	02542	026547		JMP S732	CONTINUE PARAMETER
0194	02543	064176	S731	LDB SEXT	EXIT FLAG TO B
0195	02544	006011		SLB, RSS	EXIT FLAG=1?
0196	02545	026525		JMP S730+4	NO-GET ANOTHER CHAR.
0197	02546	026502		JMP S727	OUTPUT ERROR MESSAGE
0198	02547	060540	S732	LDA S840	STARTING SECTOR ADDRESS TO A
0199	02550	170505		STA WAWSR, I	PUT IN WRITE SECTOR ARRAY
0200	02551	034505		ISZ WAWSR	INCR. ARRAY ADDRESS
0201	02552	060541		LDA S841	NO. OF CONSECUTIVE SECTORS
0202	02553	170505		STA WAWSR, I	PUT IN WRITE SECTOR ARRAY
0203	02554	034505		ISZ WAWSR	INCR. ARRAY ADDRESS
0204	02555	035206		ISZ S864	85 ENTRIES IN SECTOR WRITE BUFF.
0205	02556	026560		JMP **2	NO
0206	02557	026566		JMP S733	YES
0207	02560	064176		LDB SEXT	EXIT FLAG TO B
0208	02561	006011		SLB, RSS	EXIT FLAG=1?
0209	02562	026433		JMP S723	GET ANOTHER SECTOR WRITE PAREM.
0210	02563	060505		LDA WAWSR	
0211	02564	070605		STA LAWSR	LAST BUFFER ADDR.+1
0212	02565	026574		JMP WRITE	PERFORM WRITE OPERATION
0213	02566	060626	S733	LDA CHA26	NO. OF CHAR.=30
0214	02567	064006		LDB IAD26	ST. ADDR. OF PRINT BUFFER
0215	02570	114102		JSR 102B. I	OUTPUT ERROR MESSAGE
0216	02571	102001		HLT 01	TURN SW.15 OFF IF ON
0217	02572	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0218	02573	126574	S600	JMP WRITE, I	RETURN JUMP
0219	02574	000000	WRITE	NOP	IND. RETURN
0220	02575	064123		LDB DMADR	DMA OCTAL ADDR. TO B
0221	02576	060107		LDA MASK1	177700 TO A
0222	02577	013001		AND WR2	RETAIN A6-A15
0223	02600	030001		IOR 1	IOR DMA ADDRESS
0224	02601	073001		STA WR2	RESTORE WR2

0225	02602	060107	LDA MASK1	177700 TO A
0226	02603	013010	AND WR7	RETAIN A6-A15
0227	02604	030301	IOR 1	IOR DMA ADDRESS
0228	02605	073010	STA WR7	RESTORE WR7
0229	02606	054627	CPB MASKA	DMA CHAN.=6
0230	02607	026612	JMP **3	YES
0231	02610	064631	LDR MAS7A	NO-ADDR.=3
0232	02611	026613	JMP **2	
0233	02612	064630	LDR MAS6A	ADDR.=2
0234	02613	060107	LDA MASK1	177700 TO A
0235	02614	013002	AND WR3	RETAIN A6-A15
0236	02615	030001	IOR 1	IOR MAR ADDRESS
0237	02616	073002	STA WR3	RESTORE WR3
0238	02617	060107	LDA MASK1	177700 TO A
0239	02620	013004	AND WR4	RETAIN A6-A15
0240	02621	030001	IOR 1	IOR MAR ADDRESS
0241	02622	073004	STA WR4	RESTORE WR4
0242	02623	073007	STA WR6	RESTORE WR6
0243	02624	060107	LDA MASK1	177700 TO A
0244	02625	013005	AND WR5	RETAIN A6-A15
0245	02626	030001	IOR 1	IOR WCR ADDRESS
0246	02627	073005	STA WR5	RESTORE WR5
0247	02630	064122	LDR DADR1	H.P. DISK ADDR. TO B
0248	02631	060107	LDA MASK1	177700 TO A
0249	02632	013011	AND WR8	RETAIN A6-A15
0250	02633	030001	IOR 1	IOR RLSK ADDRESS
0251	02634	073011	STA WR8	RESTORE WR8
0252	02635	006004	INB	L.P. DISK ADDR. TO B
0253	02636	060107	LDA MASK1	177700 TO A
0254	02637	012777	AND WR1	RETAIN A6-A15
0255	02640	030001	IOR 1	IOR DISK ADDRESS
0256	02641	072777	STA WR1	RESTORE WR1
0257	02642	060107	LDA MASK1	177700 TO A
0258	02643	013015	AND WR9	RETAIN A6-A15
0259	02644	030001	IOR 1	IOR DISK ADDRESS
0260	02645	073015	STA WR9	RESTORE WR9
0261	02646	073040	STA WR11	RESTORE WR11
0262	02647	072764	STA WR1A	RESTORE WR1A
0263	02650	002400	CLA	
0264	02651	070632	STA WCOMP	CLEAR FLAG
0265	02652	070641	STA SCOMP	CLEAR FLAG
0266	02653	070665	STA BUFLG	CLEAR FLAG
0267	02654	060502	LDA AWTFB	
0268	02655	070503	STA WAWTR	RESET WRITE TRACK BUFFER ADDR.
0269	02656	060504	LDA AWSBF	
0270	02657	070505	STA WAWSH	RESET WRITE SECTOR BUFFER ADDR.
0271	02660	164503	LDR WAWTR, I	PICKUP TRACK ADDR.
0272	02661	034503	ISZ WAWTR	INCR. ARRAY ADDRESS
0273	02662	060503	LDA WAWTH	CURRENT ARRAY ADDR. TO A
0274	02663	050604	CPA LAWTH	LAST BUFFER ADDR.+1?
0275	02664	034632	ISZ WCOMP	YES-SET WRITE COMPLETE FLAG
0276	02665	060633	LDA S844	TRACK MASK-140377
0277	02666	010634	AND WCOMW	RETAIN A15-A14, A0-A7
0278	02667	005727	HLF, BLF	10-A5 TO A8-A13
0279	02670	030001	IOR 1	TRACK ADDR. TO A
0280	02671	070634	STA WCOMW	RESTORE WCOMW
0281	02672	164505	LDR WAWSH, I	PICKUP STARTING SECTOR ADDR.

S734

S734A

0282	02673	034505		ISZ WAWSA	INCR. ARRAY ADDRESS
0283	02674	060640		LDA S845	SECTOR MASK=177600
0284	02675	010634		ANI WCOMW	RETAIN A0-A6
0285	02676	030001		IOR 1	SECTOR ADDR. TO A
0286	02677	070634		STA WCOMW	RESTORE WCOMW-TR./SECT. COMPLETE
0287	02700	164505		IDB WAWSA, I	PICKUP # OF CONSEC. SECTORS
0288	02701	034505		ISZ WAWSA	INCR. ARRAY ADDRESS
0289	02702	060505		LDA WAWSA	CURRENT ARRAY ADDR. TO A
0290	02703	050505		CPA LAWSA	LAST BUFFER ADDR.+1
0291	02704	034641		ISZ SCOMP	YES-SET SECTOR STRING COMP. FLAG
0292	02705	006003		SZB, RSS	SECTOR VALUE >0?
0293	02706	026502		JMP S727	NO-ERROR PRINTOUT
0294	02707	074000		STB 0	B TO A
0295	02710	001727		ALF, ALF	
0296	02711	001323		RAH, RAR	MULTIPLY BY 64
0297	02712	040105		ADA 1058	ADD 1ST AVAIL. LOCN. VALUE
0298	02713	003004		CMA, INA	2'S COMPL.
0299	02714	040106		ADA 1068	SUBTR. LOWER FROM UPPER
0300	02715	002020		SSA	
0301	02716	026754	S735	JMP S738	ERROR-BUFFER LENGTH EXCEEDS MEM.
0302	02717	074000		STB 0	GOOD MEM. FIT
0303	02720	001727		ALF, ALF	
0304	02721	001323		RAH, RAR	MULTIPLY BY 64
0305	02722	003004		CMA, INA	2'S COMPL. OF TOTAL WORD COUNT
0306	02723	070637		STA WDCNT	WORD COUNT READY
0307	02724	002400		CLA	
0308	02725	030105		IOR 1058	IOR START ADDR. OF AVAIL. MEM.
0309	02726	070636		STA WDIR	OUTPUT AND ST. ADDR. READY
0310	02727	007004		CMB, INB	2'S COMPL. # OF SECTORS
0311	02730	074642		STB S847	RETAIN # OF SECTORS
0312	02731	060105		LDA 1058	
0313	02732	070643		STA S848	ST. OF AVAILABLE MEM.
0314	02733	060267	S736	LDA S823	
0315	02734	070266		STA S822	RESET SECTOR PATTERN ARRAY ADDR.
0316	02735	060375		LDA S829	
0317	02736	070374		STA S828	RESET -64
0318	02737	160266	S737	LDA S822.I	PICKUP PATTERN WORD
0319	02740	170643		STA S848.I	STORE IN OUTPUT BUFFER
0320	02741	034266		ISZ S822	
0321	02742	034643		ISZ S848	
0322	02743	034374		ISZ S828	SECTOR COMPLETE?
0323	02744	026737		JMP S737	NO
0324	02745	034642		ISZ S847	ENTIRE BUFFER COMPLETE?
0325	02746	026733		JMP S736	NO
0326	02747	060375		LDA S829	YES
0327	02750	010635		AND WDMAW	RETAIN A6-A15
0328	02751	030122		IOR DADR1	IOR H.P. DISK ADDR.
0329	02752	070635		STA WDMAW	RESTORE WDMAW
0330	02753	026761		JMP S739	OUTPUT TO DISK
0331	02754	060662	S738	LDA CHA27	CHAR. COUNT=32
0332	02755	064644		LDB IAD27	ST. ADDR. OF PRINT BUFFER
0333	02756	114102		JSE 102B.I	OUTPUT ERROR MESSAGE
0334	02757	102001		HLT 01	TURN SW. 15 OFF IF ON
0335	02760	026202		JMP S708+1	GET NEW WRITE PARAMETERS
0336	02761	060663	S739	LDA S849	RETURN JUMP
0337	02762	070006		STA 6	INT. LOCN.
0338	02763	070007		STA 7	INT. LOCN.

0339	02764	102500	WR1A	LIA 0	
0340	02765	001727		ALF,ALF	
0341	02766	002020		SSA	
0342	02767	026775		JMP S739A	
0343	02770	060721		LDA CHA20	
0344	02771	064711		LDR IAD20	
0345	02772	114102		JSH 102B-I	
0346	02773	102001		HLT P1	
0347	02774	026764		JMP WR1A	
0348	02775	103100	S739A	CLF 0	TURN-OFF INTERRUPT SYSTEM
0349	02776	060634		LDA WCOMW	TRACK/SECTOR ADDRESS
0350	02777	102600	WR1	OTA 0	L.P. DISK ADDRESS
0351	03000	060635		LDA WDMAW	H.P. DISK ADDR. AND CLC
0352	03001	102600	WR2	OTA 0	DMA CHAN. #6/7
0353	03002	106700	WR3	CLC 0	MAR ADDR. #2/3
0354	03003	060636		LDA WDIR	STARTING ADDRESS-BIT 15=0
0355	03004	102600	WR4	OTA 0	MAR ADDR. #2/3
0356	03005	102700	WR5	STC 0	WCR ADDR. #2/3
0357	03006	060637		LDA WDCNT	2'S COMPL.-WORD COUNT
0358	03007	102600	WR6	OTA 0	WCR ADDR. #2/3
0359	03010	103700	WR7	STC 0,C	DMA CHAN. #6/7
0360	03011	102700	WR8	STC 0	H.P. DISK ADDRESS
0361	03012	102100		STF 0	TURN-ON INTERRUPT
0362	03013	002400		CLA	
0363	03014	070665		STA BUFLG	CLEAR FLAGS
0364	03015	102500	WR9	LIA 0	L.P. DISK ADDRESS
0365	03016	002011		SLA,RSS	RUSY BIT=1?
0366	03017	034665		ISZ BUFLG	ERROR-SET FLAG
0367	03020	061210		LDA S869	77777 TO A
0368	03021	002006		INA,SZA	
0369	03022	027021		JMP *-1	TIME-OUT LOOP
0370	03023	102501		LIA 01	SW. REG. TO A
0371	03024	001323		RAH,RAR	
0372	03025	001300		RAH	BIT 3 TO BIT 0
0373	03026	000010		SLA	NO SUPPRESS?
0374	03027	027032		JMP WAIT1+1	BYPASS PRINTOUT
0375	03030	103100		CLF 0	TURN-OFF INTERRUPT
0376	03031	115211	WAIT1	JSH S870-I	MISSING INTERRUPT
0377	03032	103100		CLF 0	TURN-OFF INTERRUPT
0378	03033	102501		LIA 01	SW. REG. TO A
0379	03034	001323		RAH,RAR	
0380	03035	001300		RAH	BIT 3 TO BIT 0
0381	03036	000010		SLA	NO SUPPRESS?
0382	03037	027066		JMP S741	SUPPRESS PRINT
0383	03040	102500	WR11	LIA 0	L.P. DISK ADDRESS
0384	03041	000010		SLA	BUSY BIT=0?
0385	03042	034665		ISZ BUFLG	NO-ERROR
0386	03043	001323		RAH,RAR	
0387	03044	001300		RAH	STATUS BIT 3 TO BIT 0
0388	03045	002011		SLA,RSS	BIT0=1?
0389	03046	027060		JMP S740	NO
0390	03047	061245		LDA S872	A8-A13 MASK
0391	03050	010634		ANI WCOMW	RETAIN TRACK ADDR.
0392	03051	001727		ALF,ALF	MOVE TO A0-A5
0393	03052	070001		STA 1	A TO B
0394	03053	114113		JSH CONV.I	CONVERT OCTAL TO ASCII
0395	03054	025261	S885	JMP S883	

0396	03055	061230		LDA CHA4X	CHAR. COUNT=20
0397	03056	065214		LDB IAD4X	ST. ADDR. OF PRINT BUFFER
0398	03057	114102		JSR 1028.I	OUTPUT ERROR MESSAGE
0399	03060	060665	S740	LDA BUFLG	
0400	03061	002003		SZA,RSS	FLAG=1?
0401	03062	027066		JMP S741	
0402	03063	060710		LDA CHA2R	CHAR. COUNT=49
0403	03064	064666		LDB IAD2R	ST. ADDR. OF PRINT BUFFER
0404	03065	114102		JSR 1028.I	OUTPUT ERROR MESSAGE
0405	03066	002400	S741	CLA	
0406	03067	070665		STA BUFLG	
0407	03070	060641		LDA SCOMP	SECTOR STRING COMPLETE FLAG
0408	03071	002003		SZA,RSS	FLAG>0?
0409	03072	026672		JMP S734A	NO-CONTINUE SECTOR PROCESSING
0410	03073	002400		CLA	YES
0411	03074	070641		STA SCOMP	CLEAR FLAG
0412	03075	060632		LDA WCOMP	TRACK WRITE COMPLETE FLAG
0413	03076	002003		SZA,RSS	FLAG>0?
0414	03077	026656		JMP S734	NO-GET NEW TRACK VALUE
0415	03100	002400		CLA	YES
0416	03101	070632		STA WCOMP	CLEAR FLAG
0417	03102	000000	S601	NOF	JUMP RETURN
0418	03103	102501		LIA 01	SW. PFG. TO A
0419	03104	001300		WAR	BIT 1 TO BIT 0
0420	03105	002011		SLA,RSS	BIT 1=1?
0421	03106	027125		JMP S743	
0422	03107	060231		LDA CHUFF	COMPL. PATTERN BUFFER
0423	03110	002011		SLA,RSS	
0424	03111	026654		JMP S734-2	NO-WRITE SAME PATTERN BUFFER
0425	03112	060375		LDA S829	YES
0426	03113	070374		STA S828	-64 RESET
0427	03114	060267		LDA S823	SECTOR BUFFER ADDR.
0428	03115	070266		STA S822	RESET
0429	03116	160266	S742	LDA S822.I	PICKUP WORD
0430	03117	003000		CMA	COMPL. WORD
0431	03120	170266		STA S822.I	RESTORE WORD
0432	03121	034266		ISZ S822	INCR. ADDR.
0433	03122	034374		ISZ S828	64 WORDS FINISHED?
0434	03123	027116		JMP S742	LOOP
0435	03124	026654		JMP S734-2	WRITE COMPL. PATTERN
0436	03125	000000	S743	NOF	BEGINNING OF READ PROCESSOR
0437	03126	060506		LDA ARTBF	
0438	03127	070507		STA WARTH	RESET ARRAY ADDR.
0439	03130	061205		LDA S863	-65 TO A
0440	03131	071204		STA S862	-65 TO WORKING
0441	03132	102501		LIA 01	SW. REG. TO A
0442	03133	002020		SSA	BIT 15=0?
0443	03134	027140		JMP S744	
0444	03135	060732		LDA CHA3W	NO. OF CHAR.=13
0445	03136	064722		LDB IAD3W	ST. ADDR. OF PRINT BUFFER
0446	03137	114102		JSR 1028.I	OUTPUT MESSAGE
0447	03140	060200	S744	LDA S805	CHAR. COUNT=72
0448	03141	070177		STA S804	SETUP INPUT CHAR. LENGTH
0449	03142	015300		JSR S900	CALL INPUT SUBROUTINE
0450	03143	040226		ADA S816	ADD -73 TO CHAR. COUNT
0451	03144	002020		SSA	POS.=ERROR
0452	03145	027153		JMP S745	NO ERROR

0453	03146	060445		LDA CHA21	CHAR. COUNT=37
0454	03147	064421		LDB IAD21	ST. ADDR. OF PRINT BUFFER
0455	03150	114102		JSH 102B-1	OUTPUT MESSAGE
0456	03151	102001		HLT 01	TURN SW. 15 OFF IF ON
0457	03152	027126		JMF S743+1	GET NEW TRACK PAREM. FROM TTY
0458	03153	015341	S745	JSH S901	GET A CHAR.
0459	03154	050476		CPA S832	IS CHAR. A BLANK?
0460	03155	027171		JMF S746	YES-CHECK EXIT FLAG
0461	03156	050477		CPA S833	IS CHAR. A COMMA?
0462	03157	027171		JMP S746	YES-CHECK EXIT FLAG
0463	03160	050500		CPA S834	IS CHAR. A SLASH?
0464	03161	027140		JMP S744	PROCESS CONTINUATION
0465	03162	050512		CPA S836	IS CHAR. A T ?
0466	03163	027200		JMF S747	YES-PROCESS PARAMETER
0467	03164	060445		LDA CHA21	CHAR. COUNT=37
0468	03155	064514		LDB IAD23	ST. ADDR. OF PRINT BUFFER
0469	03166	114102		JSH 102B-1	OUTPUT MESSAGE
0470	03167	102001		HLT 01	TURN SW. 15 OFF IF ON
0471	03170	027126		JMF S743+1	GET NEW TRACK PAREM. FROM TTY
0472	03171	064176	S746	LDB SEXT	EXIT FLAG TO B
0473	03172	006011		SLF,RSS	EXIT FLAG=1?
0474	03173	027153		JMP S745	NO
0475	03174	060506		LDA ARTBF	YES
0476	03175	050507		CPA WARTB	ANY ENTRIES?
0477	03176	026042		JMF I4	NO-RE-ENTER FROM TOP
0478	03177	027311		JMF S755-3	YES-GET READ SECTOR PARAMETERS
0001	03200	060602	S747	LDA S842	-3 TO A
0002	03201	070603		STA S843	RESET CHAR. COUNTER
0003	03202	002400		LLA	
0004	03203	070540		STA S840	CLEAR CHAR. HOLD
0005	03204	015341		JSH S901	GET A CHAR.
0006	03205	050476		CPA S832	IS CHAR. A BLANK?
0007	03206	027222		JMF S748	CHECK EXIT FLAG
0008	03207	015363		JSH S902	CHECK LEGALITY-2-7
0009	03210	027126		JMF S743+1	GET NEW TRACK PAREM. FROM TTY
0010	03211	064114		LDB MASK2	7 TO B
0011	03212	010001		ANL 1	RETAIN A0-A2
0012	03213	064540		LDB S840	PARTIAL TO B
0013	03214	005723		RLF,R0R	ROTATE LEFT 3
0014	03215	030001		IOR 1	IOR 4 TO A
0015	03216	070540		STA S840	RESTORE RESULTS
0016	03217	034603		ISL S843	TRACK ADDR. FINISHED
0017	03220	027204		JMF S747+4	NO-GET ANOTHER CHARACTER
0018	03221	027232		JMF S750	CONTINUE PARAMETER
0019	03222	064176	S748	LDB SEXT	EXIT FLAG TO B
0020	03223	006011		SLF,RSS	EXIT FLAG=1?
0021	03224	027204		JMF S747+4	NO-GET A CHAR.
0022	03225	061015	S749	LDA CHA31	CHAR. COUNT =25
0023	03226	064777		LDB IAD31	ST. ADDR. OF PRINT BUFFER
0024	03227	114102		JSH 102B-1	OUTPUT ERROR MESSAGE
0025	03230	102001		HLT 01	TURN SW. 15 OFF IF ON
0026	03231	027126		JMF S743+1	GET NEW TRACK PARAMETER FROM TTY
0027	03232	015341	S750	JSH S901	GET A CHAR.
0028	03233	050476		CPA S832	IS CHAR. A BLANK?
0029	03234	027240		JMF S751	YES-CHECK EXIT FLAG
0030	03235	050501		CPA S835	IS CHAR. A - ?
0031	03236	027244		JMF S752	YES

0032	03237	027225		JMP S749	NO-PRINTOUT ERROR MESSAGE
0033	03240	064176	S751	LDR SEXT	EXIT FLAG TO B
0034	03241	004010		SLB	EXIT FLAG=0?
0035	03242	027225		JMP S749	NO-ERROR PRINTOUT
0036	03243	027232		JMP S750	GET A CHAR.
0037	03244	060602	S752	LDA S842	-3 TO A
0038	03245	070603		STA S843	RESET CHAR. COUNTER
0039	03246	002400		CLA	
0040	03247	070541		STA S841	CLEAR CHAR. HOLD
0041	03250	015341		JSR S901	GET A CHAR.
0042	03251	050476		CPA S832	IS CHAR. A BLANK?
0043	03252	027266		JMP S753	CHECK EXIT FLAG
0044	03253	015363		JSR S902	CHECK LEGALITY-0-7
0045	03254	027126		JMP S743+1	GET NEW TRACK PAREM. FROM TTY
0046	03255	064114		LDR MASK2	7 TO B
0047	03256	010001		ANI 1	RETAIN A0-A2
0048	03257	064541		LDR S841	PARTIAL TO B
0049	03260	005723		RLF,RRR	ROTATE LEFT 3
0050	03261	030001		IOR 1	IOR B TO A
0051	03262	070541		STA S841	RESTORE RESULTS
0052	03263	034603		ISZ S843	TRACK SEQ. CHAR. FINISHED?
0053	03264	027250		JMP S752+4	NO-GET ANOTHER CHARACTER
0054	03265	027272		JMP S754	CONTINUE PARAMETER
0055	03266	064176	S753	LDR SEXT	EXIT FLAG TO B
0056	03267	006011		SLB,RSS	EXIT FLAG=1?
0057	03270	027250		JMP S752+4	NO-GET ANOTHER CHAR.
0058	03271	027225		JMP S749	OUTPUT ERROR MESSAGE
0059	03272	060541	S754	LDA S841	SEQ. #
0060	03273	003004		CMA,INA	2,S COMPL.
0061	03274	070541		STA S841	BLOCK SEQ. FOR TRACKS
0062	03275	060540		LDA S840	ST. TRACK ADDR. OF BLOCK
0063	03276	170507		STA WARTH,1	STORE TRACK ADDRESS
0064	03277	034507		ISZ WARTH	INCR. ARRAY ADDRESS
0065	03300	002004		INA	INCR. TRACK ADDRESS
0066	03301	035204		ISZ S862	64 ADDR. ENTERED
0067	03302	027304		JMP *+2	NO
0068	03303	027314		JMP S755	YES
0069	03304	034541		ISZ S841	INCR. # OF TRACKS
0070	03305	027276		JMP S754+4	NOT FINISHED
0071	03306	064176		LDR SEXT	EXIT FLAG TO B
0072	03307	006011		SLB,RSS	EXIT FLAG=1?
0073	03310	027153		JMP S745	GET ANOTHER READ TRACK PARAMETER.
0074	03311	060507		LDA WARTH	LAST TRACK READ BUFFER ADDR.+1
0075	03312	071016		STA LARTH	LAST TRACK READ BUFFER ADDR.+1
0076	03313	027321		JMP S756	GET READ SECTOR PARAMETERS
0077	03314	061037	S755	LDA CHA32	CHAR. COUNT=28
0078	03315	065020		LDR IAD32	ST. ADDR. OF PRINT BUFFER
0079	03316	114102		JSR 102B.1	ERROR PRINTOUT
0080	03317	102001		HLT 01	TURN SW.15 OFF IF ON
0081	03320	027126		JMP S743+1	GET NEW TRACK PAREM. FROM TTY
0082	03321	060510	S756	LDA ARSBF	
0083	03322	070511		STA WARSR	RESET ARRAY ADDRESS
0084	03323	061207		LDA S865	-85 TO A
0085	03324	071206		STA S864	RESET WORKING COUNTER
0086	03325	102501		LIA 01	SW. REG. TO A
0087	03326	002020		SSA	BIT 15=0?
0088	03327	027333		JMP S757	NO-PR INPUT

0089	03330	061050		LDA CHA33	NO. OF CHAR.=14
0090	03331	065040		LDB IAD33	ST. ADDR. OF PRINT BUFFER
0091	03332	114102		JSE 102B.1	OUTPUT MESSAGE
0092	03333	064200	S757	LDA S805	CHAR. COUNT=72
0093	03334	070177		STA S804	SETUP INPUT CHAR. LENGTH
0094	03335	015300		JSE S900	CALL INPUT SUBROUTINE
0095	03336	040226		ADA S816	ADD -73 TO CHAR. COUNT
0096	03337	002020		SSA	POS.=ERROR
0097	03340	027346		JMP S758	NO ERROR
0098	03341	060445		LDA CHA21	CHAR. COUNT=37
0099	03342	064421		LDB IAD21	ST. ADDR. OF PRINT BUFFER
0100	03343	114102		JSE 102B.1	OUTPUT ERROR MESSAGE
0101	03344	102001		HLT 01	TURN SW.15 OFF IF ON
0102	03345	027321		JMP S756	GET NEW SECT. PAREM. FROM TTY
0103	03346	015341	S758	JSE S901	GET A CHAR.
0104	03347	050476		CPA S832	IS CHAR. A BLANK?
0105	03350	027364		JMP S759	YES-CHECK EXIT FLAG
0106	03351	050477		CPA S833	IS CHAR. A COMMA?
0107	03352	027364		JMP S759	YES-CHECK EXIT FLAG
0108	03353	050500		CPA S834	IS CHAR. A SLASH?
0109	03354	027333		JMP S757	PROCESS CONTINUATION
0110	03355	050513		CPA S837	IS CHAR. A S?
0111	03356	027370		JMP S760	YES-PROCESS PARAMETER
0112	03357	060445		LDA CHA21	CHAR. COUNT=37
0113	03360	064514		LDB IAD23	ST. ADDR. OF PRINT BUFFER
0114	03361	114102		JSE 102B.1	OUTPUT ERROR MESSAGE
0115	03362	102001		HLT 01	TURN SW. 15 OFF IF ON
0116	03363	027321		JMP S756	GET NEW SECT. PAREM. FROM TTY
0117	03364	064176	S759	LDB SEXT	EXIT FLAG TO B
0118	03365	006011		SLB,RSS	EXIT FLAG=1?
0119	03366	027346		JMP S758	NO
0120	03367	027476		JMP S768-3	YES-JUMP TO READ OPERATION
0121	03370	060602	S760	LDA S842	-3 TO A
0122	03371	070603		STA S843	RESET CHAR. COUNTER
0123	03372	002400		CLA	
0124	03373	070540		STA S840	CLEAR CHAR. HOLD
0125	03374	015341		JSE S901	GET A CHAR.
0126	03375	050476		CPA S832	IS CHAR. A BLANK?
0127	03376	027412		JMP S761	CHECK EXIT FLAG
0128	03377	015363		JSE S902	CHECK LEGALITY-0-7
0129	03400	027321		JMP S756	GET NEW SECT. PAREM. FROM TTY
0130	03401	064114		LDB MASK2	7 TO B
0131	03402	010001		ANI 1	RETAIN A0-A2
0132	03403	064540		LDB S840	PARTIAL TO B
0133	03404	005723		RLF,RRR	ROTATE LEFT 3
0134	03405	030001		IOR 1	IOR B TO A
0135	03406	070540		STA S840	RESTORE RESULTS
0136	03407	034603		ISZ S843	SECTOR ADDR. FINISHED?
0137	03410	027374		JMP S760+4	NO-GET ANOTHER CHARACTER
0138	03411	027422		JMP S763	CONTINUE PARAMETER
0139	03412	064176	S761	LDB SEXT	EXIT FLAG TO B
0140	03413	006011		SLB,RSS	EXIT FLAG=1
0141	03414	027374		JMP S760+4	NO-GET A CHAR.
0142	03415	061015	S762	LDA CHA31	CHAR. COUNT=25
0143	03416	064777		LDB IAD31	ST. ADDR. OF PRINT BUFFER
0144	03417	114102		JSE 102B.1	OUTPUT ERROR MESSAGE
0145	03420	102001		HLT 01	TURN SW.15 OFF IF ON

0146	03421	027321		JMP S756	GET NEW SECTOR PARAMETER FROM TT
0147	03422	015341	S763	JSH S901	GET A CHAR.
0148	03423	050476		CPA S832	IS CHAR. A BLANK?
0149	03424	027430		JMF S764	YES-CHECK EXIT FLAG
0150	03425	050501		CPA S835	IS CHAR. A -?
0151	03426	027434		JMP S765	YES
0152	03427	027415		JMP S762	NO-PRINTOUT ERROR MESSAGE
0153	03430	064176	S764	LDB SEXT	EXIT FLAG TO B
0154	03431	004010		SLB	EXIT FLAG=0?
0155	03432	027415		JMP S762	NO-ERROR PRINTOUT
0156	03433	027422		JMP S763	GET A CHAR.
0157	03434	060602	S765	LDA S842	-3 TO A
0158	03435	070603		STA S843	RESET CHAR. COUNTER
0159	03436	002400		CLA	
0160	03437	070541		STA S841	CLEAR CHAR. HOLD
0161	03440	015341		JSH S901	GET A CHAR.
0162	03441	050476		CPA S832	IS CHAR. A BLANK?
0163	03442	027456		JMP S766	CHECK EXIT FLAG
0164	03443	015363		JSH S902	CHECK LEGALITY-0-7
0165	03444	027321		JMP S756	GET NEW SECT. PAREM. FROM TTY
0166	03445	064114		LDB MASK2	7 TO B
0167	03446	010001		AND 1	RETAIN A0-A2
0168	03447	064541		LDB S841	PARTIAL TO B
0169	03450	005723		BLF,RBR	ROTATE LEFT 3
0170	03451	030001		IOR 1	IOR B TO A
0171	03452	070541		STA S841	RESTORE RESULTS
0172	03453	034603		ISZ S843	SECTOR SEQ. CHAR. FINISHED?
0173	03454	027440		JMP S765+4	NO-GET ANOTHER CHARACTER
0174	03455	027462		JMP S767	CONTINUE PARAMETER
0175	03456	064176	S766	LDB SEXT	EXIT FLAG TO B
0176	03457	006011		SLB,RSS	EXIT FLAG=1?
0177	03460	027440		JMP S765+4	NO-GET ANOTHER CHAR.
0178	03461	027415		JMP S762	OUTPUT ERROR MESSAGE
0179	03462	060540	S767	LDA S840	STARTING SECTOR ADDRESS TO A
0180	03463	170511		STA WARSR,I	PUT IN READ SECTOR ARRAY
0181	03464	034511		ISZ WARSR	INCR. ARRAY ADDRESS
0182	03465	060541		LDA S841	NO. OF CONSECUTIVE SECTORS
0183	03466	170511		STA WARSR,I	PUT IN READ SECTOR ARRAY
0184	03467	034511		ISZ WARSR	INCR. ARRAY ADDRESS
0185	03470	035206		ISZ S864	85 ENTRIES IN SECTOR READ BUFF.?
0186	03471	027473		JMP **2	NO
0187	03472	027501		JMP S768	YES
0188	03473	064176		LDB SEXT	EXIT FLAG TO B
0189	03474	006011		SLB,RSS	EXIT FLAG=1?
0190	03475	027346		JMP S758	GET ANOTHER SECTOR READ PAREM.
0191	03476	060511		LDA WARSR	
0192	03477	071017		STA LARSR	LAST BUFFER ADDR.+1
0193	03500	027510		JMP READ	PERFORM READ OPERATION
0194	03501	061071	S768	LDA CHA34	NO. OF CHAR.=29
0195	03502	065051		LDR IAD34	ST. ADDR. OF PRINT BUFFER
0196	03503	114102		JSH 1020-1	OUTPUT ERROR MESSAGE
0197	03504	102001		HLT 01	TURN SW.15 OFF IF ON
0198	03505	027321		JMP S756	GET NEW SECTOR PAREM. FROM TTY
0199	03506	027570	S855	JMP S769-2	BYPASS READ PARAMETERS
0200	03507	125260	S602	JMP READ1,I	RETURN JUMP
0201	03510	000000	READ	NOF	IND. RETURN
0202	03511	064123		LDR DMADH	DMA OCTAL ADDR. TO B

0203	03512	060107	LDA MASK1	177700 TO A
0204	03513	013713	AND RD2	RETAIN A6-A15
0205	03514	030001	IOR 1	IOR DMA ADDRESS
0206	03515	073713	STA RD2	RESTORE RD2
0207	03516	060107	LDA MASK1	177700 TO A
0208	03517	013722	AND RD7	RETAIN A6-A15
0209	03520	030001	IOR 1	IOR DMA ADDRESS
0210	03521	073722	STA RD7	RESTORE RD7
0211	03522	054627	CPH MASK6	DMA CHAN.=6
0212	03523	027526	JMP ++3	YES
0213	03524	064631	LDP MAS7A	NO-ADDR.=3
0214	03525	027527	JMP ++2	
0215	03526	064630	LDR MAS6A	ADDR.=2
0216	03527	060107	LDA MASK1	177700 TO A
0217	03530	013714	AND RD3	RETAIN A6-A15
0218	03531	030001	IOR 1	IOR MAR ADDRESS
0219	03532	073714	STA RD3	RESTORE RD3
0220	03533	060107	LDA MASK1	177700 TO A
0221	03534	013716	AND RD4	RETAIN A6-A15
0222	03535	030001	IOR 1	IOR MAC ADDREDD
0223	03536	073716	STA RD4	RESTORE RD4
0224	03537	073721	STA RD6	RESTORE RD6
0225	03540	060107	LDA MASK1	17700 TO A
0226	03541	013717	AND RD5	RETAIN A6-A15
0227	03542	030001	IOR 1	IOR WCR ADDRESS
0228	03543	073717	STA RD5	RESTORE RD5
0229	03544	064122	LDP DADR1	H.P. DISK ADDR. TO B
0230	03545	060107	LDA MASK1	177700 TO A
0231	03546	013723	AND RDB	RETAIN A6-A15
0232	03547	030001	IOR 1	IOR DISK ADDRESS
0233	03550	073723	STA RDB	RESTORE RDB
0234	03551	006004	INH	L.P. DISK ADDR. TO B
0235	03552	060107	LDA MASK1	177700 TO A
0236	03553	013711	AND RD1	RETAIN A6-A15
0237	03554	030001	IOR 1	IOR DISK ADDRESS
0238	03555	073711	STA RD1	RESTORE RD1
0239	03556	060107	LDA MASK1	177700 TO A
0240	03557	013727	AND RD9	RETAIN A6-A15
0241	03560	030001	IOR 1	IOR DISK ADDRESS
0242	03561	073727	STA RD9	RESTORE RD9
0243	03562	073752	STA RD11	RESTORE RD11
0244	03563	073676	STA RD1A	RESTORE RD1A
0245	03564	002400	CLA	
0246	03565	071072	STA RCOMP	CLEAR FLAG
0247	03566	070641	STA SCOMP	CLEAR FLAG
0248	03567	070665	STA BUFLG	CLEAR FLAG
0249	03570	060506	LDA ARTBF	
0250	03571	070507	STA WARTB	RESET READ TRACK BUFFER ADDR.
0251	03572	060510	LDA ARSBF	
0252	03573	070511	STA WARSB	RESET READ SECTOR BUFFER ADDR.
0253	03574	164507	IDR WARTB,1	PICK PRACK ADDR.
0254	03575	034507	ISZ WARTB	INCR. ARRAY ADDRESS
0255	03576	060507	LDA WARTB	CURRENT ARRAY ADDR. TO A
0256	03577	051016	CPA LARTB	LAST BUFFER ADDR.+1?
0257	03600	035072	ISZ RCOMP	YES-SET READ COMPLETE FLAG
0258	03601	075076	STB CTRCK	
0259	03602	060633	LDA SB44	TRACK MASK-140377

S769

0260	03603	011073	AND RCOMW	RETAIN A15-A14, A0-A7
0261	03604	005727	ALF, BLF	A0-A5 TO A8-A13
0262	03605	030001	IOR 1	TRACK ADDR. TO A
0263	03606	071073	STA RCOMW	RESTORE RCOMR
0264	03607	060210	S769A LDA S814	ST. ADDR.-BUFFER
0265	03610	006400	CLB	
0266	03611	174000	STB 0, I	
0267	03612	002004	INA	
0268	03613	050106	CPA 1068	LAST ADDR. OF BUFFER AREA
0269	03614	027616	JMP **2	FINISHED
0270	03615	027611	JMP S769A+2	NOT FINISHED
0271	03616	164511	LDB WARSH, I	PICKUP STARTING SECTOR
0272	03617	075077	STR CSECT	
0273	03620	034511	ISZ WARSH	INCR. ARRAY ADDRESS
0274	03621	060640	LDA S845	SECTOR MASK-177600
0275	03622	011073	AND RCOMW	RETAIN A7-A15
0276	03623	030001	IOR 1	SECTOR ADDR. TO A
0277	03624	071073	STA RCOMW	RESTORE RCOMR-TR./SECT. COMPLETE
0278	03625	164511	LDB WARSH, I	PICKUP # OF CONSEC. SECTORS
0279	03626	034511	ISZ WARSH	INCR. ARRAY ADDRESS
0280	03627	060511	LDA WARSH	CURRENT ARRAY ADDR. TO A
0281	03630	051017	CPA LARSH	LAST BUFFER ADDR.+1
0282	03631	034641	ISZ SCOMP	YES-SET SECTOR STRING COMP. FLAG
0283	03632	006003	SZB, KSS	SECTOR VALUE >0?
0284	03633	027415	JMP S762	NO-ERROR PRINTOUT
0285	03634	074000	STB 0	B TO A
0286	03635	001727	ALF, ALF	
0287	03636	001323	RAH, RAR	MULTIPLY BY 64
0288	03637	040105	ADA 105B	ADD 1ST AVAIL. LOCN. VALUE
0289	03640	003004	CMA, INA	2'S COMPL.
0290	03641	040106	ADA 106B	SUBTR. LOWER FROM UPPER
0291	03642	002020	SSA	
0292	03643	027662	S770 JMP S771	ERROR-BUFF. LENGTH EXCEEDS MEM.
0293	03644	074000	STB 0	GOOD MEM. FIT
0294	03645	001727	ALF, ALF	
0295	03646	001323	RAH, RAR	MULTIPLY BY 64
0296	03647	003004	CMA, INA	2'S COMPL. OF TOTAL WORD COUNT
0297	03650	070637	STA WDCNT	WORD COUNT READY
0298	03651	002404	CLA, INA	
0299	03652	001300	RAH	BIT15=1
0300	03653	030105	IOR 105B	IOR START ADDR. OF AVAIL. MEM.
0301	03654	071104	STA RDIR	OUTPUT AND ST. ADDR. READY
0302	03655	007004	CMB, INB	2'S COMPL. # OF SECTORS
0303	03656	075102	STB SECTO	RETAIN # OF SECTORS
0304	03657	060105	LDA 105B	
0305	03660	070643	STA S848	ST. OF AVAILABLE MEM.
0306	03661	027667	JMP S772	CONTINUE
0307	03662	060662	S771 LDA CHA27	CHAR. COUNT=32
0308	03663	064644	LDB IAD27	ST. ADDR. OF PRINT BUFFER
0309	03664	114102	JSB 102B. I	OUTPUT ERROR MESSAGE
0310	03665	102001	HLT 01	TURN SW. 15 OFF IF ON
0311	03666	125174	JMP I743. I	GET NEW READ PARAMETERS
0312	03667	060375	S772 LDA S829	177700 TO A
0313	03670	010635	AND WDMAW	RETAIN A6-A15
0314	03671	030122	IOR DADR1	IOR H.P. DISK ADDR.
0315	03672	070635	STA WDMAW	RESTORE WDMAW
0316	03673	061074	LDA S852	RETURN JUMP

0317	03674	070206		STA 6	INT. LOCN.
0318	03675	070207		STA 7	INT. LOCN.
0319	03676	102500	RD1A	LIA 0	INPUT STATUS
0320	03677	001727		ALF,ALF	BIT 7 TO BIT 15
0321	03700	002020		SSA	BIT 15=0?
0322	03701	027707		JMP S773	DISC NOT READY
0323	03702	060721		LDA CHA20	NO. OF CHAR. =14
0324	03703	064711		LDM IA020	ST. ADDR. OF PRINT BUFFER
0325	03704	114102		JSP 102B.I	OUTPUT MESSAGE
0326	03705	102001		FLI 01	MAKE DISC READY
0327	03706	027676		JMP RD1A	RETURN
0328	03707	103100	S773	CLF 0	TURN-OFF INTERRUPT SYSTEM
0329	03710	061073		LDA RCOMR	TRACK/SECTOR ADDRESS
0330	03711	102500	RD1	OTA 0	L.P. DISK ADDRESS
0331	03712	060635		LDA *DMA*	H.P. DISK ADDR. AND CLC
0332	03713	102600	RD2	OTA 0	DMA CHAN. #6/7
0333	03714	106700	RD3	CLC 0	MAR ADDR. #2/3
0334	03715	061104		LDA RDIR	STARTING ADDRESS-BIT 15=1
0335	03716	102600	RD4	OTA 2	MAR ADDR. #2/3
0336	03717	102700	RD5	STC 0	WCR ADDR. #2/3
0337	03720	060637		LDA *DCNT	2'S COMPL.-WORD COUNT
0338	03721	102600	RDE	OTA 0	WCR ADDR. #2/3
0339	03722	103700	RD7	STC 0,C	DMA CHAN. #6/7
0340	03723	102700	RDE	STC 0	H.P. DISK ADDRESS
0341	03724	102100		STF 0	TURN-ON INTERRUPT
0342	03725	002400		CLA	
0343	03726	070665		STA BUFLG	CLEAR FLAG
0344	03727	102500	RD9	LIA 0	INPUT STATUS
0345	03730	002011		SLA,RSS	BUSY BIT=1?
0346	03731	034665		ISZ BUFLG	ERROR-SET FLAG
0347	03732	061210		LDA S869	77777 TO A
0348	03733	002006		INA,SZA	
0349	03734	027733		JMP *-1	TIME-OUT LOOP
0350	03735	102501		LIA 01	SW. REG. TO A
0351	03736	001323		WAR,RAR	
0352	03737	001300		WAR	BIT 3 TO BIT 0
0353	03740	000010		SLA	NO SUPPRESS?
0354	03741	027744		JMP WAIT2+1	BYPASS PRINTOUT
0355	03742	103100		CLF 0	TURN-OFF INTERRUPT
0356	03743	115212	WAIT2	JSP S871.I	MISSING INTERRUPT
0357	03744	103100		CLF 0	TURN-OFF INTERRUPT
0358	03745	102501		LIA 01	SW. REG. TO A
0359	03746	001323		WAR,RAR	
0360	03747	001300		WAR	BIT 3 TO BIT 0
0361	03750	000010		SLA	NO SUPPRESS?
0362	03751	125256		JMP 1775.I	SUPPRESS PRINT
0363	03752	102500	RD11	LIA 0	INPUT STATUS
0364	03753	000010		SLA	BUSY BIT=0?
0365	03754	034665		ISZ BUFLG	NO-ERROR
0366	03755	001727		ALF,ALF	BIT 8 TO BIT 0
0367	03756	001700		ALF	BIT 4 TO BIT 0
0368	03757	071131		STA S857	SAVE
0369	03760	002011		SLA,RSS	DECODE BIT=1?
0370	03761	027765		JMP S773A	NO
0371	03762	061115		LDA CHA36	CHAR. COUNT=12
0372	03763	065106		LDM IAD36	ST. ADDR.
0373	03764	114102		JSP 102B.I	OUTPUT MESSAGE

0374	03765	061131	S773A	LDA S857	STATUS TO A
0375	03766	001222		RAL,RAL	
0376	03767	002021		SSA,RSS	PARITY BIT=1?
0377	03770	027774		JMP S773H	NO
0378	03771	061130		LDA CHA3A	CHAR. COUNT=17
0379	03772	065116		LDA IAD3A	ST. ADDR.
0380	03773	114102		JSB 102B.I	OUTPUT MESSAGE
0381	03774	061131	S773B	LDA S857	STATUS TO A
0382	03775	002021		SSA,RSS	BIT 3=1?
0383	03776	125257		JMP I773C.I	NO
0384	03777	065076		LDB CTRCK	CURR. TRACK VALUE TO B
0385	04000	114113		JSB CONV.J	CONVERT OCTAL TO ASCII
0386	04001	060206		LDA S812	377 TO A
0387	04002	010111		AND CARRY+1	RETAIN M.S. DIGIT
0388	04003	031253		TOR S880	BLANK TO A8-A15
0389	04004	071242		STA MES44+8	SETUP PRINT MESSAGE
0390	04005	060112		LDA CARRY+2	ASCII TRACK VALUE
0391	04006	071243		STA MES44+9	SETUP PRINT MESSAGE
0392	04007	061244		LDA CHA44	CHAR. COUNT=20
0393	04010	065231		LDB IAD44	ST. ADDR. OF PRINT BUFFER
0394	04011	114102		JSB 102B.I	OUTPUT ERROR MESSAGE
0395	04012	060665	S773C	LDA BUFLG	BUSY ERROR FLAG TO A
0396	04013	002003		BZA,RSS	FLAG=1?
0397	04014	020020		JMP S775	
0398	04015	060710	S774	LDA CHA2A	CHAR. COUNTING=49
0399	04016	064666		LDB IAD2A	ST. ADDR. OF PRINT BUFFER
0400	04017	114102		JSB 102B.I	OUTPUT ERROR MESSAGE
0401	04020	002400	S775	CLA	
0402	04021	070665		STA BUFLG	CLEAR FLAG
0403	04022	060105		LDA 105B	START OF INPUT BUFFER
0404	04023	071100		STA CMEM	ST. ADDR. OF INPUT BUFFER
0405	04024	000000	S603	NOF	JUMP RETURN
0406	04025	002400	S776	CLA	
0407	04026	071101		STA SEWD	CLEAR WORD #
0408	04027	060375		LDA S829	
0409	04030	070374		STA S828	RESET -64
0410	04031	060267		LDA S823	
0411	04032	070266		STA S822	RESET SECT. BUFFER ADDRESS
0412	04033	160266	S777	LDA S822.I	PICKUP GOOD WORD
0413	04034	151100		CPA CMEM.I	COMPARE TO TEST WORD
0414	04035	002001		RSS	GOOD
0415	04036	016120		JSB PRINT	ERROR
0416	04037	035100	S778	ISZ CMEM	INCR. INPUT BUFFER ADDR.
0417	04040	035101		ISZ SEWD	INCR. SECTOR WORD #
0418	04041	034266		ISZ S822	INCR. GOOD WORD ARRAY ADDR.
0419	04042	034374		ISZ S828	64 WORDS FINISHED?
0420	04043	026033		JMP S777	DO ANOTHER WORD
0421	04044	035077		ISZ CSECT	INCR. CURRENT SECTOR COUNT
0422	04045	035102		ISZ SECTC	ARE ALL SECTORS COMPLETED?
0423	04046	125203		JMP I776.I	NO
0424	04047	060641		LDA SCOMP	YES-SECTOR STRING COMPLETE FLAG
0425	04050	002003		BZA,RSS	FLAG>0?
0426	04051	125177		JMP S858.I	NO-CONTINUE SECTOR PROCESSING
0427	04052	002400		CLA	YES
0428	04053	070641		STA SCOMP	CLEAR FLAG
0429	04054	061372		LDA RCOMP	TRACK READ COMPLETE FLAG
0430	04055	002003		SZA,RSS	FLAG>0?

0431	04056	125200		JMP S850.I	NO-GET NEW TRACK VALUE
0432	04057	002400		CLA	YES
0433	04058	071072		STA RCOMP	CLEAR FLAG
0434	04051	102501		LIA 01	SW. REG. TO A
0435	04062	001323		RAK,RAR	BIT2 TO HIT0
0436	04063	000010		SLA	BIT2=??
0437	04064	125201		JMP S860.I	LOOP ON READ PROCESSOR
0438	04065	002021		SSA,RSS	BIT1=1?
0439	04066	025072		JMP S779	CHECK SW.0
0440	04067	161176		LDA I855.I	YES
0441	04070	171103		STA S854.I	BYPASS READ PARAMETERS
0442	04071	125105		JMP S856.I	RETURN TO WRITE PROCESSOR
0443	04072	001200	S779	RAL	BIT14 TO BIT 15
0444	04073	002021		SSA,RSS	BIT0=1?
0445	04074	026115		JMP S780	NO-EXIT T4
0446	04075	161176		LDA I855.I	YES
0447	04076	171103		STA S854.I	BYPASS READ PARAMETERS
0448	04077	060231		LDA CBUFF	COMPL. PATTERN BUFFER
0449	04100	002011		SLA,RSS	
0450	04101	026114		JMP S780-1	NO-WRITE SAME PATTERN BUFFER
0451	04102	060375		LDA S829	YES
0452	04103	070374		STA S828	-64 RESET
0453	04104	060267		LDA S823	SECTOR BUFFER ADDR.
0454	04105	070266		STA S822	RESET
0455	04106	160266	S779A	LDA S822.I	PICKUP WORD
0456	04107	003000		CMA	COMPL. WORD
0457	04110	170266		STA S822.I	RESTORE WORD
0458	04111	034266		ISZ S822	INCR. ADDR.
0459	04112	034374		ISZ S828	64 WORDS FINISHED?
0460	04113	026106		JMP S779A	NO-LOOP
0461	04114	125105		JMP S856.I	RETURN TO WRITE PROCESSOR
0462	04115	002400	S780	CLA	
0463	04116	171103		STA S854.I	NOP TO S743
0464	04117	125202		JMP S861.I	JUMP TO MAIN EXEC.
0465	04120	000000	PRINT	NOP	
0466	04121	035700		ISZ S999	INCR. ERROR COUNT
0467	04122	002001		RSS	
0468	04123	035701		ISZ S999+1	INCR. ERROR COUNT OVERFLOW
0469	04124	000000		NOP	
0470	04125	102501		LIA 01	SW. REG. TO A
0471	04126	001323		RAK,RAR	
0472	04127	001300		RAR	BIT 3 TO BIT0
0473	04130	000010		SLA	BIT3=??
0474	04131	126120		JMP PRINT,I	BYPASS PRINT AND SUBROUTINES
0475	04132	065076		LDB CTRCK	CURR. TRACK VALUE TO 3
0476	04133	114113		JSR CONV.I	CONVERT OCTAL TO ASCII
0477	04134	060206		LDA S812	377 TO A
0478	04135	010111		AND CARRY+1	RETAIN HIGH ORDER DID-BIT
0479	04136	001727		ALF,ALF	
0480	04137	070001		STA 1	
0481	04140	060475		LDA S831	177400 TO A
0482	04141	010112		AND CARRY+2	RETAIN MIDDLE DIGIT
0483	04142	001727		ALF,ALF	A8-A15 TO A0-A7
0484	04143	030001		IOR 1	
0485	04144	071136		STA MES37+3	SETUP PRINT MESSAGE
0486	04145	060206		LDA S812	377 TO A
0487	04146	010112		AND CARRY+2	RETAIN LOW DIGIT

0488	04147	001727	ALF,ALF	
0489	04150	030476	IOR S832	BLANK TO A0-A7
0490	04151	071137	STA MES37+4	SETUP PRINT MESSAGE
0491	04152	065077	IDR CSECT	CURR. SECTOR VALUE TO 3
0492	04153	114113	JSH CONV.1	CONVERT OCTAL TO ASCII
0493	04154	064476	LDR S832	ASCII BLANK
0494	04155	005727	ALF,BLF	A0:A7 TO A8-A15
0495	04156	060206	LDA S812	377 TO A
0496	04157	010111	AND CARRY+1	RETAIN LOW DIGIT
0497	04160	030001	TOM 1	BLANK TO A
0498	04161	071143	STA MES37+8	SETUP PRINT MESSAGE
0499	04162	060112	LDA CARRY+2	SECOND HALF
0500	04163	071144	STA MES37+9	SETUP PRINT MESSAGE
0501	04164	065101	IDF SEWD	CURR. WORD # TO B
0502	04165	114113	JSH CONV.1	CONVERT OCTAL TO ASCII
0503	04166	060112	LDA CARRY+2	LOW ORDER DIGITS
0504	04167	071152	STA MES37+15	SETUP PRINT MESSAGE
0505	04170	164266	LDR S822.1	OUTPUT WORD TO B
0506	04171	114113	JSH CONV.1	CONVERT OCTAL TO ASCII
0507	04172	060110	LDA CARRY	1ST WORD
0508	04173	071161	STA MES3A+4	SETUP PRINT MESSAGE
0509	04174	060111	LDA CARRY+1	2ND WORD
0510	04175	071162	STA MES3A+5	SETUP PRINT MESSAGE
0511	04176	060112	LDA CARRY+2	3RD WORD
0512	04177	071163	STA MES3A+6	SETUP PRINT MESSAGE
0513	04200	165100	LDR CMEM.1	INPUT WORD TO B
0514	04201	114113	JSH CONV.1	CONVERT OCTAL TO ASCII
0515	04202	060110	LDA CARRY	1ST WORD
0516	04203	071170	STA MES3A+11	SETUP PRINT MESSAGE
0517	04204	060111	LDA CARRY+1	2ND WORD
0518	04205	071171	STA MES3A+12	SETUP PRINT MESSAGE
0519	04206	060112	LDA CARRY+2	3RD WORD
0520	04207	071172	STA MES3A+13	SETUP PRINT MESSAGE
0521	04210	061153	LDA CHA37	NO. OF CHAR. =32
0522	04211	065132	LDR IAD37	ST. ADDR. OF PRINT BUFFER
0523	04212	114102	JSP 102B.1	PRINT MESSAGE
0524	04213	061173	LDA CHA3A	NO. OF CHAR. =28
0525	04214	065154	LDR IAD3A	ST. ADDR. OF PRINT BUFFER
0526	04215	114102	JSP 102B.1	PRINT MESSAGE
0527	04216	126120	JMP PRINT,I	EXIT
0528	***** TRACK ADDRESS VERIFICATION SUBROUTINE *****			
0529	04217	000000	TRVER NOP	
0530	04220	002400	CLA	
0531	04221	070171	STA TOPT0	CLEAR INFO
0532	04222	062465	LDA CHA4R	NO. OF CHAR.=13
0533	04223	066464	LDR IAD4R	ST. ADDR. OF PRINT BUFFER
0534	04224	114102	JSP 102B.1	OUTPUT MESSAGE
0535	04225	060200	LDA S805	CHAR. COUNT=72
0536	04226	070177	STA S804	SETUP INPUT CHAR. LENGTH
0537	04227	015300	JSH S900	CALL INPUT SUBROUTINE
0538	04230	060602	LDA S842	-3 TO A
0539	04231	070603	STA S843	RESET CHAR. COUNTER
0540	04232	002400	CLA	
0541	04233	070540	STA S840	CLEAR CHAR. HOLD
0542	04234	015341	JSH S901	GET A CHAR.
0543	04235	050476	CPA S832	IS CHAR. A BLANK?
0544	04236	026262	JMP S549	CHECK EXIT FLAG

0545	04237	015363	JSH S902	CHECK LEGALITY-0-7
0546	04240	026220	JMP TRVEN+1	RESTART
0547	04241	064114	LDB MASK2	7 TO B
0548	04242	010001	AND 1	RETAIN A0-A2
0549	04243	064540	LDB S840	PARTIAL TO B
0550	04244	005723	ALF,RBR	ROTATE LEFT 3
0551	04245	030001	IOK 1	B TO A
0552	04246	070540	STA S840	RESTORE RESULTS
0553	04247	034603	ISZ S843	FINISHED?
0554	04250	026234	JMP S548	NO-GET ANOTHER CHAR.
0555	04251	001727	ALF,ALF	A0-A7 TO A8-A15
0556	04252	070171	STA TOPT2	SAVE TRACK # IN BINARY
0557	04253	001727	ALF,ALF	A8-A15 TO A0-A7
0558	04254	002003	SZA,RSS	VALUE > 0?
0559	04255	026220	JMP TRVEN+1	NO-RESTART
0560	04256	041252	ADA S510	ADD -101
0561	04257	002020	SSA	POS.?
0562	04260	026266	JMP S549+4	NO-CONTINUE
0563	04261	026220	JMP TRVEN+1	YES-RESTART
0564	04262	064176	LDB SEXT	EXIT FLAG TO B
0565	04263	005011	SLR,RSS	EXIT FLAG=1?
0566	04264	026234	JMP S548	NO-CONTINUE
0567	04265	026220	JMP TRVEN+1	YES-RESTART
0568	04266	002400	CLA	
0569	04267	071247	STA S500	CLEAR ACTIVE TRACK COUNTER
0570	04270	070632	STA WCOMP	CLEAR WR. TR. FLAG
0571	04271	070641	STA SCOMP	CLEAR WR. SECTOR FLAG
0572	04272	071372	STA RCOMP	CLEAR RD. TR. FLAG
0573	04273	070231	STA CBUFF	CLEAR COMP. PATT. FLAG
0574	04274	170504	STA AWSBF,I	SET WRITE SECTOR ADDRESS
0575	04275	170510	STA ARSBF,I	SET READ SECTOR ADDRESS
0576	04276	002004	INA	SET CONSEC. # OF SECTORS
0577	04277	172455	STA S501.I	SET CONSEC. # OF WRITE SECTORS
0578	04300	172456	STA S502.I	SET CONSEC. # OF READ SECTORS
0579	04301	062455	LDA S501	
0580	04302	002004	INA	LAST ADDR.+1 OF SECTOR BUFFER
0581	04303	070605	STA LAWSH	SET TERMINAL ADDR.
0582	04304	062456	LDA S502	
0583	04305	002004	INA	LAST ADDR.+1 OF SECTOR BUFFER
0584	04306	071017	STA LARSH	SET TERMINAL ADDR.
0585	04307	060502	LDA AWTBF	
0586	04310	002004	INA	LAST ADDR.+1 OF TRACK BUFFER
0587	04311	070604	STA LAWTH	SET TERMINAL ADDR.
0588	04312	060506	LDA ARTBF	
0589	04313	002004	INA	LAST ADDR.+1 OF TRACK BUFFER
0590	04314	071016	STA LARTH	SET TERMINAL ADDR.
0591	04315	162460	LDA S504.I	JMP WRITE,I TO A
0592	04316	172461	STA S505.I	SETUP RETURN JUMP
0593	04317	061247	LDA S500	PICKUP TR./SECTOR ADDRESS
0594	04320	001727	ALF,ALF	A8-A15 TO A0-A7
0595	04321	170502	STA AWTBF,I	PUT TRACK ENTRY IN BUFFER
0596	04322	060375	LDA S829	-64 TO A
0597	04323	070374	STA S828	RESET WORKING COUNT
0598	04324	060267	LDA S823	
0599	04325	070266	STA S822	RESET SECTOR BUFFER ADDRESS
0600	04326	061247	LDA S500	PICKUP TR./SECT. ADDR.
0601	04327	170266	STA S822.I	STORE IN BUFFER

0602	04330	034266	ISZ	S822	INCR. BUFFER ADDRESS
0603	04331	034374	ISZ	S828	INCR. WORD COUNT
0604	04332	026327	JMP	S551	BUFFER NOT FINISHED
0605	04333	116457	JSE	S503.I	WRITE ONE TRACK
0606	04334	061247	LDA	S500	PICKUP CURR. TR. VALUE
0607	04335	042462	ADA	S506	ADD 1 TO TR. ADDR.
0608	04336	071247	STA	S500	STORE TR./SECT. ADDR.+1
0609	04337	050171	CPA	TOPT2	LAST ADDR.+1?
0610	04340	026342	JMP	++2	YES
0611	04341	026317	JMP	S550	NO-DO ANOTHER TRACK
0612	04342	002400	CLA		
0613	04343	172457	STA	S503.I	
0614	04344	172461	STA	S505.I	CLEAR NOP'S
0615	04345	071247	STA	S500	CLEAR ACTIVE TRACK COUNTER
0616	04346	162463	LDA	S508.I	
0617	04347	171251	STA	S509.I	SETUP RETURN JUMP
0618	04350	061247	S552	LDA S500	PICKUP TR./SECTOR ADDRESS
0619	04351	001727	ALF,ALF		A8-A15 TO A0-A7
0620	04352	170506	STA	ARTBF,I	PUT TRACK ENTRY IN BUFFER
0621	04353	115250	JSH	S507.I	READ ONE TRACK
0622	04354	060375	LDA	S829	
0623	04355	070374	STA	S828	RESET -64
0624	04356	065247	LDE	S500	PICKUP TR./SECT. PATTERN
0625	04357	155100	S553	CPH CMEM.I	COMPARE TO RECORD
0626	04360	002001	RSS		GOOD
0627	04361	026406	JMP	PROUT	ERROR
0628	04362	035100	ISZ	CMEM	INCR. INPUT BUFFER ADDR.
0629	04363	034374	ISZ	S828	64 WORDS FINISHED?
0630	04364	026357	JMP	S553	DO ANOTHER WORD
0631	04365	061247	S554	LDA S500	PICKUP CURR. TR. VALUE
0632	04366	042462	ADA	S506	ADD 1 TO TRACK ADDR.
0633	04367	071247	STA	S500	STORE TR./SECT. ADDR.+1
0634	04370	050171	CPA	TOPT2	LAST ADDR.+1
0635	04371	026373	JMP	++2	YES-FINISHED COMPLETE PASS
0636	04372	026350	JMP	S552	NO-DO ANOTHER TRACK
0637	04373	102501	LIA	01	SW. REG. TO A
0638	04374	001700	ALF		BIT11 TO BIT15
0639	04375	002020	SSA		BIT11=0?
0640	04376	026315	JMP	S550-2	NO-LOOP CHECK
0641	04377	002400	CLA		
0642	04400	171250	STA	S507.I	
0643	04401	171251	STA	S509.I	CLEAR NOP'S
0644	04402	062467	LDA	CHA40	NO. OF CHAR.=28
0645	04403	066466	LDE	IAD40	ST. ADDR. OF PRINT BUFFER
0646	04404	114102	JSH	102B.I	OUTPUT MESSAGE
0647	04405	126217	JMP	TRVER,I	EXIT CHECK
0648	04406	005727	PRCUT	HLF,BLF	B8-B15 TO B0-B7
0649	04407	114113	JSP	CONV.I	CONVERT OCTAL TO ASCII
0650	04410	060206	LDA	S812	377 TO A
0651	04411	010111	ANI	CARRY+1	RETAIN M.S. DIGIT
0652	04412	070001	STA	1	
0653	04413	060475	LDA	S831	177400 MASK
0654	04414	010112	ANI	CARRY+2	MIDDLE DIGIT
0655	04415	001727	ALF,ALF		
0656	04416	005727	HLF,BLF		
0657	04417	030001	IOR	1	
0658	04420	072504	STA	MES51+8	SETUP PRINT MESSAGE

0659	04421	060206	LDA S812	377 TO A
0660	04422	010112	AND CARRY+2	RETAIN LOW DIGIT
0661	04423	001727	ALF,ALF	
0662	04424	030476	TOR S832	
0663	04425	072505	STA MES51+9	SETUP PRINT MESSAGE
0664	04426	165100	IDF CHFM.I	PICKUP ERROR TR. VALUE
0665	04427	005727	HLF,RLF	B8-B15 TO 80-B7
0666	04430	114113	JSH CONV.I	CONVERT OCTAL TO ASCII
0667	04431	060206	LDA S812	377 TO A
0668	04432	010111	AND CARRY+1	RETAIN M.S. DIGIT
0669	04433	070001	STA 1	
0670	04434	060475	LDA S831	177400 MASK
0671	04435	010112	AND CARRY+2	MIDDLE DIGIT
0672	04436	001727	ALF,ALF	
0673	04437	005727	RLF,RLF	
0674	04440	030001	TOR 1	
0675	04441	072515	STA MES51+17	SETUP PRINT MESSAGE
0676	04442	060206	LDA S812	377 TO A
0677	04443	010112	AND CARRY+2	RETAIN LOW DIGIT
0678	04444	001727	ALF,ALF	
0679	04445	072516	STA MES51+18	SETUP PRINT MESSAGE
0680	04446	062471	LDA CHA54	NO. OF CHAR.=19
0681	04447	066470	LDR IAD54	ST. ADDR. OF PRINT BUFFER
0682	04450	114102	JSH 102B-I	OUTPUT ERROR MESSAGE
0683	04451	062473	LDA CHA51	NO. OF CHAR.=36
0684	04452	066472	LDR IAD51	ST. ADDR. OF PRINT BUFFER
0685	04453	114102	JSH 102B-I	OUTPUT ERROR MESSAGE
0686	04454	026305	JMF S554	DO NEXT TRACK
0687	04455	004760	S501 DEF WSRUF+1	IND. ADDR.
0688	04456	005450	S502 DEF RSBUF+1	IND. ADDR.
0689	04457	002574	S503 DEF WRITF	IND. ADDR.
0690	04460	002573	S504 DEF S600	IND. ADDR.
0691	04461	003102	S505 DEF S601	IND. ADDR.
0692	04462	000400	S506 OCT 400	TRACK INCR.
0693	04463	003507	S508 DEF S602	IND. ADDR.
0694	04464	004517	IAI48 DEF MES48	BUFFER ADDR.
0695	04465	000017	CHA48 OCT 17	CHAR. COUNT
0696	04466	004527	IAI49 DEF MES40	BUFFER ADDR.
0697	04467	000034	CHA49 OCT 34	CHAR. COUNT
0698	04470	004545	IAI50 DEF MES50	BUFFER ADDR.
0699	04471	000023	CHA50 OCT 23	CHAR. COUNT
0700	04472	004474	IAI51 DEF MES51	BUFFER ADDR.
0701	04473	000045	CHA51 OCT 45	CHAR. COUNT
0702	04474	042530	MES51 ASC 19,EXPECTED TRACK-	ACTUAL TRACK-
	04475	050105		
	04476	041524		
	04477	042504		
	04500	020124		
	04521	051101		
	04502	041513		
	04503	026440		
	04504	020040		
	04505	020040		
	04506	040503		
	04507	052125		
	04510	040514		
	04511	020124		

```

04512 051101
04513 041513
04514 026440
04515 020040
04516 020040
0703 04517 047117 MES48 ASC 8, NO. OF TRACKS ?
04520 027040
04521 047506
04522 020124
04523 051101
04524 041513
04525 051440
04526 037440
0704 04527 052122 MES49 ASC 14, TRACK ADDRESS CHECK COMPLETE
04530 040503
04531 045440
04532 040504
04533 042122
04534 042523
04535 051440
04536 041510
04537 042503
04540 045440
04541 041517
04542 046520
04543 046105
04544 052105
0705 04545 052122 MES50 ASC 10, TRACK ADDRESS ERROR
04546 040503
04547 045440
04550 040504
04551 042122
04552 042523
04553 051440
04554 042522
04555 051117
04556 051040
0706 04557 000000 WTEUF RSS 128 WRITE TRACK BUFFER
0707 04757 000000 WSBUF RSS 184 WRITE SECTOR BUFFER
0708 05247 000000 RTEUF RSS 128 READ TRACK BUFFER
0709 05447 000000 RSEUF RSS 184 READ SECTOR BUFFER
0710 05737 000000 SEQ0 RSS 1
0711 00105 ORG 1058
0712 00105 005737 DEF S000
0713 END

```

** NO ERRORS*

DDC DISC DIAGNOSTIC

BINARY TAPE HP20346C

SOURCE TAPES HP20682C
 HP20683C
 HP20684C

SOURCE LISTING HP20346CL

PAGE 0001

0001

ASPH,A,B,L

** NO ERRORS*

0001			ASPB,A,B,L		
0003	00107		CRG 107B		
0004	00107	177700	MASK1 CCT 177700	A6-A15 MASK	
0005	00110	000000	CARRY PSS 3		
0006	00113	001407	CONV DEF CONV1		
0007	00114	000007	MASK2 CCT 7	A0-A2 MASK	
0008	00115	000000	MASK3 CCT 00	ASCII CONSTANT	
0009	00116	030000	MASK4 CCT 30000	ASCII 0	
0010	00117	030400	MASK5 CCT 30400	ASCII 1	
0011	00120	000110	CHARY DEF CARRY	BUFFER ADDR.	
0012	00121	000110	CHARW DEF CARRY	BUFFER ADDR. WORKING	
0013	00122	000000	DAIR1 CCT 0	HIGHEST PRIORITY DISK ADDRESS	
0014	00123	000000	DMADR CCT 0	DMA ADDRESS IN ASCII	
0015	00124	000123	ANIMA DEF DMADR	BUFFER ADDR.	
0016	00125	000002	S100 CCT 2	CHAR. COUNT	
0017	00126	000122	ADIAD DEF DADR1	BUFFER ADDR.	
0018	00127	000130	IAI11 DEF MES11	BUFFER ADDR.	
0019	00130	042115	MES11 ASC 11,DMA	OCTAL CHANNEL # ?	
	00131	040440			
	00132	047503			
	00133	052101			
	00134	046040			
	00135	041510			
	00136	040516			
	00137	047105			
	00140	046040			
	00141	021440			
	00142	037440			
0020	00143	000025	CHA11 CCT 25	CHAR. COUNT	
0021	00144	030066	DMA06 ASC 1,06		
0022	00145	030067	DMA07 ASC 1,07		
0023	00146	000147	IAI12 DEF MES12	BUFFER ADDR.	
0024	00147	044111	MES12 ASC 17,HIGH	PRIORITY OCTAL DISC ADDRESS ?	
	00150	043510			
	00151	020120			
	00152	051111			
	00153	047522			
	00154	044524			
	00155	054440			
	00156	047503			
	00157	052101			
	00160	046040			
	00161	042111			
	00162	051503			
	00163	020101			
	00164	042104			
	00165	051105			
	00166	051523			
	00167	020077			
0025	00170	000042	CHA12 CCT 42	CHAR. COUNT	
0026	00171	000000	TOFT2 CCT 0	TEST OPTION IN ASCII	
0027	00172	000733	S000 DEF BUFF	INPUT BUFFER ADDR.-WORKING	
0028	00173	000733	S001 DEF BUFF	INPUT BUFFER ADDR.	
0029	00174	177734	S002 CCT 177734	BUFFER WORD COUNT-36	
0030	00175	020040	S003 CCT 020040	ASCII BLANKS	
0031	00176	000000	SEXT CCT 0	EXIT FLAG	
0032	00177	000000	S004 CCT 0	INPUT CHAR. LENGTH	

0033	00202	000120	S805	CCT 120	80 CHAR. COUNT
0034	00201	000000	S807	CCT 0	ACTUAL INPUT CHAR. COUNT
0035	00202	077777	S808	CCT 77777	RETAIN A0-A14
0036	00203	000000	S809	CCT 0	LAST WORD BUFFER ADDRESS
0037	00204	000000	S810	CCT 0	WORKING U/L CHAR. MASK
0038	00205	125252	S811	CCT 125252	UPPER/LOWER CHAR. MASK
0039	00206	000377	S812	CCT 377	A0-A7 MASK
0040	00207	000000	S813	CCT 0	TEMP. CHAR. SAVE
0041	00210	005747	S814	DEF 5000	ST. ADDR. OF BUFFER AREA-R/W
0042	00211	000212	IAI16	DEF MES16	BUFFER ADDR.
0043	00212	041111	MES16	ASC 11, BINARY	TEST PATTERN ?
	00213	047101			
	00214	051131			
	00215	020124			
	00216	042523			
	00217	052040			
	00220	050101			
	00221	052124			
	00222	042522			
	00223	047040			
	00224	037440			
0044	00225	000025	CHA16	CCT 25	CHAR. COUNT
0045	00226	177667	S816	CCT 177667	-73 CHAR. COUNT
0046	00227	000000	PWORD	CCT 0	BINARY PATTERN WORD
0047	00230	000000	CWORD	CCT 0	COMPLEMENT ALTERNATE WORD FLAG
0048	00231	000000	CBUFF	CCT 0	COMPL. ALTERNATE BUFFERS FLAG
0049	00232	177760	S817	CCT 177760	-16 WORKING
0050	00233	177760	S818	CCT 177760	-16 RESET
0051	00234	000000	S819	CCT 00	ASCII 0
0052	00235	000001	S820	CCT 01	ASCII 1
0053	00236	000237	IAI18	DEF MES18	BUFFER ADDR.
0054	00237	044514	MES18	ASC 22, ILLEGAL CHARACTER IN TEST PATTERN PARAM	
	00240	045105			
	00241	043501			
	00242	046040			
	00243	041510			
	00244	040522			
	00245	040503			
	00246	052105			
	00247	051040			
	00250	044516			
	00251	020124			
	00252	042523			
	00253	052040			
	00254	050101			
	00255	052124			
	00256	042522			
	00257	047040			
	00260	050101			
	00261	051101			
	00262	046505			
	00263	052105			
	00264	051040			
0055	00265	000053	CHA18	CCT 53	CHAR. COUNT
0056	00266	000271	S822	DEF 5BLFF	SECTOR BUFFER ADDRESS-WORKING
0057	00267	000271	S823	DEF 5BLFF	SECTOR BUFFER ADDRESS
0058	00270	102001	S824	FLT 01	MANUAL BUFFER PRESET

0059	00271	000000	SBLFF	RSS	64	SECTOR BUFFER
0060	00371	102001	S825	FLT	01	SAFETY FACTOR
0061	00372	124373	S826	JMP	S827,I	RETURN TO MAIN PROCESSOR
0062	00373	002201	S827	IEF	S708	MAIN PROGRAM
0063	00374	177700	S828	CCT	177700	-64 WORKING
0064	00375	177700	S829	CCT	177700	-64
0065	00376	000377	IA119	IEF	MES19	BUFFER ADDR.
0066	00377	053522	MES19	ASC	7,WRITE	TRACKS ?
	00400	044524				
	00401	042440				
	00402	052122				
	00403	040503				
	00404	045523				
	00405	020077				
0067	00406	000016	CHA19	CCT	16	CHAR. COUNT
0068	00407	000410	IA120	IEF	MES20	BUFFER ADDR.
0069	00410	053522	MES20	ASC	8,WRITE	SECTORS ?
	00411	044524				
	00412	042440				
	00413	051505				
	00414	041524				
	00415	047522				
	00416	051440				
	00417	037440				
0070	00420	000017	CHA20	CCT	17	CHAR. COUNT
0071	00421	000422	IA121	IEF	MES21	BUFFER ADDR.
0072	00422	053522	MES21	ASC	19,WR/RD	PARAMETER EXCEEDS 72 CHARACTERS
	00423	027522				
	00424	042040				
	00425	050101				
	00426	051101				
	00427	046505				
	00430	052105				
	00431	051040				
	00432	042530				
	00433	041505				
	00434	042504				
	00435	051440				
	00436	033402				
	00437	020103				
	00440	044101				
	00441	051101				
	00442	041524				
	00443	042522				
	00444	051440				
0073	00445	000045	CHA21	CCT	45	CHAR. COUNT
0074	00446	000070	S830	CCT	70	ASCII R
0075	00447	000450	IA122	IEF	MES22	BUFFER ADDR.
0076	00450	020040	MES22	ASC	20,	CHARACTER IN OCTAL PARAMETER ILLEGAL
	00451	020103				
	00452	044101				
	00453	051101				
	00454	041524				
	00455	042522				
	00456	020111				
	00457	047040				
	00460	047503				

	00461	052101			
	00462	046040			
	00463	050101			
	00464	051101			
	00465	040505			
	00466	052105			
	00467	051040			
	00470	044514			
	00471	046105			
	00472	043501			
	00473	040040			
0077	00474	000047	CHA22	CCT 47	CHAR. COUNT
0078	00475	177400	S821	CCT 177400	A8-A15 MASK
0079	00476	000040	S822	CCT 40	BLANK
0080	00477	000054	S823	CCT 54	COMMA
0081	00500	000057	S824	CCT 57	SLASH
0082	00501	000055	S825	CCT 55	-
0083	00502	004567	AWTBF	IEF WTRUF	
0084	00503	004567	WAWTB	IEF WTRUF	WORKING ADDRESS
0085	00504	004707	AWSBF	IEF WSRUF	
0086	00505	004707	WAWSB	IEF WSRUF	WORKING ADDRESS
0087	00506	005257	ARTBF	IEF RTBUF	
0088	00507	005257	WARTB	IEF RTBUF	WORKING ADDRESS
0089	00510	005457	ARSBF	IEF WSRUF	
0090	00511	005457	WARSB	IEF WSRUF	WORKING ADDRESS
0091	00512	000124	S826	CCT 124	ASCII T
0092	00513	000123	S827	CCT 123	ASCII S
0093	00514	000515	1A123	IEF MES23	
0094	00515	044515	MES23	ASC 19, IMPROPER CHARACTER IN NAME PARAMETER	
	00516	050122			
	00517	047520			
	00520	042522			
	00521	020103			
	00522	044101			
	00523	051101			
	00524	041524			
	00525	042522			
	00526	020111			
	00527	047040			
	00530	053522			
	00531	027522			
	00532	042040			
	00533	050101			
	00534	051101			
	00535	046505			
	00536	052105			
	00537	051040			
0095	00540	000000	S840	CCT 0	CHAR. STORAGE-ST. TRACK
0096	00541	000000	S841	CCT 0	SEQ. TRACK VALUE-CHAR. STORAGE
0097	00542	000543	1A124	IEF MES24	BUFFER ADDR.
0098	00543	053522	MES24	ASC 13, WRITE PARAMETER INCOMPLETE	
	00544	044524			
	00545	042440			
	00546	050101			
	00547	051101			
	00550	046505			
	00551	052105			

	00552	051040			
	00553	044516			
	00554	041517			
	00555	046520			
	00556	046105			
	00557	052105			
0099	00560	000032	CHA24	CCT 32	CHAR. COUNT
0100	00561	000562	IAI25	DEF MES25	BUFFER ADDR.
0101	00562	053522	MES25	ASC 15,WRITE	TRACK BUFFER OVERFLOWED
	00563	044524			
	00564	042440			
	00565	052122			
	00566	040503			
	00567	045440			
	00570	041125			
	00571	043106			
	00572	042522			
	00573	020117			
	00574	053105			
	00575	051106			
	00576	046117			
	00577	053505			
	00600	042040			
0102	00601	000035	CHA25	CCT 35	CHAR. COUNT
0103	00602	177775	S842	CCT 177775	-3 COUNTER
0104	00603	177775	S843	CCT 177775	-3 COUNTER-WORKING
0105	00604	000000	LAWTB	CCT 0	LAST TRACK WRITE BUFFER ADDR.+1
0106	00605	000000	LASB	CCT 0	LAST SECTOR WRITE BUFF. ADDR.+1
0107	00606	000607	IAI26	DEF MES26	BUFFER ADDR.
0108	00607	053522	MES26	ASC 15,WRITE	SECTOR BUFFER OVERFLOWED
	00610	044524			
	00611	042440			
	00612	051505			
	00613	041524			
	00614	047522			
	00615	020102			
	00616	052506			
	00617	043105			
	00620	051040			
	00621	047526			
	00622	042522			
	00623	043114			
	00624	047527			
	00625	042504			
0109	00626	000036	CHA26	CCT 36	CHAR. COUNT
0110	00627	000006	MASK6	CCT 6	DMA ADDR.
0111	00630	000002	MAS6A	CCT 2	MAR/WCR ADDR. FOR CHAN.6
0112	00631	000003	MAS7A	CCT 3	MAR/WCR ADDR. FOR CHAN.7
0113	00632	000000	WCOMP	CCT 0	WRITE COMPLETE FLAG
0114	00633	140177	S844	CCT 140177	TRACK MASK
0115	00634	100000	WCCMH	CCT 100000	TRACK/SECTOR ADDRESS
0116	00635	020000	WDFAW	CCT 020000	H.P. DISK ADDR. AND CLC BIT
0117	00636	000000	WDIR	CCT 0	STARTING ADDRESS
0118	00637	000000	WDCNT	CCT 0	2'S COMPL. WD. COUNT
0119	00640	177600	S845	CCT 177600	SECTOR MASK
0120	00641	000000	SCOMP	CCT 0	SECTOR STRING COMPLETE FLAG
0121	00642	000000	S847	CCT 0	2'S COMPL. # OF SECTORS

0122	00043	000000	S848	CCT 0	ST. OF AVAILABLE MEM.
0123	00044	000045	IAI27	DEF MES27	BUFFER ADDR.
0124	00045	053522	MES27	ASC 13,WR/RT	WORD COUNT EXCESSIVE
	00046	027522			
	00047	042040			
	00050	053517			
	00051	051104			
	00052	020103			
	00053	047525			
	00054	047124			
	00055	020103			
	00056	054103			
	00057	042523			
	00060	051511			
	00061	053105			
0125	00062	000032	CHA27	CCT 32	CHAR. COUNT
0126	00063	124664	S849	JMP S850,1	RETURN FROM INTERRUPT
0127	00064	003033	S850	DEF FAIT1+1	RETURN ADDRESS
0128	00065	000000	BUFLG	CCT 0	DISK BUSY ERROR FLAG
0129	00066	000067	IAI28	DEF MES28	BUFFER ADDR.
0130	00067	042522	MES28	ASC 17,ERROR	BUSY STATUS BIT DURING WR/RO
	00070	051117			
	00071	051040			
	00072	041125			
	00073	051531			
	00074	020123			
	00075	052101			
	00076	052125			
	00077	051440			
	00700	041111			
	00701	052040			
	00702	042125			
	00703	051111			
	00704	047107			
	00705	020127			
	00706	051257			
	00707	051104			
0131	00710	000042	CHA28	CCT 42	CHAR. COUNT
0132	00711	000712	IAI29	DEF MES29	BUFFER ADDR.
0133	00712	042111	MES29	ASC 7,DISC	NOT READY
	00713	051503			
	00714	020116			
	00715	047524			
	00716	020122			
	00717	042501			
	00720	042131			
0134	00721	000016	CHA29	CCT 16	CHAR. COUNT
0135	00722	000723	IAI30	DEF MES30	BUFFER ADDR.
0136	00723	051105	MES30	ASC 7,READ	TRACKS ?
	00724	040504			
	00725	020124			
	00726	051101			
	00727	041513			
	00730	051440			
	00731	037440			
0137	00732	000015	CHA30	CCT 15	CHAR. COUNT
0138	00733	000000	HLFF	ESS 36	INPLT BUFFER

0139	00777	001000	IAI31 DEF MES31	BUFFER ADDR.
0140	01000	051105	MES31 ASC 13,READ	PARAMETER INCOMPLETE
	01001	040504		
	01002	020120		
	01003	040522		
	01004	040515		
	01005	042524		
	01006	042522		
	01007	020111		
	01010	047103		
	01011	047515		
	01012	050114		
	01013	042524		
	01014	042440		
0141	01015	000031	CHA31 CCT 31	CHAR. COUNT
0142	01016	000000	LAFB CCT 0	LAST TRACK READ BUFFER ADDR.+1
0143	01017	000000	LAFSB CCT 0	LAST SECTOR READ BUFF. ADDR.+1
0144	01020	001021	IAI32 DEF MES32	BUFFER ADDR.
0145	01021	051105	MES32 ASC 14,READ	TRACK BUFFER OVERFLOWED
	01022	040504		
	01023	020124		
	01024	051101		
	01025	041513		
	01026	020102		
	01027	052506		
	01030	043105		
	01031	051040		
	01032	047526		
	01033	042522		
	01034	043114		
	01035	047527		
	01036	042504		
0146	01037	000034	CHA32 CCT 34	CHAR. COUNT
0147	01040	001041	IAI33 DEF MES33	BUFFER ADDR.
0148	01041	051105	MES33 ASC 7,READ	SECTORS ?
	01042	040504		
	01043	020123		
	01044	042503		
	01045	052117		
	01046	051123		
	01047	020077		
0149	01050	000016	CHA33 CCT 16	CHAR. COUNT
0150	01051	001052	IAI34 DEF MES34	BUFFER ADDR.
0151	01052	051105	MES34 ASC 15,READ	SECTOR BUFFER OVERFLOWED
	01053	040504		
	01054	020123		
	01055	042503		
	01056	052117		
	01057	051040		
	01060	041125		
	01061	043106		
	01062	042522		
	01063	020117		
	01064	053105		
	01065	051106		
	01066	046117		
	01067	053505		

	01070	042040			
0152	01071	000035	CHA34	CCT 35	CHAR. COUNT
0153	01072	000000	RCLMP	CCT 0	READ COMPLETE FLAG
0154	01073	000000	RCCMR	CCT 0	TRACK/SECTOR ADDRESS
0155	01074	120075	S852	JMP S853,I	RETURN FROM INTERRUPT
0156	01075	003747	S853	IEF *AIT2+1	RETURN ADDRESS
0157	01076	000000	CTCK	CCT 0	TRACK VALUE OF INPUT BUFFER
0158	01077	000000	CSECT	CCT 0	STARTING SECTOR VALUE OF INPUT
0159	01100	000000	CMEM	CCT 0	ST. ADDR. OF INPUT BUFFER
0160	01101	000000	SEWC	CCT 0	WORD # WITHIN SECTOR
0161	01102	000000	SECTC	CCT 0	2'S COMPL. # OF SECTORS
0162	01103	003127	S854	IEF S743	LOOP LOCN.
0163	01104	000000	REIR	CCT 0	STARTING ADDRESS
0164	01105	002574	S856	IEF WRITE	LOOP CONTROL
0165	01106	001107	IAI35	IEF MES35	BUFFER ADDR.
0166	01107	042105	MES35	ASC 6,PECODE ERROR	
	01110	041517			
	01111	042105			
	01112	020105			
	01113	051122			
	01114	047522			
0167	01115	000014	CHA35	CCT 14	CHAR. COUNT
0168	01116	001117	IAI36	IEF MES36	BUFFER ADDR.
0169	01117	051105	MES36	ASC 9,READ PARITY ERROR	
	01120	040504			
	01121	020120			
	01122	040522			
	01123	044524			
	01124	054440			
	01125	042522			
	01126	051117			
	01127	051040			
0170	01130	000021	CHA36	CCT 21	CHAR. COUNT
0171	01131	000000	S857	CCT 0	TEMP.
0172	01132	001133	IAI37	IEF MES37	BUFFER ADDRESS
0173	01133	052122	MES37	ASC 16,TRACK	SECTOR WORD NO.
	01134	040503			
	01135	045440			
	01136	020040			
	01137	020040			
	01140	051505			
	01141	041524			
	01142	047522			
	01143	020040			
	01144	020040			
	01145	020127			
	01146	047522			
	01147	042040			
	01150	047117			
	01151	027040			
	01152	020040			
0174	01153	000040	CHA37	CCT 40	CHAR. COUNT
0175	01154	001155	IAI38	IEF MES38	BUFFER ADDRESS
0176	01155	047525	MES38	ASC 14,OUTPLT	INPUT
	01156	052120			
	01157	052524			
	01160	020040			

01161	020040				
01162	020040				
01163	020040				
01164	020111				
01165	047120				
01166	052524				
01167	020040				
01170	020040				
01171	020040				
01172	020040				
0177	01173	000034	CHA38	CCT 34	CHAR. COUNT
0178	01174	003130	1743	IEF S743+1	
0179	01175	001574	PRCT	IEF PROTC	IND.
0180	01176	003510	1855	IEF S855	IND.
0181	01177	003612	S858	IEF S769A	IND.
0182	01200	003574	S859	IEF S769	IND.
0183	01201	003572	S860	IEF S769-2	IND.
0184	01202	002042	S861	IEF T4	IND.
0185	01203	004030	1776	IEF S776	
0186	01204	177577	S862	CCT 177577	-129 WORKING
0187	01205	177577	S863	CCT 177577	-129
0188	01206	177643	S864	CCT 177643	-93 WORKING
0189	01207	177643	S865	CCT 177643	-93
0190	01210	077777	S869	CCT 77777	INTERRUPT TIME-OUT CONSTANT
0191	01211	001457	S870	IEF S903	WRITE INT. MISSING
0192	01212	001464	S871	IEF S904	READ INT. MISSING
0193	01213	000000	FFLAG	CCT 0	SUPPRESS PRINT FLAG
0194	01214	001215	IAI43	IEF MES43	BUFFER ADDR.
0195	01215	053522	MES43	ASC 11,WRITE	ABORT-TRACK
	01216	044524			
	01217	042440			
	01220	040502			
	01221	047522			
	01222	052055			
	01223	052122			
	01224	040503			
	01225	040440			
	01226	020040			
	01227	020040			
0196	01230	000025	CHA43	CCT 25	CHAR. COUNT
0197	01231	001232	IAI44	IEF MES44	BUFFER ADDR.
0198	01232	051105	MES44	ASC 10,READ	ABORT-TRACK
	01233	040504			
	01234	020101			
	01235	041117			
	01236	051124			
	01237	026524			
	01240	051101			
	01241	041513			
	01242	020040			
	01243	020040			
0199	01244	000024	CHA44	CCT 24	CHAR. COUNT
0200	01245	037600	S872	CCT 37600	BIT 7 TO BIT 13 MASK
0201	01246	004222	TRV	IEF TRVER	IND. ADDR.
0202	01247	000000	S500	CCT 0	ACTIVE TRACK COUNTER
0203	01250	003512	S507	IEF READ	IND. ADDR.
0204	01251	004027	S509	IEF S603	IND. ADDR.

FILE 001) 001 SPECIAL DBC DISC DIAGNOSTIC FOR 2115/2116

0205	01252	177577	S810	CCT 177577	-201 OCTAL
0206	01253	020000	S8E0	CCT 20000	UPPER BLANK
0207	01254	177600	S8E1	CCT 177600	WORKING -128
0208	01255	177600	S8E2	CCT 177600	-128
0209	01256	004023	1775	IEF S775	IND.
0210	01257	004015	1773C	IEF S773C	IND.
0211	01258	103512	HEAD1	IEF READ, I	DOUBLE IND.
0212	01261	060206	S8E3	LDA S812	377 TO A
0213	01262	010111		AND CARRY+1	RETAIN M.S. DIGIT
0214	01263	001727		ALF, ALF	
0215	01264	070001		STA 1	
0216	01265	060475		LDA S831	177400 TO A
0217	01266	010112		AND CARRY+2	RETAIN MIDDLE DIGIT
0218	01267	001727		ALF, ALF	
0219	01270	030001		IOR 1	
0220	01271	071226		STA MES43+9	SETUP PRINT MESSAGE
0221	01272	060206		LDA S812	377 TO A
0222	01273	010112		AND CARRY+2	RETAIN LOW DIGIT
0223	01274	001727		ALF, ALF	
0224	01275	071227		STA MES43+10	SETUP PRINT MESSAGE
0225	01276	125277		JMP S884, I	
0226	01277	005057	S8E4	IEF S885+1	
0227	***** INPUT SUBROUTINE- TTY OR PR *****				
0228	01300	000300	S900	NOP	RETURN-ENTERED WITH S804 SETUP
0229	01301	060173		LDA S801	BUFFER ADDR. TO A
0230	01302	070172		STA S800	RESTORE BUFFER ADDR.
0231	01303	060474		LDR S802	B=FULL BUFFER COUNTER
0232	01304	060175		LDA S803	A=2 ASCII BLANKS
0233	01305	170172	S700	STA S800, I	FILL LOCN. WITH BLANKS
0234	01306	034172		ISZ S800	INCR. BUFFER ADDRESS
0235	01307	034001		ISZ 1	INCR. BUFFER COUNT
0236	01310	025305		JMP S700	LOOP
0237	01311	006400		CLB	CLEAR B
0238	01312	074176		STB SEXT	CLEAR EXIT FLAG
0239	01313	102501		LIA 1	SW. REG. TO A
0240	01314	000066		CLC, EIA	DEC. BIT TO E
0241	01315	060473		LDR S801	BUFFER ADDR. TO B
0242	01316	060177		LDA S804	INPUT CHAR. LENGTH TO A
0243	01317	002041		SEZ, FSS	E=1, PR INPUT
0244	01320	025323		JMP **+3	E=0, TTY INPUT
0245	01321	114101		JSB 101B, I	PR INPUT
0246	01322	025324		JMP **+2	COMPLETE
0247	01323	114104		JSB 104B, I	TTY INPUT
0248	01324	070201		STA S807	SAVE INPUT CHAR. COUNT
0249	01325	001300		RAR	LSB TO MSB
0250	01326	002020		SSA	SKIP IF CHAR. COUNT EVEN
0251	01327	002004		INA	IF, NOT-ADD ONE
0252	01330	010202		AND S808	RETAIN A2-A14
0253	01331	040173		ADA S801	ADD 1ST WORD BUFFER ADDRESS
0254	01332	070203		STA S809	LAST WORD BUFFER ADDRESS
0255	01333	060173		LDA S801	
0256	01334	070172		STA S800	RESTORE BUFFER ADDRESS
0257	01335	060205		LDA S811	UPPER/LOWER CHAR. MASK TO A
0258	01336	070204		STA S810	WORKING U/L CHAR. MASK
0259	01337	060201		LDA S807	ACTUAL INPUT CHAR. COUNT TO A
0260	01340	125300		JMP S900, I	EXIT-ACTUAL INPUT CHAR. COUNT=A
0261	***** GET A CHARACTER SUBROUTINE *****				

0262	01341	000000	S901	NOP	RETURN
0263	01342	064204		LDB S810	WORKING L/L CHAR. MASK TO B
0264	01343	100172		LDA S800,1	PICKUP BUFFER WORD
0265	01344	000020		SSH	SKIP IF LOWER HALF CHAR.
0266	01345	001727		ALF,ALF	ROTATE A LEFT 8
0267	01346	010206		AND S812	RETAIN A0-A7
0268	01347	006021		SSH,RSS	SKIP IF UPPER CHAR.
0269	01350	034172		ISZ S800	INCR. BUFFER ADDR.
0270	01351	005200		RBL	ROTATE UPPER-LOWER MASK
0271	01352	074204		STB S810	RESTORE L/L CHAR. MASK
0272	01353	070207		STA S813	SAVE CHAR. IN TEMP. LOCN.
0273	01354	060172		LDA S800	CURRENT BUFFER ADDR.
0274	01355	050203		CPA S809	COMPARE WITH LAST BUFFER ADDR.
0275	01356	025361		JMP S701	YES, SET EXIT FLAG
0276	01357	060207	S702	LDA S813	RESTORE CHAR. IN A
0277	01360	125341		JMP S901,1	EXIT-CHAR. IN A0-A7
0278	01361	034176	S701	ISZ SEXT	SET EXIT FLAG
0279	01362	025357		JMP S702	RETURN
0280	***** ASCII-OCTAL VERIFICATION ROUTINE *****				
0281	01363	000000	S902	NOP	ENTERED WITH CHAR. IN A0-A7
0282	01364	064234		LDB S819	ASCII # TO A
0283	01365	050001		CPA 1	COMPARE A TO B
0284	01366	025405		JMP S902A	CHAR. LEGAL-EXIT
0285	01367	006004		INH	
0286	01370	054446		CPB S830	B=0000707
0287	01371	002001		RSS	FINISHED-CHAR. ILLEGAL
0288	01372	025365		JMP S902+2	NOT FINISHED
0289	01373	070001		STA 1	A TO B
0290	01374	060475		LDA S831	A0-A15 MASK
0291	01375	010450		AND MES22	RETAIN A0-A15
0292	01376	030001		IOR 1	B0-B7 TO A
0293	01377	070450		STA MES22	RESTORE MESSAGE
0294	01400	060474		LDA CHA22	NO. OF CHAR.=39
0295	01401	064447		LDB IAD22	ST. ADDR. OF PRINT BUFFER
0296	01402	114102		JSB 1020,1	OUTPUT ERROR MESSAGE
0297	01403	102001		PLI 01	TURN SW.15 OFF IF ON
0298	01404	125363		JMP S902,1	ERROR RETURN
0299	01405	035363	S902A	ISZ S902	INCR. EXIT ADDRESS
0300	01406	025404		JMP S902A-1	EXIT
0301	***** OCTAL TO ASCII CONVERSION - 6 DIGITS *****				
0302	01407	000000	CONV1	NOP	OCTAL TO ASCII CONV. SUBR.
0303	*ENTERED WITH B=6 DIGIT OCTAL NUMBER				
0304	01410	060120		LDA CHAR0	
0305	01411	070121		STA CHAR0	RESET ARRAY ADDRESS
0306	01412	060116		LDA MASK4	ASCII 0 TO A
0307	01413	006020		SSB	MSB=07
0308	01414	060117		LDA MASK5	ASCII 1 TO A
0309	01415	170121		STA CHAR0,1	1ST DIGIT COMPLETE
0310	01416	005700		BLF	ROTATE A LEFT
0311	01417	060114		LDA MASK2	77 TO A
0312	01420	010001		AND 1	B0-B2 TO A
0313	01421	030115		IOR MASK3	6X IN A0-A7
0314	01422	130121		IOR CHAR0,1	COMPLETE 2ND DIGIT
0315	01423	170121		STA CHAR0,1	RESTORE 1ST WORD
0316	01424	034121		ISZ CHAR0	INCR. ARRAY ADDR.
0317	01425	005723		BLF,RBR	ROTATE 3 LEFT
0318	01426	060114		LDA MASK2	77 TO A

0319	01427	010001		AND 1	B0-B2 TO A
0320	01430	030115		IOR MASK3	6X IN A0-A7
0321	01431	001727		ALF,ALF	ROTATE A LEFT 8
0322	01432	170121		STA CHARW,I	3RD DIGIT COMPLETE
0323	01433	005723		RLF,RBR	ROTATE 3 LEFT
0324	01434	060114		LDA MASK2	77 TO A
0325	01435	010001		AND 1	B0-B2 TO A
0326	01436	030115		IOR MASK3	6X IN A0-A7
0327	01437	130121		IOR CHARW,I	COMPLETE 4TH DIGIT
0328	01440	170121		STA CHARW,I	RESTORE 2ND WORD
0329	01441	034121		ISZ CHARW	INCR. ARRAY ADDR.
0330	01442	005723		RLF,RBR	ROTATE 3 LEFT
0331	01443	060114		LDA MASK2	77 TO A
0332	01444	010001		AND 1	B0-B2 TO A
0333	01445	030115		IOR MASK3	6X IN A0-A7
0334	01446	001727		ALF,ALF	ROTATE A LEFT 8
0335	01447	170121		STA CHARW,I	5TH DIGIT COMPLETE
0336	01450	005723		RLF,RBR	ROTATE 3 LEFT
0337	01451	060114		LDA MASK2	77 TO A
0338	01452	010001		AND 1	B0-B2 TO A
0339	01453	030115		IOR MASK3	6X IN A0-A7
0340	01454	130121		IOR CHARW,I	6TH DIGIT COMPLETE
0341	01455	170121		STA CHARW,I	RESTORE 3RD WORD
0342	01456	125407		JMP CONV1,I	RETURN
0343	*****	INTERRUPT ERROR	SUBROUTINE *****		
0344	01457	000000	S903	NOP	WRITE INTERRUPT ERROR
0345	01460	061541		LDA CHA40	NO. OF CHAR.=23
0346	01461	065524		LDB IAD40	ST. ADDR. OF PRINT BUFFER
0347	01462	114102		JSR 102B,I	OUTPUT MESSAGE
0348	01463	020471		JMP S905	CONTINUE
0349	01464	000000	S904	NOP	
0350	01465	061555		LDA CHA41	NO. OF CHAR.=22
0351	01466	065542		LDB IAD41	ST. ADDR. OF PRINT BUFFER
0352	01467	114102		JSR 102B,I	OUTPUT MESSAGE
0353	01470	025473		JMP S906	CONTINUE
0354	01471	015475	S905	JSR S907	GET DMA WORD COUNT
0355	01472	125457		JMP S903,I	RETURN FROM WRITE INT. ERROR
0356	01473	015475	S906	JSR S907	GET DMA WORD COUNT
0357	01474	125464		JMP S904,I	RETURN FROM READ INT. ERROR
0358	01475	000000	S907	NOP	
0359	01476	064123		LDB DMADR	DMA OCTAL ADDR. TO B
0360	01477	054627		CPB MASK6	DMA CHAN.=6?
0361	01500	025503		JMP ++3	YES
0362	01501	064631		LDB MAS7A	NO-ADDR.=3
0363	01502	025504		JMP ++2	
0364	01503	064630		LDB MAS6A	ADDR.=2
0365	01504	060107		LDA MASK1	17700 TO A
0366	01505	011510		AND S908	RETAIN A6-A15
0367	01506	030001		IOR 1	IOR WCR ADDRESS
0368	01507	071510		STA S908	RESTORE S908
0369	01510	106500	S908	LIB 0	INPUT WORD COUNT
0370	01511	114113		JSR CONV,I	OCTAL TO ASCII CONVERSION
0371	01512	060110		LDA CARRY	SETUP PRINT MESSAGE
0372	01513	071570		STA MES42+8	
0373	01514	060111		LDA CARRY+1	
0374	01515	071571		STA MES42+9	
0375	01516	060112		LDA CARRY+2	

0376	01517	071572	STA	MES42+10	
0377	01520	061573	LDA	CHA42	NO. OF CHAR.=22
0378	01521	065557	LDB	IAD42	ST. ADDR. OF PRINT BUFFER
0379	01522	114102	JSR	1020,I	OUTPUT MESSAGE
0380	01523	125475	JMP	S907,I	EXIT
0381	01524	001525	IAI40	DEF MES40	BUFFER ADDR.
0382	01525	053522	MES40	ASC 12,WRITE	INTERRUPT MISSING
	01526	044524			
	01527	042440			
	01530	044516			
	01531	052105			
	01532	051122			
	01533	052520			
	01534	052040			
	01535	046511			
	01536	051523			
	01537	044516			
	01540	043440			
0383	01541	000027	CHA40	CCT 27	CHAR. COUNT
0384	01542	001543	IAI41	DEF MES41	BUFFER ADDR.
0385	01543	051105	MES41	ASC 11,READ	INTERRUPT MISSING
	01544	040504			
	01545	020111			
	01546	047124			
	01547	042522			
	01550	051125			
	01551	050124			
	01552	020115			
	01553	044523			
	01554	051511			
	01555	047107			
0386	01556	000026	CHA41	CCT 26	CHAR. COUNT
0387	01557	001560	IAI42	DEF MES42	BUFFER ADDR.
0388	01560	042115	MES42	ASC 11,DMA WORD COUNT=	
	01561	040440			
	01562	053517			
	01563	051104			
	01564	020103			
	01565	047525			
	01566	047124			
	01567	036440			
	01570	020040			
	01571	020040			
	01572	020040			
0389	01573	000026	CHA42	CCT 26	CHAR. COUNT
0390	***** PROTECT SUBROUTINE *****				
0391	01574	000000	PRCTC	NOP	PROTECT CHECK SUBROUTINE
0392	01575	002400	CLA		
0393	01576	071664	STA	S912	CLEAR
0394	01577	071663	STA	S910	CLEAR TRACK ADDR. COUNTER
0395	01600	061255	LDA	S882	-128 TO A
0396	01601	071254	STA	S881	RESET COUNTER
0397	01602	064122	LDB	DADR1	H.P. DISK ADDR. TO B
0398	01603	006004	INR		SET TO L.P. ADDR.
0399	01604	060107	LDA	MASK1	177700 TO A
0400	01605	011617	AND	S911+3	RETAIN A6-A15
0401	01606	030001	TOR	1	B TO A

0402	01607	071617		STA S911+3	RESTORE S911+3
0403	01610	060107		LDA MASK1	177700 TO A
0404	01611	011520		AND S911+4	RETAIN A6-A15
0405	01612	030001		IOR 1	B TO A
0406	01613	071620		STA S911+4	RESTORE S911+3
0407	01614	061663	S911	LDA S910	TR. ADDR. COUNTER TO A
0408	01615	001727		ALF,ALF	A0-A5 TO A8-A13
0409	01616	001300		RAR	ADJUST TO A7-A13
0410	01617	102600		CTA 0	TRACK ADDR. TO DISK
0411	01620	102500		LIA 0	INPUT STATUS
0412	01621	001323		RAR,RAR	BIT2 TO BIT0
0413	01622	002011		SLA,SSS	WRITE ENABLE=17
0414	01623	035604		IS7 S912	NO-PROTECT COUNTER
0415	01624	035663		ISZ S910	INCR. TRACK ADDRESS
0416	01625	035254		ISZ S881	128 TRACKS FINISHED?
0417	01626	025614		JMP S911	NO-LOOP
0418	01627	065664		LDB S912	ACTUAL PROTECT COUNT
0419	01630	114113		JSB CONV,1	CONVERT OCTAL TO ASCII
0420	01631	060206		LDA S812	377 TO A
0421	01632	010111		AND CARRY+1	RETAIN M.S. DIGIT
0422	01633	031253		IOR S880	BLANK A8-A15
0423	01634	071600		STA MES45+12	SETUP PRINT MESSAGE
0424	01635	060112		LDA CARRY+2	PICKUP ASCII COUNT
0425	01636	071661		STA MES45+13	PREPARE MESSAGE
0426	01637	061662		LDA CHA45	CHAR. COUNT=28
0427	01640	065543		LDB IAB45	ST. ADDR. OF PRINT BUFFER
0428	01641	114102		JSB 102B,1	OUTPUT MESSAGE
0429	01642	125574		JMP PROT0,1	RETURN
0430	01643	001644	IAB45	IEF MES45	BUFFER ADDR.
0431	01644	047117	MES45	ASC 14,NO. OF	PROTECTED TRACKS-
		01645			
		01646			
		01647			
		01650			
		01651			
		01652			
		01653			
		01654			
		01655			
		01656			
		01657			
		01660			
		01661			
0432	01662	000034	CHA45	CCT 34	CHAR. COUNT
0433	01663	000000	S910	CCT 0	TRACK ADDRESS COUNTER
0434	01664	000000	S912	CCT 0	PROTECT COUNTER
0435	01700			CRG 1700B	
0436	01700	000000	S959	NOP	ERROR COUNT
0437	01701	000000		NOP	ERRGR COUNT OVERFLOW
0438	01702	001703	IAB52	IEF MES52	BUFFER ADDR.
0439	01703	041111	MES52	ASC 19,BINARY	PARAMETER EXCEEDS 72 CHARACTERS
		01704			
		01705			
		01706			
		01707			
		01710			
		01711			

01712	042522				
01713	020105				
01714	054103				
01715	042505				
01716	042123				
01717	020067				
01720	031040				
01721	041510				
01722	040522				
01723	040503				
01724	052105				
01725	051123				
0440	01726	000046	CHA52	CCT 46	CHAR. COUNT
0441	020000			CRG 20008	
0442	020000	060143	START	LDA CHA11	NO. OF CHAR.=14
0443	020001	064127		LDR IAD11	ST. ADDR. OF PRINT BUFFER
0444	020002	114102		JSB 102B,I	OUTPUT MESSAGE
0445	020003	060125		LDA S100	NO. OF CHAR.=2
0446	020034	064124		LDR ARDMA	BUFFER ADDR.
0447	020005	114104		JSB 104B,I	INPUT DMA ADDR.
0448	020006	060123		LDA DMA0R	ASCII DMA ADDR. TO A
0449	020007	050144		CPA DMA06	EQUAL 06
0450	020100	026014		JMP S300	YES
0451	020111	050145		CPA DMA07	EQUAL 07
0452	020112	026014		JMP S300	YES
0453	020113	026000		JMP START	NO-GET GOOD ADDRESS
0454	020114	010114	S300	AND MASK2	A0-A2 MASK
0455	020115	070123		STA DMADR	RESTORE OCTAL DMA ADDRESS
0456	020116	060170		LDA CHA12	NO. OF CHAR.=28
0457	020117	064146		LDR IAD12	ST. ADDR. OF PRINT BUFFER
0458	020200	114102		JSB 102B,I	OUTPUT MESSAGE
0459	020201	060125		LDA S100	NO. OF CHAR.=2
0460	020202	064126		LDR ADIAD	BUFFER ADDR.
0461	020203	114104		JSB 104B,I	INPUT H.P. DISK ADDR.
0462	020204	060114		LDA MASK2	A0-A2 MASK
0463	020205	010122		AND DADR1	RETAIN 10-A2
0464	020206	070001		STA 1	A TO B
0465	020207	060122		LDA DADR1	ASCII ADDR. TO A
0466	020300	001727		ALF,ALF	LEFT 8
0467	020301	010114		AND MASK2	RETAIN A0-A2
0468	020302	001723		ALF,RAR	LEFT 3
0469	020303	030001		IOR 1	B TO A
0470	020304	070122		STA DADR1	RESTORE OCTAL H.P. DISK ADDRESS
0471	020305	115175		JSB PROT,I	CHECK PROTECT FEATURE
0472	020306	102501		LIA 01	SW. REG. TO A
0473	020307	001700		ALF	BIT11 TO BIT15
0474	020400	002020		SSA	SW.11=0?
0475	020401	115246		JSB TRV,I	TRACK ADDR. CHECK SUBR.
0476	020402	060502	14	LDA AWTBF	START OF BUFFER AREA
0477	020403	006400		CLB	
0478	020404	174000		STB 0,I	
0479	020405	002004		JNA	
0480	020406	050106		CPA 106B	LAST ADDR. OF BUFFER AREA
0481	020407	026051		JMP ++2	FINISHED
0482	020500	026044		JMP T4+2	NOT FINISHED
0483	020501	075213		STH PFLAG	
0484	020502	175103		STB S854,I	CLEAR FLAGS

0485	02053	076574		STB WRITE	
0486	02054	077104		STB S601	
0487	02055	077512		STB READ	
0488	02056	175251		STB S509,I	CLEAR NOP'S
0489	02057	102501		LIA 01	SW. REG. TO A
0490	02060	001200		RAL	BIT 14 TO BIT 15
0491	02061	002020		SSA	BIT 15=0?
0492	02062	024270		JMP S824	MANUAL PRESET
0493	02063	102501		LIA 01	SW. REG. TO A
0494	02064	002020		SSA	BIT 15=0?
0495	02065	026071		JMP S703	NO-PR INPUT
0496	02066	060225		LDA CHA10	NO. OF CHAR.=21
0497	02067	064211		LDB IAD16	ST. ADDR. OF PRINT BUFFER
0498	02070	114102		JSB 102B,I	OUTPUT MESSAGE
0499	02071	060200	S703	LDA S805	CHAR. COUNT=72
0500	02072	070177		STA S804	SETUP INPUT CHAR. LENGTH
0501	02073	015300		JSB S900	CALL INPUT SUBROUTINE
0502	02074	040226		ADA S816	ADD -73 TO CHAR. COUNT
0503	02075	002020		SSA	POS.=ERROR
0504	02076	026104		JMP S704	NO ERROR
0505	02077	061726		LDA CHA52	CHAR. COUNT=38
0506	02100	065702		LDB IAD52	ST. BUFFER ADDR.
0507	02101	114102		JSB 102B,I	OUTPUT MESSAGE
0508	02102	102001		FLT 01	TURN SW. 15 OFF IF ON
0509	02103	026071		JMP S703	RETURN FOR NEW INPUT
0510	02104	002400	S704	CLA	
0511	02105	070227		STA FWORD	CLEAR BINARY PATTERN WORD
0512	02106	070230		STA CWORD	WORK COMPLEMENT FLAG
0513	02107	070231		STA C0UFF	COMPLEMENT BUFFER WORD
0514	02110	050233		LDA S818	
0515	02111	070232		STA S817	SET COUNTER TO -16
0516	02112	015341		JSB S901	GET A CHAR.
0517	02113	050476		CPA S832	CHAR.=BLANK?
0518	02114	002001		RSS	MORE BLANKS-TAPE LEADER
0519	02115	026122		JMP S704A	BLANKS FINISHED?
0520	02116	064176		LDB SEXT	EXIT FLAG TO B
0521	02117	006011		SLB,RSS	FLAG=1?
0522	02120	026112		JMP *-6	NO-GET ANOTHER CHAR.
0523	02121	026077		JMP S704-5	PRINT ERROR MESSAGE
0524	02122	064176	S704A	LDB SEXT	EXIT FLAG TO B
0525	02123	004010		SLB	FLAG=0?
0526	02124	026077		JMP S704-5	NO-PRINT ERROR MESSAGE
0527	02125	002001		RSS	BLANKS FINISHED
0528	02126	015341	S705	JSB S901	GET A CHAR.
0529	02127	050234		CPA S819	CHAR.=0
0530	02130	026140		JMP S706	YES
0531	02131	050235		CPA S820	CHAR.=1
0532	02132	026140		JMP S706	YES
0533	02133	060265		LDA CHA18	ERROR-CHAR. COUNT=43
0534	02134	064236		LDB IAD18	ST. ADDR. OF PRINT BUFFER
0535	02135	114102		JSB 102B,I	OUTPUT ERROR MESSAGE
0536	02136	102001		FLT 01	TURN SW. 15 OFF IF ON
0537	02137	026066		JMP S703-3	GET NEW PATTERN FROM TTY
0538	02140	000404	S706	CLP,INB	B MASK=000001
0539	02141	010001		AND 1	RETAIN A0
0540	02142	064227		LDB PWORD	PATTERN WORD TO B
0541	02143	001200		RAL	A LEFT 1

0542	02144	005200	RBL	B LEFT 1
0543	02145	030001	IOR 1	INCL. OR B TO A
0544	02146	070227	STA PWORD	RESTORE PATTERN WORD
0545	02147	034232	ISZ S817	INCR. BIT COUNTER
0546	02150	026126	JMP S705	16 BITS NOT FINISHED
0547	02151	060227	LDA PWORD	PATTERN WORD TO A
0548	02152	001300	RAR	ADJUST WORD RIGHT 1
0549	02153	070227	STA PWORD	RESTORE FINAL BIN. PATTERN WORD
0550	02154	015341	JSB S901	GET A CHAR.
0551	02155	050476	CPA S832	CHAR.=BLANK?
0552	02156	002001	RSS	YES
0553	02157	034230	ISZ CWORD	SET COMPLEMENT WORD FLAG
0554	02160	015341	JSB S901	GET A CHAR.
0555	02161	050476	CPA S832	CHAR.=BLANK?
0556	02162	002001	RSS	YES
0557	02163	034231	ISZ CBUFF	SET COMPLEMENT BUFFER FLAG
0558	02164	060267	LDA S823	
0559	02165	070266	STA S822	RESET SECTOR BUFFER ADDRESS
0560	02166	060230	LDA CWORD	COMPL. WORD FLAG TO A
0561	02167	001500	ERA	A0 TO E
0562	02170	060375	LDA S829	-64 TO A
0563	02171	070374	STA S828	RESET WORKING COUNT
0564	02172	060227	LDA PWORD	BIN. PATTERN WORD TO A
0565	02173	002040	5707 SEZ	E=0?
0566	02174	003000	CMA	NO-COMPL. EVERY WORD
0567	02175	170266	STA S822,1	STORE IN BUFFER
0568	02176	034266	ISZ S822	INCR. BUFFER ADDRESS
0569	02177	034374	ISZ S828	INCR. WORD COUNT
0570	02200	026173	JMP S707	BUFFER NOT FINISHED
0571	02201	000000	5708 NOP	BEGINNING OF WRITE PROCESSOR
0572	02202	060502	LDA AWTBF	ST. ADDR.=BUFFER
0573	02203	000400	CLK	
0574	02204	174000	STB 0,1	
0575	02205	002004	INA	
0576	02206	050506	CPA ARTBF	LAST ADDR.+1
0577	02207	026211	JMP ++2	FINISHED
0578	02210	026204	JMP S708+3	NOT FINISHED
0579	02211	075700	STB S999	CLEAR ERROR COUNT
0580	02212	075701	STB S999+1	CLEAR ERROR COUNT OVERFLOW
0581	02213	060502	LDA AWTBF	
0582	02214	070503	STA AWTB	RESET ARRAY ADDR.
0583	02215	061205	LDA S863	-65 TO A
0584	02216	071204	STA S862	-65 TO WORKING
0585	02217	102501	LIA 01	SW. REG. TO A
0586	02220	002020	SSA	BIT 15=0?
0587	02221	026225	JMP S709	NO-PR INPUT
0588	02222	060406	LDA CHA19	NO. OF CHAR.=14
0589	02223	064376	LDR IAD19	ST. ADDR. OF PRINT BUFFER
0590	02224	114102	JSB 102B,1	OUTPUT MESSAGE
0591	02225	060200	5709 LDA S805	CHAR. COUNT=72
0592	02226	070177	STA S804	SETUP INPUT CHAR. LENGTH
0593	02227	015300	JSB S900	CALL INPUT SUBROUTINE
0594	02230	040226	ADA S816	ADD -73 TO CHAR. COUNT
0595	02231	002020	SSA	POS.=ERROR
0596	02232	026240	JMP S710	NO ERROR
0597	02233	060445	LDA CHA21	CHAR. COUNT=37
0598	02234	064421	LDB IAD21	ST. ADDR. OF PRINT BUFFER

0599	02235	114102		JSR 1028,1	OUTPUT MESSAGE
0600	02236	102001		FLT 01	TURN SW. 15 OFF IF ON
0601	02237	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0602	02240	015341	S710	JSR S901	GET A CHAR.
0603	02241	050476		CPA S832	IS CHAR. A BLANK?
0604	02242	026256		JMP S711	YES-CHECK EXIT FLAG
0605	02243	050477		CPA S833	IS CHAR. A COMMA?
0606	02244	026256		JMP S711	YES-CHECK EXIT FLAG
0607	02245	050500		CPA S834	IS CHAR. A SLASH?
0608	02246	026225		JMP S709	PROCESS CONTINUATION
0609	02247	050512		CPA S836	IS CHAR. A T ?
0610	02250	026265		JMP S712	YES-PROCESS PARAMETER
0611	02251	060445		LDA CHA21	CHAR. COUNT=37
0612	02252	064514		LDB IAD23	ST. ADDR. OF PRINT BUFFER
0613	02253	114102		JSR 1028,1	OUTPUT MESSAGE
0614	02254	102001		FLT 01	TURN SW. 15 OFF IF ON
0615	02255	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0616	02256	064176	S711	LDB SEXT	EXIT FLAG TO B
0617	02257	006011		SLB, RSS	EXIT FLAG=1?
0618	02260	026240		JMP S710	NO
0619	02261	060502		LDA AWTBF	YES
0620	02262	050503		CPA WAWTB	ANY ENTRIES?
0621	02263	027127		JMP S743	NO-JUMP TO READ PROCESSOR
0622	02264	026376		JMP S720-3	YES-GET WRITE SECTOR PARAMERS.
0623	02265	060602	S712	LDA S842	-3 TO A
0624	02266	070603		STA S843	RESET CHAR. COUNTER
0625	02267	002400		CLA	
0626	02270	070540		STA S840	CLEAR CHAR. HOLD
0627	02271	015341		JSR S901	GET A CHAR.
0628	02272	050476		CPA S832	IS CHAR. A BLANK?
0629	02273	026307		JMP S713	CHECK EXIT FLAG
0630	02274	015363		JSR S902	CHECK LEGALITY-0-7
0631	02275	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0632	02276	064114		LDB MASK2	7 TO B
0633	02277	010001		AND 1	RETAIN A0-A2
0634	02300	064540		LDB S840	PARTIAL TO B
0635	02301	005723		ELF, RBR	ROTATE LEFT 3
0636	02302	030001		IOR 1	IOR B TO A
0637	02303	070540		STA S840	RESTORE RESULTS
0638	02304	034603		ISZ S843	TRACK ADDR. FINISHED?
0639	02305	026271		JMP S712+4	NO-GET ANOTHER CHARACTER
0640	02306	026317		JMP S715	CONTINUE PARAMETER
0641	02307	064176	S713	LDB SEXT	EXIT FLAG TO B
0642	02310	006011		SLB, RSS	EXIT FLAG=1?
0643	02311	026271		JMP S712+4	NO-GET A CHAR.
0644	02312	060560	S714	LDA LHA24	CHAR. COUNT=26
0645	02313	064542		LDB IAD24	ST. ADDR. OF PRINT BUFFER
0646	02314	114102		JSR 1028,1	OUTPUT ERROR MESSAGE
0647	02315	102001		FLT 01	TURN SW. 15 OFF IF ON
0648	02316	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0649	02317	015341	S715	JSR S901	GET A CHAR.
0650	02320	050476		CPA S832	IS CHAR. A BLANK?
0651	02321	026325		JMP S716	YES-CHECK EXIT FLAG
0652	02322	050501		CPA S835	IS CHAR. A - ?
0653	02323	026331		JMP S717	YES
0654	02324	026312		JMP S714	NO-PRINTOUT ERROR MESSAGE
0655	02325	064176	S716	LDB SEXT	EXIT FLAG TO B

0053	02326	004010		SLR	EXIT FLAG=0?
0054	02327	026312		JMP S714	NO-ERROR PRINTOUT
0055	02330	026317		JMP S715	GET A CHAR.
0056	02331	060602	S717	LDA S842	-3 TO A
0057	02332	070603		STA S843	RESET CHAR. COUNTER
0058	02333	002400		CLA	
0059	02334	070541		STA S841	CLEAR CHAR. HOLD
0060	02335	015341		JSH S901	GET A CHAR.
0061	02336	050476		CPA S832	IS CHAR. A BLANK?
0062	02337	026353		JMP S718	CHECK EXIT FLAG
0063	02340	015363		JSH S902	CHECK LEGALITY-0-7
0064	02341	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0065	02342	064114		LDR MASK2	7 TO B
0066	02343	010001		AND 1	RETAIN A0-A2
0067	02344	064541		LDB S841	PARTIAL TO B
0068	02345	005723		BLF, RBR	ROTATE LEFT 3
0069	02346	030001		IOR 1	IOR B TO A
0070	02347	070541		STA S841	RESTORE RESULTS
0071	02350	034603		ISZ S843	TRACK SEQ. CHAR. FINISHED?
0072	02351	026335		JMP S717+4	NO-GET ANOTHER CHARACTER
0073	02352	026357		JMP S719	CONTINUE PARAMETER
0074	02353	064176	S718	LDB SEXT	EXIT FLAG TO B
0075	02354	006011		SLR, RSS	EXIT FLAG=1?
0076	02355	026335		JMP S717+4	NO-GET ANOTHER CHAR.
0077	02356	026312		JMP S714	OUTPUT ERROR MESSAGE
0078	02357	060541	S719	LDA S841	SEQ. #
0079	02360	003004		CMA, INA	2'S COMPL.
0080	02361	070541		STA S841	BLOCK SEQ. FOR TRACKS
0081	02362	060540		LDA S840	ST. TRACK ADDR. OF BLOCK
0082	02363	170503		STA WAWTB, 1	STORE TRACK ADDRESS
0083	02364	034503		ISZ WAWTB	INCR. ARRAY ADDRESS
0084	02365	002004		INA	INCR. TRACK ADDRESS
0085	02366	035204		ISZ S862	64 ADDR. ENTERED?
0086	02367	026371		JMP ++2	NO
0087	02370	026401		JMP S720	YES
0088	02371	034541		ISZ S841	INCR. # OF TRACKS
0089	02372	026363		JMP S719+4	NOT FINISHED
0090	02373	064176		LDB SEXT	EXIT FLAG TO B
0091	02374	006011		SLR, RSS	EXIT FLAG=1?
0092	02375	026240		JMP S710	GET ANOTHER WRITE TRACK PAREM.
0093	02376	060503		LDA WAWTB	
0094	02377	070604		STA LAWTB	
0095	02400	026406		JMP S721	GET WRITE SECTOR PARAMETERS
0096	02401	060601	S720	LDA CHA25	CHAR. COUNT=29
0097	02402	064501		LDB IAD25	ST. ADDR. OF PRINT BUFFER
0098	02403	114102		JSB 102B, 1	ERROR PRINTOUT
0099	02404	102001		FLT 01	TURN SW. 15 OFF IF ON
0100	02405	026202		JMP S708+1	GET NEW TRACK PAREM. FROM TTY
0101	02406	060504	S721	LDA AWSBF	
0102	02407	070505		STA WAWSB	RESET ARRAY ADDRESS
0103	02410	061207		LDA S865	-86 TO A
0104	02411	071206		STA S864	-86 TO WORKING
0105	02412	102501		LIA 01	SW. REG. TO A
0106	02413	002020		SSA	BIT 15=0?
0107	02414	026420		JMP S722	NO-PR INPUT
0108	02415	060420		LDA CHA20	NO. OF CHAR.=15
0109	02416	064407		LDB IAD20	ST. ADDR. OF PRINT BUFFER

0110	02417	114102		JSB 102B,1	OUTPUT MESSAGE
0111	02420	060200	S722	LDA S805	CHAR. COUNT=72
0112	02421	070177		STA S804	SETUP INPUT CHAR. LENGTH
0113	02422	015300		JSB S900	CALL INPUT SUBROUTINE
0114	02423	040226		ADA S816	ADD -73 TO CHAR. COUNT
0115	02424	002020		SSA	POS.=ERROR
0116	02425	026433		JMP S723	NO ERROR
0117	02426	060445		LDA CHA21	CHAR. COUNT=37
0118	02427	064421		LDR IAD21	ST. ADDR. OF PRINT BUFFER
0119	02430	114102		JSB 102B,1	OUTPUT ERROR MESSAGE
0120	02431	102001		FLT 01	TURN SW.15 OFF IF ON
0121	02432	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0122	02433	015341	S723	JSB S901	GET A CHAR.
0123	02434	050476		CPA S832	IS CHAR. A BLANK?
0124	02435	026451		JMP S724	YES-CHECK EXIT FLAG
0125	02436	050477		CPA S833	IS CHAR. A COMMA?
0126	02437	026451		JMP S724	YES-CHECK EXIT FLAG
0127	02440	050500		CPA S834	IS CHAR. A SLASH?
0128	02441	026420		JMP S722	PROCESS CONTINUATION
0129	02442	050513		CPA S837	IS CHAR. A S?
0130	02443	026455		JMP S725	YES-PROCESS PARAMETER
0131	02444	060445		LDA CHA21	CHAR. COUNT=37
0132	02445	064514		LDR IAD23	ST. ADDR. OF PRINT BUFFER
0133	02446	114102		JSB 102B,1	OUTPUT ERROR MESSAGE
0134	02447	102001		FLT 01	TURN SW. 15 OFF IF ON
0135	02450	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0136	02451	064176	S724	LDR SEXT	EXIT FLAG TO B
0137	02452	006011		SLB,RSS	EXIT FLAG=1?
0138	02453	026433		JMP S723	NO
0139	02454	026503		JMP S733-3	YES-JUMP TO WRITE OPERATION
0140	02455	060602	S725	LDA S842	-3 TO A
0141	02456	070603		STA S843	RESET CHAR. COUNTER
0142	02457	002400		CLA	
0143	02460	070540		STA S840	CLEAR CHAR. HOLD
0144	02461	015341		JSB S901	GET A CHAR.
0145	02462	050476		CPA S832	IS CHAR. A BLANK?
0146	02463	026477		JMP S726	CHECK EXIT FLAG
0147	02464	015363		JSB S902	CHECK LEGALITY-0-7
0148	02465	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0149	02466	064114		LDR MASK2	7 TO B
0150	02467	010001		AND 1	RETAIN A0-A2
0151	02470	064540		LDR S840	PARTIAL TO B
0152	02471	005723		RLF,RBR	ROTATE LEFT 3
0153	02472	030001		IOR 1	IOR B TO A
0154	02473	070540		STA S840	RESTORE RESULTS
0155	02474	034603		ISZ S843	SECTOR ADDR. FINISHED?
0156	02475	026461		JMP S725+4	NO-GET ANOTHER CHARACTER
0157	02476	026507		JMP S728	CONTINUE PARAMETER
0158	02477	064176	S726	LDR SEXT	EXIT FLAG TO 3
0159	02500	006011		SLB,RSS	EXIT FLAG=1?
0160	02501	026461		JMP S725+4	NO-GET A CHAR.
0161	02502	060560	S727	LDA CHA24	CHAR. COUNT=26
0162	02503	064542		LDR IAD24	ST. ADDR. OF PRINT BUFFER
0163	02504	114102		JSB 102B,1	OUTPUT ERROR MESSAGE
0164	02505	102001		FLT 01	TURN SW.15 OFF IF ON
0165	02506	026406		JMP S721	GET NEW SECT. PAREM. FROM TTY
0166	02507	015341	S728	JSB S901	GET A CHAR.

0167	02510	050476		CPA S832	IS CHAR. A BLANK?
0168	02511	026515		JMP S729	YES-CHECK EXIT FLAG
0169	02512	050501		CPA S835	IS CHAR. A - ?
0170	02513	026521		JMP S730	YES
0171	02514	026502		JMP S727	NO-PRINTOUT ERROR MESSAGE
0172	02515	064176	S729	LDB SEXT	EXIT FLAG TO B
0173	02516	004010		SLB	EXIT FLAG=0?
0174	02517	026502		JMP S727	NO-ERROR PRINTOUT
0175	02520	026507		JMP S728	GET A CHAR.
0176	02521	060602	S730	LDA S842	-3 TO A
0177	02522	070603		STA S843	RESET CHAR. COUNTER
0178	02523	002400		CLA	
0179	02524	070541		STA S841	CLEAR CHAR. HOLD
0180	02525	015341		JSB S901	GET A CHAR.
0181	02526	050476		CPA S832	IS CHAR. A BLANK?
0182	02527	026543		JMP S731	CHECK EXIT FLAG
0183	02530	015363		JSB S902	CHECK LEGALITY-0-7
0184	02531	026406		JMP S721	GET NEW SECT. PARAM. FROM TTY
0185	02532	064114		LDB MASK2	7 TO B
0186	02533	010001		AND 1	RETAIN A0-A2
0187	02534	064541		LDB S841	PARTIAL TO B
0188	02535	005723		ELF, FBR	ROTATE LEFT 3
0189	02536	030001		IOR 1	IOR B TO A
0190	02537	070541		STA S841	RESTORE RESULTS
0191	02540	034603		ISZ S843	SECTOR SEQ. CHAR. FINISHED?
0192	02541	026525		JMP S730+4	NO-GET ANOTHER CHARACTER
0193	02542	026547		JMP S732	CONTINUE PARAMETER
0194	02543	064176	S731	LDB SEXT	EXIT FLAG TO B
0195	02544	000011		SLB, RSS	EXIT FLAG=1?
0196	02545	026525		JMP S730+4	NO-GET ANOTHER CHAR.
0197	02546	026502		JMP S727	OUTPUT ERROR MESSAGE
0198	02547	060540	S732	LDA S840	STARTING SECTOR ADDRESS TO A
0199	02550	170505		STA LAWSB, 1	PUT IN WRITE SECTOR ARRAY
0200	02551	034505		ISZ LAWSB	INCR. ARRAY ADDRESS
0201	02552	060541		LDA S841	NO. OF CONSECUTIVE SECTORS
0202	02553	170505		STA LAWSB, 1	PUT IN WRITE SECTOR ARRAY
0203	02554	034505		ISZ LAWSB	INCR. ARRAY ADDRESS
0204	02555	035206		ISZ S864	85 ENTRIES IN SECTOR WRITE BUFF.
0205	02556	026560		JMP ++2	NO
0206	02557	026566		JMP S733	YES
0207	02560	064176		LDB SEXT	EXIT FLAG TO B
0208	02561	006011		SLB, RSS	EXIT FLAG=1?
0209	02562	026433		JMP S723	GET ANOTHER SECTOR WRITE PARAM.
0210	02563	060505		LDA LAWSB	
0211	02564	070605		STA LAWSB	LAST BUFFER ADDR.+1
0212	02565	026574		JMP WRITE	PERFORM WRITE OPERATION
0213	02566	060626	S733	LDA CHA26	NO. OF CHAR.=30
0214	02567	064606		LDB IAD26	ST. ADDR. OF PRINT BUFFER
0215	02570	114102		JSB I02B, 1	OUTPUT ERROR MESSAGE
0216	02571	102001		FLT 01	TURN SW.15 OFF IF UN
0217	02572	026406		JMP S721	GET NEW SECT. PARAM. FROM TTY
0218	02573	126574	S600	JMP WRITE, 1	RETURN JUMP
0219	02574	000000	WRITE	NOP	IND. RETURN
0220	02575	064123		LDB DMADR	DMA OCTAL ADDR. TO R
0221	02576	060107		LDA MASK1	177700 TO A
0222	02577	013002		AND WR2	RETAIN A6-A15
0223	02600	030001		IOR 1	IOR DMA ADDRESS

0224	02601	073002	STA WR2	RESTORE WR2
0225	02602	060107	LDA MASK1	177700 TO A
0226	02603	013011	AND WR7	RETAIN A6-A15
0227	02604	030001	IOR 1	IOR DMA ADDRESS
0228	02605	073011	STA WR7	RESTORE WR7
0229	02606	054627	CPB MASK6	DMA CHAN.=6
0230	02607	026612	JMP *+3	YES
0231	02610	064631	LDR MAS7A	NO-ADDR.=3
0232	02611	026613	JMP *+2	
0233	02612	064630	LDB MAS6A	ADDR.=2
0234	02613	060107	LDA MASK1	177700 TO A
0235	02614	013003	AND WR3	RETAIN A6-A15
0236	02615	030001	IOR 1	IOR MAR ADDRESS
0237	02616	073003	STA WR3	RESTORE WR3
0238	02617	060107	LDA MASK1	177700 TO A
0239	02620	013005	AND WR4	RETAIN A6-A15
0240	02621	030001	IOR 1	IOR MAR ADDRESS
0241	02622	073005	STA WR4	RESTORE WR4
0242	02623	073010	STA WR6	RESTORE WR6
0243	02624	060107	LDA MASK1	177700 TO A
0244	02625	013006	AND WR5	RETAIN A6-A15
0245	02626	030001	IOR J	IOR WCK ADDRESS
0246	02627	073006	STA WR5	RESTORE WR5
0247	02630	064122	LDB DADR1	H.P. DISK ADDR. TO B
0248	02631	060107	LDA MASK1	177700 TO A
0249	02632	013012	AND WR8	RETAIN A6-A15
0250	02633	030001	IOR 1	IOR DISK ADDRESS
0251	02634	073012	STA WR8	RESTORE WR8
0252	02635	060004	INB	L.P. DISK ADDR. TO B
0253	02636	060107	LDA MASK1	177700 TO A
0254	02637	013000	AND WR1	RETAIN A6-A15
0255	02640	030001	IOR 1	IOR DISK ADDRESS
0256	02641	073000	STA WR1	RESTORE WR1
0257	02642	060107	LDA MASK1	177700 TO A
0258	02643	013016	AND WR9	RETAIN A6-A15
0259	02644	030001	IOR 1	IOR DISK ADDRESS
0260	02645	073016	STA WR9	RESTORE WR9
0261	02646	073041	STA WR11	RESTORE WR11
0262	02647	072765	STA WR1A	RESTORE WR1A
0263	02650	002400	CLA	
0264	02651	070632	STA WCOMP	- CLEAR FLAG
0265	02652	070641	STA SCOMP	CLEAR FLAG
0266	02653	070665	STA BUFLG	CLEAR FLAG
0267	02654	060502	LDA AWTBF	
0268	02655	070503	STA WAWTB	RESET WRITE TRACK BUFFER ADDR.
0269	02656	060504	LDA AWSBF	
0270	02657	070505	STA WAWSB	RESET WRITE SECTOR BUFFER ADDR.
0271	02660	164503	LDB WAWTB, I	PICKUP TRACK ADDR.
0272	02661	034503	ISZ WAWTB	INCR. ARRAY ADDRESS
0273	02662	060503	LDA WAWTB	CURRENT ARRAY ADDR. TO A
0274	02663	050504	CPA LAWTB	LAST BUFFER ADDR.+1?
0275	02664	034632	ISZ WCOMP	YES-SET WRITE COMPLETE FLAG
0276	02665	060633	LDA S844	TRACK MASK-140377
0277	02666	010634	AND WCOMM	RETAIN A15-A14, A0-A7
0278	02667	005727	ELF, BLF	10-A5 TO A8-A13
0279	02670	005300	RBR	
0280	02671	030001	IOR 1	TRACK ADDR. TO A

S724

0281	02672	070634		STA WCOMW	RESTORE WCOMW
0282	02673	164505	S734A	LDB WAWSB, I	PICKUP STARTING SECTOR ADDR.
0283	02674	034505		ISZ WAWSB	INCR. ARRAY ADDRESS
0284	02675	060540		LDA S845	SECTOR MASK-177600
0285	02676	010634		AND WCOMW	RETAIN A0-A6
0286	02677	030001		IOR I	SECTOR ADDR. TO A
0287	02700	070634		STA WCOMW	RESTORE WCOMW-TR./SECT. COMPLETE
0288	02701	164505		LDB WAWSB, I	PICKUP # OF CONSEC. SECTORS
0289	02702	034505		ISZ WAWSB	INCR. ARRAY ADDRESS
0290	02703	060505		LDA WAWSB	CURRENT ARRAY ADDR. TO A
0291	02704	050505		CPA LAWSB	LAST BUFFER ADDR.+1
0292	02705	034641		ISZ SCOMP	YES-SET SECTOR STRING COMP. FLAG
0293	02706	006003		SZB, RSS	SECTOR VALUE >0?
0294	02707	020502		JMP S727	NO-ERROR PRINTOUT
0295	02710	074000		STH E	B TO A
0296	02711	001727		ALF, ALF	
0297	02712	001323		RAR, RAR	MULTIPLY BY 64
0298	02713	040105		ADA 105B	ADD 1ST AVAIL. LOCK. VALUE
0299	02714	003004		CMA, INA	2'S COMPL.
0300	02715	040106		ADA 106B	SUBTR. LOWER FROM UPPER
0301	02716	002020		SSA	
0302	02717	020755	S735	JMP S738	-ERROR-BUFFER LENGTH EXCEEDS MEM.
0303	02720	074000		STH 0	GOOD MEM. FIT
0304	02721	001727		ALF, ALF	
0305	02722	001323		RAR, RAR	MULTIPLY BY 64
0306	02723	003004		CMA, INA	2'S COMPL. OF TOTAL WORD COUNT
0307	02724	070537		STA WDCNF	WORD COUNT READY
0308	02725	002400		CLA	
0309	02726	030105		IOP 105B	IOR START ADDR. OF AVAIL. MEM.
0310	02727	070636		STA WDIR	OUTPUT AND ST. ADDR. READY
0311	02730	007004		CMB, INR	2'S COMPL. # OF SECTORS
0312	02731	074642		STB S847	RETAIN # OF SECTORS
0313	02732	060105		LDA 105B	
0314	02733	070643		STA S848	ST. OF AVAILABLE MEM.
0315	02734	060267	S736	LDA S823	
0316	02735	070266		STA S822	RESET SECTOR PATTERN ARRAY ADDR.
0317	02736	060375		LDA S829	
0318	02737	070374		STA S828	RESET -64
0319	02740	160266	S737	LDA S822, I	PICKUP PATTERN WORD
0320	02741	170643		STA S848, I	STORE IN OUTPUT BUFFER
0321	02742	034266		ISZ S822	
0322	02743	034643		ISZ S848	
0323	02744	034374		ISZ S828	SECTOR COMPLETE?
0324	02745	026740		JMP S737	NO
0325	02746	034642		ISZ S847	ENTIRE BUFFER COMPLETE?
0326	02747	026734		JMP S736	NO
0327	02750	060375		LDA S829	YES
0328	02751	010635		AND WDMAW	RETAIN A6-A15
0329	02752	030122		IOR IADR1	IOR H.P. DISK ADDR.
0330	02753	070635		STA WDMAW	RESTORE WDMAW
0331	02754	026762		JMP S739	OUTPUT TO DISK
0332	02755	060662	S738	LDA CHA27	CHAR. COUNT=32
0333	02756	064644		LDB IAD27	ST. ADDR. OF PRINT BUFFER
0334	02757	114102		JSB 102B, I	OUTPUT ERROR MESSAGE
0335	02760	102001		FLT 01	TURN SW. 15 OFF IF ON
0336	02761	026202		JMP S708+1	GET NEW WRITE PARAMETERS
0337	02762	060663	S739	LDA S849	RETURN JUMP

0338	02763	070006		STA 6	INT. LOCN.
0339	02764	070007		STA 7	INT. LOCN.
0340	02765	102500	WR1A	LIA 0	
0341	02766	001727		ALF,ALF	
0342	02767	002020		SSA	
0343	02770	026776		JMP S739A	
0344	02771	060721		LDA CHA29	
0345	02772	064711		LDB IAD29	
0346	02773	114102		JSB 1028,I	
0347	02774	102001		HLT 01	
0348	02775	026765		JMP WR1A	
0349	02776	103100	S739A	CLF 0	TURN-OFF INTERRUPT SYSTEM
0350	02777	060634		LDA WCOMW	TRACK/SECTOR ADDRESS
0351	03000	102600	WR1	CTA 0	L.P. DISK ADDRESS
0352	03001	060635		LDA WDPAW	H.P. DISK ADDR. AND CLC
0353	03002	102600	WR2	CTA 0	DMA CHAN. #6/7
0354	03003	100700	WR3	CLC 0	MAR ADDR. #2/3
0355	03004	060636		LDA WDIR	STARTING ADDRESS-BIT 15=0
0356	03005	102600	WR4	CTA 0	MAR ADDR. #2/3
0357	03006	102700	WR5	STC 0	WCR ADDR. #2/3
0358	03007	060637		LDA WDCNT	2'S COMPL.-WORD COUNT
0359	03010	102600	WR6	CTA 0	WCR ADDR. #2/3
0360	03011	103700	WR7	STC 0,C	DMA CHAN. #6/7
0361	03012	102700	WR8	STC 0	H.P. DISK ADDRESS
0362	03013	102100		STF 0	TURN-ON INTERRUPT
0363	03014	002400		CLA	
0364	03015	070665		STA BUFLG	CLEAR FLAGS
0365	03016	102500	WR9	LIA 0	L.P. DISK ADDRESS
0366	03017	002011		SLA,RSS	BUSY BIT=1?
0367	03020	034665		ISZ BUFLG	ERROR-SET FLAG
0368	03021	061210		LDA S809	77777 TO A
0369	03022	002006		INA,SZA	
0370	03023	027022		JMP *-1	TIME-OUT LOOP
0371	03024	102501		LIA 01	SW. REG. TO A
0372	03025	001323		KAR,RAR	
0373	03026	001300		RAR	BIT 3 TO BIT 0
0374	03027	000010		SLA	NO SUPPRESS?
0375	03030	027033		JMP WAIT1+1	BYPASS PRINTOUT
0376	03031	103100		CLF 0	TURN-OFF INTERRUPT
0377	03032	115211	WAIT1	JSB S870,I	MISSING INTERRUPT
0378	03033	103100		CLF 0	TURN-OFF INTERRUPT
0379	03034	102501		LIA 01	SW. REG. TO A
0380	03035	001323		KAR,RAR	
0381	03036	001300		RAR	BIT 3 TO BIT 0
0382	03037	000010		SLA	NO SUPPRESS?
0383	03040	027070		JMP S741	SUPPRESS PRINT
0384	03041	102500	WR11	LIA 0	L.P. DISK ADDRESS
0385	03042	000010		SLA	BUSY BIT=0?
0386	03043	034665		ISZ BUFLG	NO-ERROR
0387	03044	001323		RAR,RAR	
0388	03045	001300		RAR	STATUS BIT 3 TO BIT 0
0389	03046	002011		SLA,RSS	BIT=1?
0390	03047	027062		JMP S740	NO
0391	03050	061245		LDA S872	A8-A13 MASK
0392	03051	010634		AND WCOMW	RETAIN TRACK ADDR.
0393	03052	001727		ALF,ALF	MOVE TO A0-A5
0394	03053	001200		RAL	

0395	03054	070001		STA 1	A TO B
0396	03055	114113		JSB CNV, I	CONVERT OCTAL TO ASCII
0397	03056	025261	S885	JMP S883	
0398	03057	061230		LDA CHA43	CHAR. COUNT=20
0399	03060	065214		LDB IAD43	ST. ADDR. OF PRINT BUFFER
0400	03061	114102		JSB 102B, I	OUTPUT ERROR MESSAGE
0401	03062	060665	S740	LDA BUFLG	
0402	03063	002003		SZA, RSS	FLAG=1?
0403	03064	027070		JMP S741	
0404	03065	060710		LDA CHA28	CHAR. COUNT=49
0405	03066	064666		LDB IAD28	ST. ADDR. OF PRINT BUFFER
0406	03067	114102		JSB 102B, I	OUTPUT ERROR MESSAGE
0407	03070	002400	S741	CLA	
0408	03071	070665		STA BUFLG	
0409	03072	060641		LDA SCOMP	SECTOR STRING COMPLETE FLAG
0410	03073	002003		SZA, RSS	FLAG>0?
0411	03074	026673		JMP S734A	NO-CONTINUE SECTOR PROCESSING
0412	03075	002400		CLA	YES
0413	03076	070641		STA SCOMP	CLEAR FLAG
0414	03077	060632		LDA WCOMP	TRACK WRITE COMPLETE FLAG
0415	03100	002003		SZA, RSS	FLAG>0?
0416	03101	026656		JMP S734	NO-GET NEW TRACK VALUE
0417	03102	002400		CLA	YES
0418	03103	070632		STA WCOMP	CLEAR FLAG
0419	03104	000000	S801	NOP	JUMP RETURN
0420	03105	102501		LIA 01	SW. REG. TO A
0421	03106	001300		KAR	BIT 1 TO BIT 0
0422	03107	002011		SLA, RSS	BIT 1=1?
0423	03110	027127		JMP S743	
0424	03111	060231		LDA CBUFF	COMPL. PATTERN BUFFER
0425	03112	002011		SLA, RSS	
0426	03113	026654		JMP S734-2	NO-WRITE SAME PATTERN BUFFER
0427	03114	060375		LDA S829	YES
0428	03115	070374		STA S828	-64 RESET
0429	03116	060267		LDA S823	SECTOR BUFFER ADDR.
0430	03117	070266		STA S822	RESET
0431	03120	160266	S742	LDA S822, I	PICKUP WORD
0432	03121	003000		CMA	COMPL. WORD
0433	03122	170266		STA S822, I	RESTORE WORD
0434	03123	034266		ISZ S822	INCR. ADDR.
0435	03124	034374		ISZ S828	64 WORDS FINISHED?
0436	03125	027120		JMP S742	LOOP
0437	03126	026654		JMP S734-2	WRITE COMPL. PATTERN
0438	03127	000000	S743	NOP	BEGINNING OF READ PROCESSOR
0439	03130	060506		LDA ARTB	
0440	03131	070507		STA WARTB	RESET ARRAY ADDR.
0441	03132	061205		LDA S863	-65 TO A
0442	03133	071204		STA S862	-65 TO WORKING
0443	03134	102501		LIA 01	SW. REG. TO A
0444	03135	002020		SSA	BIT 15=0?
0445	03136	027142		JMP S744	
0446	03137	060732		LDA CHA30	NO. OF CHAR.=13
0447	03140	064722		LDB IAD30	ST. ADDR. OF PRINT BUFFER
0448	03141	114102		JSB 102B, I	OUTPUT MESSAGE
0449	03142	060200	S744	LDA S805	CHAR. COUNT=72
0450	03143	070177		STA S804	SETUP INPUT CHAR. LENGTH
0451	03144	015300		JSB S900	CALL INPUT SUBROUTINE

0452	03145	040226	ADA	S816	ADD -73 TO CHAR. COUNT	
0453	03146	002020	SSA		POS.=ERROR	
0454	03147	027155	JMP	S745	NO ERROR	
0455	03150	060445	LDA	CHA21	CHAR. COUNT=37	
0456	03151	064421	LDB	IAD21	ST. ADDR. OF PRINT BUFFER	
0457	03152	114102	JSB	102B,1	OUTPUT MESSAGE	
0458	03153	102001	PLT	01	TURN SW. 15 OFF IF ON	
0459	03154	027130	JMP	S743+1	GET NEW TRACK PARAM. FROM TTY	
0460	03155	015341	S745	JSB	S901	GET A CHAR.
0461	03156	050476	CPA	S832	IS CHAR. A BLANK?	
0462	03157	027173	JMP	S746	YES-CHECK EXIT FLAG	
0463	03160	050477	CPA	S833	IS CHAR. A COMMA?	
0464	03161	027173	JMP	S746	YES-CHECK EXIT FLAG	
0465	03162	050500	CPA	S834	IS CHAR. A SLASH?	
0466	03163	027142	JMP	S744	PROCESS CONTINUATION	
0467	03164	050512	CPA	S836	IS CHAR. A T ?	
0468	03165	027202	JMP	S747	YES-PROCESS PARAMETER	
0469	03166	060445	LDA	CHA21	CHAR. COUNT=37	
0470	03167	064514	LDB	IAD23	ST. ADDR. OF PRINT BUFFER	
0471	03170	114102	JSB	102B,1	OUTPUT MESSAGE	
0472	03171	102001	PLT	01	TURN SW. 15 OFF IF ON	
0473	03172	027130	JMP	S743+1	GET NEW TRACK PARAM. FROM TTY	
0474	03173	064176	S746	LDB	SEXT	EXIT FLAG TO B
0475	03174	000011	SLB,	RSS	EXIT FLAG=1?	
0476	03175	027155	JMP	S745	NO	
0477	03176	060506	LDA	ARTBF	YES	
0478	03177	050507	CPA	WARTB	ANY ENTRIES?	
0479	03200	020042	JMP	T4	NO-RE-ENTER FROM TOP	
0480	03201	027313	JMP	S755-3	YES-GET READ SECTOR PARAMETERS	
0001	03202	060602	S747	LDA	S842	-3 TO A
0002	03203	070603	STA	S843	RESET CHAR. COUNTER	
0003	03204	002400	CLA			
0004	03205	070540	STA	S840	CLEAR CHAR. HOLD	
0005	03206	015341	JSB	S901	GET A CHAR.	
0006	03207	050476	CPA	S832	IS CHAR. A BLANK?	
0007	03210	027224	JMP	S748	CHECK EXIT FLAG	
0008	03211	015363	JSB	S902	CHECK LEGALITY-0-7	
0009	03212	027130	JMP	S743+1	GET NEW TRACK PARAM. FROM TTY	
0010	03213	064114	LDB	MASK2	7 TO B	
0011	03214	010001	AND	1	RETAIN A0-A2	
0012	03215	064540	LDF	S840	PARTIAL TO B	
0013	03216	005723	PLF,	RBR	ROTATE LEFT 3	
0014	03217	030001	IOR	1	IOR B TO A	
0015	03220	070540	STA	S840	RESTORE RESULTS	
0016	03221	034603	ISZ	S843	TRACK ADDR. FINISHED	
0017	03222	027206	JMP	S747+4	NO-GET ANOTHER CHARACTER	
0018	03223	027234	JMP	S750	CONTINUE PARAMETER	
0019	03224	064176	S748	LDB	SEXT	EXIT FLAG TO B
0020	03225	006011	SLB,	RSS	EXIT FLAG=1?	
0021	03226	027206	JMP	S747+4	NO-GET A CHAR.	
0022	03227	061015	S749	LDA	CHA31	CHAR. COUNT =25
0023	03230	064777	LDB	IAD31	ST. ADDR. OF PRINT BUFFER	
0024	03231	114102	JSB	102B,1	OUTPUT ERROR MESSAGE	
0025	03232	102001	PLT	01	TURN SW. 15 OFF IF ON	
0026	03233	027130	JMP	S743+1	GET NEW TRACK PARAMETER FROM TTY	
0027	03234	015341	S750	JSB	S901	GET A CHAR.
0028	03235	050476	CPA	S832	IS CHAR. A BLANK?	

0029	03236	027242		JMP S751	YES-CHECK EXIT FLAG
0030	03237	050501		CPA S835	IS CHAR. A - ?
0031	03240	027246		JMP S752	YES
0032	03241	027227		JMP S749	NO-PRINTOUT ERROR MESSAGE
0033	03242	064176	S751	LDR SEXT	EXIT FLAG TO B
0034	03243	004010		SLB	EXIT FLAG=0?
0035	03244	027227		JMP S749	NO-ERROR PRINTOUT
0036	03245	027234		JMP S750	GET A CHAR.
0037	03246	060602	S752	LDA S842	-3 TO A
0038	03247	070603		STA S843	RESET CHAR. COUNTER
0039	03250	002400		CLA	
0040	03251	070541		STA S841	CLEAR CHAR. HOLD
0041	03252	015341		JSR S901	GET A CHAR.
0042	03253	050476		CPA S832	IS CHAR. A BLANK?
0043	03254	027270		JMP S753	CHECK EXIT FLAG
0044	03255	015363		JSR S902	CHECK LEGALITY-4-7
0045	03256	027130		JMP S743+1	GET NEW TRACK PARAM. FROM TTY
0046	03257	064114		LDR MASK2	7 TO B
0047	03260	010001		AND 1	RETAIN A0-A2
0048	03261	004541		LDR S841	PARTIAL TO B
0049	03262	005723		RLF,RRR	ROTATE LEFT 3
0050	03263	030001		IOR 1	IGR H TO A
0051	03264	070541		STA S841	RESTORE RESULTS
0052	03265	034603		ISZ S843	TRACK SEQ. CHAR. FINISHED?
0053	03266	027252		JMP S752+4	NO-GET ANOTHER CHARACTER
0054	03267	027274		JMP S754	CONTINUE PARAMETER
0055	03270	064176	S753	LDR SEXT	EXIT FLAG TO B
0056	03271	006011		SLR,RSS	EXIT FLAG=1?
0057	03272	027252		JMP S752+4	NO-GET ANOTHER CHAR.
0058	03273	027227		JMP S749	OUTPUT ERROR MESSAGE
0059	03274	060541	S754	LDA S841	SEQ. #
0060	03275	003004		CMA,INA	2,S COMPL.
0061	03276	070541		STA S841	BLOCK SEQ. FOR TRACKS
0062	03277	060540		LDA S840	ST. TRACK ADDR. OF BLOCK
0063	03300	170507		STA WARTB,I	STORE TRACK ADDRESS
0064	03301	034507		ISZ WARTB	INCR. ARRAY ADDRESS
0065	03302	002004		INA	INCR. TRACK ADDRESS
0066	03303	035204		ISZ S862	64 ADDR. ENTERED
0067	03304	027306		JMP ++2	NO
0068	03305	027316		JMP S755	YES
0069	03306	034541		ISZ S841	INCR. # OF TRACKS
0070	03307	027300		JMP S754+4	NOT FINISHED
0071	03310	064170		LDR SEXT	EXIT FLAG TO B
0072	03311	006011		SLB,RSS	EXIT FLAG=1?
0073	03312	027155		JMP S745	GET ANOTHER READ TRACK PARAMETER
0074	03313	060507		LDA WARTB	LAST TRACK READ BUFFER ADDR.+1
0075	03314	071016		STA LARTB	LAST TRACK READ BUFFER ADDR.+1
0076	03315	027323		JMP S756	GET READ SECTOR PARAMETERS
0077	03316	061037	S755	LDA CHA32	CHAR. COUNT=28
0078	03317	065020		LDR IAD32	ST. ADDR. OF PRINT BUFFER
0079	03320	114102		JSB 102B,I	ERROR PRINTOUT
0080	03321	102001		FLT 01	TURN SW.15 OFF IF ON
0081	03322	027130		JMP S743+1	GET NEW TRACK PARAM. FROM TTY
0082	03323	060510	S756	LDA ARSBF	
0083	03324	070511		STA WARSB	RESET ARRAY ADDRESS
0084	03325	061207		LDA S865	-85 TO A
0085	03326	071206		STA S864	RESET WORKING COUNTER

0086	03327	102501	LIA 01	SW. REG. TO A
0087	03330	002020	SSA	BIT 15=0?
0088	03331	027335	JMP S757	NO-PR INPUT
0089	03332	061050	LDA CHA33	NO. OF CHAR.=14
0090	03333	065040	LDB IAD33	ST. ADDR. OF PRINT BUFFER
0091	03334	114102	JSB 102B,1	OUTPUT MESSAGE
0092	03335	000200	LDA S805	CHAR. COUNT=72
0093	03336	070177	STA S804	SETUP INPUT CHAR. LENGTH
0094	03337	015300	JSB S900	CALL INPUT SUBROUTINE
0095	03340	040226	ADA S816	ADD -73 TO CHAR. COUNT
0096	03341	002020	SSA	POS.=ERROR
0097	03342	027350	JMP S758	NO ERROR
0098	03343	060445	LDA CHA21	CHAR. COUNT=37
0099	03344	064421	LDB IAD21	ST. ADDR. OF PRINT BUFFER
0100	03345	114102	JSB 102B,1	OUTPUT ERROR MESSAGE
0101	03346	102001	FLT 01	TURN SW.15 OFF IF ON
0102	03347	027323	JMP S756	GET NEW SECT. PARAM. FROM TTY
0103	03350	015341	JSB S901	GET A CHAR.
0104	03351	050476	CPA S832	IS CHAR. A BLANK?
0105	03352	027366	JMP S759	YES-CHECK EXIT FLAG
0106	03353	050477	CPA S833	IS CHAR. A COMMA?
0107	03354	027366	JMP S759	YES-CHECK EXIT FLAG
0108	03355	050500	CPA S834	IS CHAR. A SLASH?
0109	03356	027335	JMP S757	PROCESS CONTINUATION
0110	03357	050513	CPA S837	IS CHAR. A S?
0111	03360	027372	JMP S760	YES-PROCESS PARAMETER
0112	03361	060445	LDA CHA21	CHAR. COUNT=37
0113	03362	064514	LDB IAD23	ST. ADDR. OF PRINT BUFFER
0114	03363	114102	JSB 102B,1	OUTPUT ERROR MESSAGE
0115	03364	102001	FLT 01	TURN SW. 15 OFF IF ON
0116	03365	027323	JMP S756	GET NEW SECT. PARAM. FROM TTY
0117	03366	064176	LDB SEXT	EXIT FLAG TO B
0118	03367	006011	SLB, RSS	EXIT FLAG=1?
0119	03370	027350	JMP S758	NO ;
0120	03371	027500	JMP S760-3	YES-JUMP TO READ OPERATION
0121	03372	060602	LDA S842	-3 TO A
0122	03373	070603	STA S843	RESET CHAR. COUNTER
0123	03374	002400	CLA	
0124	03375	070540	STA S840	CLEAR CHAR. HOLD
0125	03376	015341	JSB S901	GET A CHAR.
0126	03377	050476	CPA S832	IS CHAR. A BLANK?
0127	03400	027414	JMP S761	CHECK EXIT FLAG
0128	03401	015363	JSB S902	CHECK LEGALITY-0-7
0129	03402	027323	JMP S756	GET NEW SECT. PARAM. FROM TTY
0130	03403	064114	LDB MASK2	7 TO B
0131	03404	010001	AND 1	RETAIN A0-A2
0132	03405	064540	LDB S840	PARTIAL TO B
0133	03406	005723	RLF, RBR	ROTATE LEFT 3
0134	03407	030001	IOR 1	IOR B TO A
0135	03410	070540	STA S840	RESTORE RESULTS
0136	03411	034603	ISZ S843	SECTOR ADDR. FINISHED?
0137	03412	027376	JMP S760+4	NO-GET ANOTHER CHARACTER
0138	03413	027424	JMP S763	CONTINUE PARAMETER
0139	03414	064176	LDB SEXT	EXIT FLAG TO B
0140	03415	006011	SLB, RSS	EXIT FLAG=1
0141	03416	027376	JMP S760+4	NO-GET A CHAR.
0142	03417	061015	LDA CHA31	CHAR. COUNT-25

0143	03420	064777		LDB IAD31	ST. ADDR. OF PRINT BUFFER
0144	03421	114102		JSB 102B,1	OUTPUT ERROR MESSAGE
0145	03422	102001		FLT 01	TURN SW.15 OFF IF UN
0146	03423	027323		JMP S756	GET NEW SECTOR PARAMETER FROM TT
0147	03424	015341	S763	JSB S901	GET A CHAR.
0148	03425	050476		CPA S832	IS CHAR. A BLANK?
0149	03426	027432		JMP S764	YES-CHECK EXIT FLAG
0150	03427	050501		CPA S835	IS CHAR. A -?
0151	03430	027436		JMP S765	YES
0152	03431	027417		JMP S762	NO-PRINTOUT ERROR MESSAGE
0153	03432	064176	S764	LDB SEXT	EXIT FLAG TO B
0154	03433	004010		SLB	EXIT FLAG=0?
0155	03434	027417		JMP S762	NO-ERROR PRINTOUT
0156	03435	027424		JMP S763	GET A CHAR.
0157	03436	060602	S765	LDA S842	-3 TO A
0158	03437	070603		STA S843	RESET CHAR. COUNTER
0159	03440	002400		LLA	
0160	03441	070541		STA S841	CLEAR CHAR. HOLD
0161	03442	015341		JSB S901	GET A CHAR.
0162	03443	050476		CPA S832	IS CHAR. A BLANK?
0163	03444	027460		JMP S766	CHECK EXIT FLAG
0164	03445	015303		JSB S902	CHECK LEGALITY-0-7
0165	03446	027323		JMP S756	GET NEW SECT. PARAM. FROM TTY
0166	03447	064114		LDB MASK2	7 TO B
0167	03450	010001		AND 1	RETAIN A0-A2
0168	03451	064541		LDB S841	PARTIAL TO B
0169	03452	005723		BLF,RRR	ROTATE LEFT 3
0170	03453	030001		IOR 1	IOR B TO A
0171	03454	070541		STA S841	RESTORE RESULTS
0172	03455	034003		ISZ S843	SECTOR SEQ. CHAR. FINISHED?
0173	03456	027442		JMP S765+4	NO-GET ANOTHER CHARACTER
0174	03457	027464		JMP S767	CONTINUE PARAMETER
0175	03460	064176	S766	LDB SEXT	EXIT FLAG TO B
0176	03461	006011		SLB,RSS	EXIT FLAG=1?
0177	03462	027442		JMP S765+4	NO-GET ANOTHER CHAR.
0178	03463	027417		JMP S762	OUTPUT ERROR MESSAGE
0179	03464	060540	S767	LDA S840	STARTING SECTOR ADDRESS TO A
0180	03465	170511		STA WARSB,1	PUT IN READ SECTOR ARRAY
0181	03466	034511		ISZ WARSB	INCR. ARRAY ADDRESS
0182	03467	060541		LDA S841	NO. OF CONSECUTIVE SECTIONS
0183	03470	170511		STA WARSB,1	PUT IN READ SECTOR ARRAY
0184	03471	034511		ISZ WARSB	INCR. ARRAY ADDRESS
0185	03472	035206		ISZ S864	85 ENTRIES IN SECTOR READ BUFF.?
0186	03473	027475		JMP **2	NO
0187	03474	027503		JMP S768	YES
0188	03475	064176		LDB SEXT	EXIT FLAG TO B
0189	03476	006011		SLB,RSS	EXIT FLAG=1?
0190	03477	027350		JMP S758	GET ANOTHER SECTOR READ PARAM.
0191	03500	060511		LDA WARSB	
0192	03501	071017		STA LARSB	LAST BUFFER ADDR.+1
0193	03502	027512		JMP READ	PERFORM READ OPERATION
0194	03503	061071	S768	LDA CHA34	NO. OF CHAR.=29
0195	03504	065051		LDB IAD34	ST. ADDR. OF PRINT BUFFER
0196	03505	114102		JSB 102B,1	OUTPUT ERROR MESSAGE
0197	03506	102001		FLT 01	TURN SW.15 OFF IF UN
0198	03507	027323		JMP S756	GET NEW SECTOR PARAM. FROM TTY
0199	03510	027572	S855	JMP S769-2	BYPASS READ PARAMETERS

0200	03511	125260	S002	JMP HEAD1,I	RETURN JUMP
0201	03512	000000	HEAD	NOP	IND. RETURN
0202	03513	064123		LDB DMA DR	DMA OCTAL ADDR. TO B
0203	03514	060107		LDA MASK1	177700 TO A
0204	03515	013716		AND RD2	RETAIN A6-A15
0205	03516	030001		IOR 1	IOR DMA ADDRESS
0206	03517	073716		STA RD2	RESTORE RD2
0207	03520	060107		LDA MASK1	177700 TO A
0208	03521	013725		AND RD7	RETAIN A6-A15
0209	03522	030001		IOR 1	IOR DMA ADDRESS
0210	03523	073725		STA RD7	RESTORE RD7
0211	03524	054627		CPB MASK6	DMA CHAN.=6
0212	03525	027530		JMP **3	YES
0213	03526	064631		LDB MAS7A	NO-ADDR.=3
0214	03527	027531		JMP **2	
0215	03530	064630		LDB MAS6A	ADDR.=2
0216	03531	060107		LDA MASK1	177700 TO A
0217	03532	013717		AND RD3	RETAIN A6-A15
0218	03533	030001		IOR 1	IOR MAR ADDRESS
0219	03534	073717		STA RD3	RESTORE RD3
0220	03535	060107		LDA MASK1	177700 TO A
0221	03536	013721		AND RD4	RETAIN A6-A15
0222	03537	030001		IOR 1	IOR MAC ADDRESS
0223	03540	073721		STA RD4	RESTORE RD4
0224	03541	073724		STA RD6	RESTORE RD6
0225	03542	060107		LDA MASK1	177700 TO A
0226	03543	013722		AND RD5	RETAIN A6-A15
0227	03544	030001		IOR 1	IOR WCR ADDRESS
0228	03545	073722		STA RD5	RESTORE RD5
0229	03546	064122		LDB DADR1	H.P. DISK ADDR. TO B
0230	03547	060107		LDA MASK1	177700 TO A
0231	03550	013726		AND RD8	RETAIN A6-A15
0232	03551	030001		IOR 1	IOR DISK ADDRESS
0233	03552	073726		STA RD8	RESTORE RD8
0234	03553	006004		INB	L.P. DISK ADDR. TO A
0235	03554	060107		LDA MASK1	177700 TO A
0236	03555	013714		AND RD1	RETAIN A6-A15
0237	03556	030001		IOR 1	IOR DISK ADDRESS
0238	03557	073714		STA RD1	RESTORE RD1
0239	03560	060107		LDA MASK1	177700 TO A
0240	03561	013732		AND RD9	RETAIN A6-A15
0241	03562	030001		IOR 1	IOR DISK ADDRESS
0242	03563	073732		STA RD9	RESTORE RD9
0243	03564	073755		STA RD11	RESTORE RD11
0244	03565	073701		STA RD1A	RESTORE RD1A
0245	03566	002400		CLA	
0246	03567	071072		STA RCOMP	CLEAR FLAG
0247	03570	070641		STA SCOMP	CLEAR FLAG
0248	03571	070665		STA BUFLG	CLEAR FLAG
0249	03572	060506		LDA ARTBF	
0250	03573	070507		STA WARTB	RESET READ TRACK BUFFER ADDR.
0251	03574	060510	S709	LDA ARSBF	
0252	03575	070511		STA WARSB	RESET READ SECTOR BUFFER ADDR.
0253	03576	164507		LDB WARTB,I	PICK PRACK ADDR.
0254	03577	034507		ISZ WARTB	INCR. ARRAY ADDRESS
0255	03600	060507		LDA WARTB	CURRENT ARRAY ADDR. TO A
0256	03601	051016		CPA LARTB	LAST BUFFER ADDR.+1?

0257	03002	035072		ISZ RCOMP	YES-SET READ COMPLETE FLAG
0258	03003	075076		STH CTRCK	
0259	03004	060633		LDA S844	TRACK MASK-140377
0260	03005	011073		AND RCOMR	RETAIN A15-A14, A0-A7
0261	03006	005727		PLF, BLF	A0-A5 TO A8-A13
0262	03007	005300		RBR	
0263	03010	030001		IOR 1	TRACK ADDR. TO A
0264	03011	071073		STA RCOMR	RESTORE RCOMR
0265	03012	060210	S769A	LDA S814	ST. ADDR.-BUFFER
0266	03013	006400		CLB	
0267	03014	174000		STB 0, I	
0268	03015	002004		INA	
0269	03016	050106		CPA 106B	LAST ADDR. OF BUFFER AREA
0270	03017	027621		JMP **2	FINISHED
0271	03020	027614		JMP S769A+2	NOT FINISHED
0272	03021	164511		LDB WARSB, I	PICKUP STARTING SECTOR
0273	03022	075077		STB CSECT	
0274	03023	034511		ISZ WARSB	INCR. ARRAY ADDRESS
0275	03024	060640		LDA S845	SECTOR MASK-177600
0276	03025	011073		AND RCOMR	RETAIN A7-A15
0277	03026	030001		IOR 1	SECTOR ADDR. TO A
0278	03027	071073		STA RCOMR	RESTORE RCOMR-TR./SECT. COMPLETE
0279	03030	164511		LDB WARSB, I	PICKUP # OF CONSEC. SECTORS
0280	03031	034511		ISZ WARSB	INCR. ARRAY ADDRESS
0281	03032	060511		LDA WARSB	CURRENT ARRAY ADDR. TO A
0282	03033	051017		CPA LARSB	LAST BUFFER ADDR.+1
0283	03034	034641		ISZ SCOMP	YES-SET SECTOR STRING COMP. FLAG
0284	03035	006003		S7B, RSS	SECTOR VALUE > 2
0285	03036	027417		JMP S762	NO-ERROR PRINTOUT
0286	03037	074000		STB 0	B TO A
0287	03040	031727		ALF, ALF	
0288	03041	001323		RAR, RAR	MULTIPLY BY 64
0289	03042	040105		ADA 105B	ADD 1ST AVAIL. LUN. VALUE
0290	03043	003004		CMA, INA	2'S COMPL.
0291	03044	040106		ADA 106B	SUBTR. LOWER FROM UPPER
0292	03045	002020		SSA	
0293	03046	027665	S770	JMP S771	ERROR-BUFF. LENGTH EXCEEDS MEM.
0294	03047	074000		STB 0	GOOD MEM. FIT
0295	03050	001727		ALF, ALF	
0296	03051	001323		RAR, RAR	MULTIPLY BY 64
0297	03052	003004		CMA, INA	2'S COMPL. OF TOTAL WORD COUNT
0298	03053	070637		STA WDCNT	WORD COUNT READY
0299	03054	002404		CLA, INA	
0300	03055	001300		RAR	HIT15=1
0301	03056	030105		IOR 105B	IOR START ADDR. OF AVAIL. MEM.
0302	03057	071104		STA RDIR	OUTPUT AND ST. ADDR. READY
0303	03060	007004		CMB, INB	2'S COMPL. # OF SECTORS
0304	03061	075102		STB SECTC	RETAIN # OF SECTORS
0305	03062	060105		LDA 105B	
0306	03063	070643		STA S848	ST. OF AVAILABLE MEM.
0307	03064	027672		JMP S772	CONTINUE
0308	03065	060662	S771	LDA CHA27	CHAR. COUNT=32
0309	03066	064644		LDB IAU27	ST. ADDR. OF PRINT BUFFER
0310	03067	114102		JSB 102B, I	OUTPUT ERROR MESSAGE
0311	03070	102001		FLT 01	TURN SW. 15 OFF IF ON
0312	03071	125174		JMP 1743, I	GET NEW READ PARAMETERS
0313	03072	060375	S772	LDA S829	177700 TO A

0314	03673	010635		AND WDMAN	RETAIN A6-A15
0315	03674	030122		IOR IADR1	IOR H.P. DISK ADDR.
0316	03675	070635		STA WDMAN	RESTORE WDMAN
0317	03676	061074		LDA S852	RETURN JUMP
0318	03677	070006		STA 6	INT. LOCN.
0319	03700	070007		STA 7	INT. LOCN.
0320	03701	102500	RD1A	LIA 0	INPUT STATUS
0321	03702	001727		ALF,ALF	BIT 7 TO BIT 15
0322	03703	002020		SSA	BIT 15=0?
0323	03704	027712		JMP S773	DISC NOT READY
0324	03705	060721		LDA CHA29	NO. OF CHAR. =14
0325	03706	064711		LDR IAD29	ST. ADDR. OF PRINT BUFFER
0326	03707	114102		JSB 102B,I	OUTPUT MESSAGE
0327	03710	102001		PLT 01	MAKE DISC READY
0328	03711	027701		JMP RD1A	RETURN
0329	03712	103100	S773	CLF 0	TURN-OFF INTERRUPT SYSTEM
0330	03713	061073		LDA RCOMR	TRACK/SECTOR ADDRESS
0331	03714	102500	RD1	CTA 0	L.P. DISK ADDRESS
0332	03715	060635		LDA WDMAN	H.P. DISK ADDR. AND CLC
0333	03716	102600	RD2	CTA 0	DMA CHAN. #6/7
0334	03717	100700	RD3	CLC 0	MAR ADDR. #2/3
0335	03720	061104		LDA RDIR	STARTING ADDRESS-BIT 15=1
0336	03721	102600	RD4	CTA 0	MAR ADDR. #2/3
0337	03722	102700	RD5	STC 0	WCR ADDR. #2/3
0338	03723	060637		LDA WLCNT	2'S COMPL.-WORD COUNT
0339	03724	102600	RD6	CTA 0	WCR ADDR. #2/3
0340	03725	103700	RD7	STC 0,C	DMA CHAN. #6/7
0341	03726	102700	RD8	STC 0	H.P. DISK ADDRESS
0342	03727	102100		STF 0	TURN-ON INTERRUPT
0343	03730	002400		CLA	
0344	03731	070665		STA BUFLG	CLEAR FLAG
0345	03732	102500	RDS	LIA 0	INPUT STATUS
0346	03733	002011		SLA,WSS	BUSY BIT=1?
0347	03734	034665		ISZ BUFLG	ERROR-SET FLAG
0348	03735	061210		LDA S869	77777 TO A
0349	03736	002006		INA,SZA	
0350	03737	027736		JMP *-1	TIME-OUT LOOP
0351	03740	102501		LIA 01	SW. REG. TO A
0352	03741	001323		RAR,RAR	
0353	03742	001300		RAR	BIT 3 TO BIT 0
0354	03743	000010		SLA	NO SUPPRESS?
0355	03744	027747		JMP WAIT2+1	BYPASS PRINTOUT
0356	03745	103100		CLF 0	TURN-OFF INTERRUPT
0357	03746	115212	WAIT2	JSB S871,I	MISSING INTERRUPT
0358	03747	103100		CLF 0	TURN-OFF INTERRUPT
0359	03750	102501		LIA 01	SW. REG. TO A
0360	03751	001323		RAR,RAR	
0361	03752	001300		RAR	BIT 3 TO BIT 0
0362	03753	000010		SLA	NO SUPPRESS?
0363	03754	125256		JMP 1775,I	SUPPRESS PRINT
0364	03755	102500	RD11	LIA 0	INPUT STATUS
0365	03756	000010		SLA	BUSY BIT=0?
0366	03757	034665		ISZ BUFLG	NO-ERROR
0367	03760	001727		ALF,ALF	BIT 8 TO BIT 0
0368	03761	001700		ALF	BIT 4 TO BIT 0
0369	03762	071131		STA S857	SAVE
0370	03763	002011		SLA,WSS	DECODE BIT=1?

0371	03764	027770		JMP S773A	NO
0372	03765	061115		LDA CHA35	CHAR. COUNT=12
0373	03766	060106		LDR IAD35	ST. ADDR.
0374	03767	114102		JSB 102B,I	OUTPUT MESSAGE
0375	03770	061131	S773A	LDA S857	STATUS TO A
0376	03771	001222		RAL,RAL	
0377	03772	062021		SSA,RSS	PARITY BIT=1?
0378	03773	027777		JMP S773B	NO
0379	03774	061130		LDA CHA36	CHAR. COUNT=17
0380	03775	060116		LDR IAD36	ST. ADDR.
0381	03776	114102		JSB 102B,I	OUTPUT MESSAGE
0382	03777	061131	S773B	LDA S857	STATUS TO A
0383	04000	002021		SSA,RSS	BIT 3=1?
0384	04001	125257		JMP I773C,I	NO
0385	04002	065076		LDR CTRCK	CURR. TRACK VALUE TO B
0386	04003	114113		JSB CONV,I	CONVERT OCTAL TO ASCII
0387	04004	060200		LDA S812	377 TO A
0388	04005	010111		AND CARRY+1	RETAIN M.S. DIGIT
0389	04006	031253		IOR S880	BLANK TO A8-A15
0390	04007	071242		STA MES44+8	SETUP PRINT MESSAGE
0391	04010	060112		LDA CARRY+2	ASCII TRACK VALUE
0392	04011	071243		STA MES44+9	SETUP PRINT MESSAGE
0393	04012	061244		LDA CHA44	CHAR. COUNT=20
0394	04013	065251		LDR IAD44	ST. ADDR. OF PRINT BUFFER
0395	04014	114102		JSB 102B,I	OUTPUT ERROR MESSAGE
0396	04015	060665	S773C	LDA BUFLG	BUSY ERROR FLAG TO A
0397	04016	002003		SZA,RSS	FLAG=1?
0398	04017	026023		JMP S775	
0399	04020	060710	S774	LDA CHA28	CHAR. COUNTING=49
0400	04021	064666		LDR IAD28	ST. ADDR. OF PRINT BUFFER
0401	04022	114102		JSB 102B,I	OUTPUT ERROR MESSAGE
0402	04023	002400	S775	CLA	
0403	04024	070665		STA BUFLG	CLEAR FLAG
0404	04025	060105		LDA 105B	START OF INPUT BUFFER
0405	04026	071100		STA CMEM	ST. ADDR. OF INPUT BUFFER
0406	04027	000000	S603	NOP	JUMP RETURN
0407	04030	002400	S776	CLA	
0408	04031	071101		STA SEWD	CLEAR WORD #
0409	04032	060375		LDA S829	
0410	04033	070374		STA S828	RESET -64
0411	04034	060267		LDA S823	
0412	04035	070266		STA S822	RESET SECT. BUFFER ADDRESS
0413	04036	160266	S777	LDA S822,I	PICKUP GOOD WORD
0414	04037	151100		CPA CMEM,I	COMPARE TO TEST WORD
0415	04040	002001		RSS	GOOD
0416	04041	016123		JSB PRINT	ERROR
0417	04042	035100	S778	ISZ CMEM	INCR. INPUT BUFFER ADDR.
0418	04043	035101		ISZ SEWD	INCR. SECTOR WORD #
0419	04044	034266		ISZ S822	INCR. GOOD WORD ARRAY ADDR.
0420	04045	034374		ISZ S828	64 WORDS FINISHED?
0421	04046	026036		JMP S777	DO ANOTHER WORD
0422	04047	035077		ISZ CSECT	INCR. CURRENT SECTOR COUNT
0423	04050	035102		ISZ SECTC	ARE ALL SECTORS COMPLETED?
0424	04051	125203		JMP I776,I	NO
0425	04052	060641		LDA SCOMP	YES-SECTOR STRING COMPLETE FLAG
0426	04053	002003		SZA,RSS	FLAG>0?
0427	04054	125177		JMP S858,I	NO-CONTINUE SECTOR PROCESSING

0428	04055	002400	CLA	YES
0429	04056	070641	STA SCOMP	CLEAR FLAG
0430	04057	061072	LDA RCOMP	TRACK READ COMPLETE FLAG
0431	04058	002003	SZA,RSS	FLAG>0?
0432	04061	125200	JMP S859,I	NO-GET NEW TRACK VALUE
0433	04062	002400	CLA	YES
0434	04063	071072	STA RCOMP	CLEAR FLAG
0435	04064	102501	LIA 01	SW. REG. TO A
0436	04065	001323	RAR,RAR	BIT2 TO BIT0
0437	04066	000010	SLA	BIT2=0?
0438	04067	125201	JMP S860,I	LOOP ON READ PROCESSOR
0439	04070	002021	SSA,RSS	BIT1=1?
0440	04071	026075	JMP S779	CHECK SW.0
0441	04072	161176	LDA I855,I	YES
0442	04073	171103	STA S854,I	BYPASS READ PARAMETERS
0443	04074	125105	JMP S856,I	RETURN TO WRITE PROCESSOR
0444	04075	001200	S779 RAL	BIT14 TO BIT 15
0445	04076	002021	SSA,RSS	BIT0=1?
0446	04077	026120	JMP S780	NO-EXIT T4
0447	04100	161176	LDA I855,I	YES
0448	04101	171103	STA S854,I	BYPASS READ PARAMETERS
0449	04102	060231	LDA CBUFF	COMPL. PATTERN BUFFER
0450	04103	002011	SLA,RSS	
0451	04104	026117	JMP S780-1	NO-WRITE SAME PATTERN BUFFER
0452	04105	060375	LDA S829	YES
0453	04106	070374	STA S828	-64 RESET
0454	04107	060267	LDA S823	SECTOR BUFFER ADDR.
0455	04110	070266	STA S822	RESET
0456	04111	160266	S779A LDA S822,I	PICKUP WORD
0457	04112	003000	LMA	COMPL. WORD
0458	04113	170266	STA S822,I	RESTORE WORD
0459	04114	034266	ISZ S822	INCR. ADDR.
0460	04115	034374	ISZ S828	64 WORDS FINISHED?
0461	04116	026111	JMP S779A	NO-LOOP
0462	04117	125105	JMP S856,I	RETURN TO WRITE PROCESSOR
0463	04120	002400	S7EM CLA	
0464	04121	171103	STA S854,I	NOP TO S743
0465	04122	125202	JMP S861,I	JUMP TO MAIN EXEC.
0466	04123	000000	PRINT NOP	
0467	04124	035700	ISZ S999	INCR. ERROR COUNT
0468	04125	002001	RSS	
0469	04126	035701	ISZ S999+1	INCR. ERROR COUNT OVERFLOW
0470	04127	000000	NOP	
0471	04130	102501	LIA 01	SW. REG. TO A
0472	04131	001323	RAR,RAR	
0473	04132	001300	RAR	BIT 3 TO BIT0
0474	04133	000010	SLA	BIT3=0?
0475	04134	126123	JMP PRINT,I	BYPASS PRINT AND SUBROUTINES
0476	04135	065076	LDB CTRCK	CURR. TRACK VALUE TO 3
0477	04136	114113	JSH CONV,I	CONVERT OCTAL TO ASCII
0478	04137	060206	LDA S812	377 TO A
0479	04140	010111	AND CARRY+1	RETAIN HIGH ORDER DIGIT
0480	04141	001727	ALF,ALF	
0481	04142	070001	STA 1	
0482	04143	060475	LDA S831	177400 TO A
0483	04144	010112	AND CARRY+2	RETAIN MIDDLE DIGIT
0484	04145	001727	ALF,ALF	A8-A15 TO A0-A7

0485	04146	030001	IOR 1	
0486	04147	071136	STA MES37+3	SETUP PRINT MESSAGE
0487	04150	060206	LDA S812	377 TO A
0488	04151	010112	AND CARRY+2	RETAIN LOW DIGIT
0489	04152	001727	ALF,ALF	
0490	04153	030476	IOR S832	BLANK TO A0-A7
0491	04154	071137	STA MES37+4	SETUP PRINT MESSAGE
0492	04155	065077	LDR CSECT	CURR. SECTOR VALUE TO 3
0493	04156	114113	JSH CONV,1	CONVERT OCTAL TO ASCII
0494	04157	064476	LDB S832	ASCII BLANK
0495	04158	005727	BLF,RLF	A0:A7 TO A8-A15
0496	04151	060206	LDA S812	377 TO A
0497	04162	010111	AND CARRY+1	RETAIN LOW DIGIT
0498	04153	030001	IOR 1	BLANK TO A
0499	04164	071143	STA MES37+8	SETUP PRINT MESSAGE
0500	04155	060112	LDA CARRY+2	SECOND HALF
0501	04166	071144	STA MES37+9	SETUP PRINT MESSAGE
0502	04167	065101	LDB SEWD	CURR. WORD # TO 8
0503	04170	114113	JSB CONV,1	CONVERT OCTAL TO ASCII
0504	04171	060112	LDA CARRY+2	LOW ORDER DIGITS
0505	04172	071152	STA MES37+15	SETUP PRINT MESSAGE
0506	04173	164206	LDB S822,1	OUTPUT WORD TO 4
0507	04174	114113	JSB CONV,1	CONVERT OCTAL TO ASCII
0508	04175	060110	LDA CARRY	1ST WORD
0509	04176	071161	STA MES38+4	SETUP PRINT MESSAGE
0510	04177	060111	LDA CARRY+1	2ND WORD
0511	04200	071162	STA MES38+5	SETUP PRINT MESSAGE
0512	04201	060112	LDA CARRY+2	3RD WORD
0513	04202	071163	STA MES38+6	SETUP PRINT MESSAGE
0514	04203	165100	LDB CMFM,1	INPUT WORD TO 5
0515	04204	114113	JSH CONV,1	CONVERT OCTAL TO ASCII
0516	04205	060110	LDA CARRY	1ST WORD
0517	04206	071170	STA MES38+11	SETUP PRINT MESSAGE
0518	04207	060111	LDA CARRY+1	2ND WORD
0519	04210	071171	STA MES38+12	SETUP PRINT MESSAGE
0520	04211	060112	LDA CARRY+2	3RD WORD
0521	04212	071172	STA MES38+13	SETUP PRINT MESSAGE
0522	04213	061153	LDA CHA37	NO. OF CHAR. =32
0523	04214	065132	LDB IAD37	ST. ADDR. OF PRINT BUFFER
0524	04215	114102	JSB 1028,1	PRINT MESSAGE
0525	04216	061173	LDA CHA38	NO. OF CHAR. =28
0526	04217	065154	LDB IAD38	ST. ADDR. OF PRINT BUFFER
0527	04220	114102	JSB 1028,1	PRINT MESSAGE
0528	04221	126123	JMP PRINT,1	EXIT
0529	***** TRACK ADDRESS VERIFICATION SUBROUTINE *****			
0530	04222	000000	TRVER NOP	
0531	04223	002400	CLA	
0532	04224	070171	STA TUPT2	CLEAR INFO
0533	04225	062475	LDA CHA48	NO. OF CHAR.=13
0534	04226	066474	LDB IAD48	ST. ADDR. OF PRINT BUFFER
0535	04227	114102	JSB 1028,1	OUTPUT MESSAGE
0536	04230	060200	LDA S805	CHAR. COUNT=72
0537	04231	070177	SIA S804	SETUP INPUT CHAR. LENGTH
0538	04232	015300	JSB S900	CALL INPUT SUBROUTINE
0539	04233	060602	LDA S842	-3 TO A
0540	04234	070603	STA S843	RESET CHAR. COUNTER
0541	04235	002400	CLA	

0542	04236	070540		STA S840	CLEAR CHAR. HOLD
0543	04237	015341	S548	JSH S901	GET A CHAR.
0544	04240	050476		CPA S832	IS CHAR. A BLANK?
0545	04241	020206		JMP S549	CHECK EXIT FLAG
0546	04242	015363		JSH S902	CHECK LEGALITY-0-7
0547	04243	020223		JMP TRVER+1	RESTART
0548	04244	064114		LDR MASK2	7 TO 8
0549	04245	010001		AND 1	RETAIN A0-A2
0550	04246	064549		LDR S840	PARTIAL TO B
0551	04247	005723		RLF, HBR	ROTATE LEFT 3
0552	04250	030001		IQR 1	B TO A
0553	04251	070540		STA S840	RESTORE RESULTS
0554	04252	034603		JSZ S843	FINISHED?
0555	04253	026237		JMP S548	NO-GET ANOTHER CHAR.
0556	04254	001727		ALF, ALF	A0-A7 TO A8-A15
0557	04255	001300		RAR	ADJUST TO A7-A13
0558	04256	070171		STA TOPT2	SAVE TRACK # IN BINARY
0559	04257	001727		ALF, ALF	A8-A15 TO A0-A7
0560	04260	002003		SZA, HSS	VALUE > 0?
0561	04251	026223		JMP TRVER+1	NO-RESTART
0562	04262	041252		ADA S510	ADD -1M1
0563	04263	002020		SSA	PCS.?
0564	04264	026272		JMP S549+4	NO-CONTINUE
0565	04265	026223		JMP TRVER+1	YES-RESTART
0566	04266	064176	S549	LDR SEXT	EXIT FLAG TO B
0567	04267	006011		SLH, RSS	EXIT FLAG=1?
0568	04270	026237		JMP S548	NO-CONTINUE
0569	04271	026223		JMP TRVER+1	YES-RESTART
0570	04272	002400		CLA	
0571	04273	071247		STA S500	CLEAR ACTIVE TRACK COUNTER
0572	04274	070632		STA WCOMP	CLEAR WR. TR. FLAG
0573	04275	070641		STA SCOMP	CLEAR WR. SECTOR FLAG
0574	04276	071072		STA RCOMP	CLEAR RD. TR. FLAG
0575	04277	070231		STA CBUFF	CLEAR COMP. PATT. FLAG
0576	04300	170504		STA AWSBF, 1	SET WRITE SECTOR ADDRESS
0577	04301	170510		STA ARSBF, 1	SET READ SECTOR ADDRESS
0578	04302	002004		INA	SET CONSEC. # OF SECTORS
0579	04303	172465		STA S501, 1	SET CONSEC. # OF WRITE SECTORS
0580	04304	172466		STA S502, 1	SET CONSEC. # OF READ SECTORS
0581	04305	062465		LDA S501	
0582	04306	002004		INA	LAST ADDR.+1 OF SECTOR BUFFER
0583	04307	070605		STA LAWSB	SET TERMINAL ADDR.
0584	04310	062466		LDA S502	
0585	04311	002004		INA	LAST ADDR.+1 OF SECTOR BUFFER
0586	04312	071017		STA LARSB	SET TERMINAL ADDR.
0587	04313	060502		LDA AWTBF	
0588	04314	002004		INA	LAST ADDR.+1 OF TRACK BUFFER
0589	04315	070604		STA LAWTB	SET TERMINAL ADDR.
0590	04316	060506		LDA ARTBF	
0591	04317	002004		INA	LAST ADDR.+1 OF TRACK BUFFER
0592	04320	071016		STA LARTB	SET TERMINAL ADDR.
0593	04321	162470		LDA S504, 1	JMP WRITE, 1 TO A
0594	04322	172471		STA S505, 1	SETUP RETURN JUMP
0595	04323	061247	S550	LDA S500	PICKUP TR./SECTOR ADDRESS
0596	04324	001727		ALF, ALF	A8-A15 TO A0-A7
0597	04325	001200		RAL	
0598	04326	170502		STA AWTBF, 1	PUT TRACK ENTRY IN BUFFER

0599	04327	060375	LDA	S829	-64 TO A
0600	04330	070374	STA	S828	RESET WORKING COUNT
0601	04331	060267	LDA	S823	
0602	04332	070266	STA	S822	RESET SECTOR BUFFER ADDRESS
0603	04333	061247	LDA	S500	PICKUP TR./SECT. ADDR.
0604	04334	170266	S551	STA S822,I	STORE IN BUFFER
0605	04335	034266	ISZ	S822	INCR. BUFFER ADDRESS
0606	04336	034374	ISZ	S828	INCR. WORD COUNT
0607	04337	026334	JMP	S551	BUFFER NOT FINISHED
0608	04340	116467	JSB	S503,I	WRITE ONE TRACK
0609	04341	061247	LDA	S500	PICKUP CURR. TR. VALUE
0610	04342	042472	ADA	S506	ADD 1 TO TR. ADDR.
0611	04343	071247	STA	S500	STORE TR./SECT. ADDR.+1
0612	04344	050171	CPA	TUPT2	LAST ADDR.+1?
0613	04345	026347	JMP	++2	YES
0614	04346	026323	JMP	S550	NO-DO ANOTHER TRACK
0615	04347	002400	CLA		
0616	04350	172467	STA	S503,I	
0617	04351	172471	STA	S505,I	CLEAR NOP'S
0618	04352	071247	STA	S500	CLEAR ACTIVE TRACK COUNTER
0619	04353	162473	LDA	S508,I	
0620	04354	171251	STA	S509,I	SETUP RETURN JUMP
0621	04355	061247	S552	LDA S500	PICKUP TR./SECTOR ADDRESS
0622	04356	001727	ALF,ALF		A8-A15 TO A0-A7
0623	04357	001200	RAL		
0624	04360	170506	STA	ARTBF,I	PUT TRACK ENTRY IN BUFFER
0625	04361	115250	JSB	S507,I	READ ONE TRACK
0626	04362	060375	LDA	S829	
0627	04363	070374	STA	S828	RESET -64
0628	04364	065247	LDB	S500	PICKUP TR./SECT. PATTERN
0629	04365	155100	S553	CPB MEM,I	COMPARE TO RECORD
0630	04366	002001	RSS		GOOD
0631	04367	026414	JMP	PROUT	ERROR
0632	04370	035100	ISZ	MEM	INCR. INPUT BUFFER ADDR.
0633	04371	034374	ISZ	S828	64 WORDS FINISHED?
0634	04372	026365	JMP	S553	DO ANOTHER WORD
0635	04373	061247	S554	LDA S500	PICKUP CURR. TR. VALUE
0636	04374	042472	ADA	S506	ADD 1 TO TRACK ADDR.
0637	04375	071247	STA	S500	STORE TR./SECT. ADDR.+1
0638	04376	050171	CPA	TUPT2	LAST ADDR.+1
0639	04377	026401	JMP	++2	YES-FINISHED COMPLETE PASS
0640	04400	026355	JMP	S552	NO-DO ANOTHER TRACK
0641	04401	102501	LIA	01	SW. REG. TO A
0642	04402	001700	ALF		BIT11 TO BIT15
0643	04403	002020	SSA		BIT11=0?
0644	04404	026321	JMP	S550-2	NO-LOOP CHECK
0645	04405	002400	CLA		
0646	04406	171250	STA	S507,I	
0647	04407	171251	STA	S509,I	CLEAR NOP'S
0648	04410	062477	LDA	CHA49	NO. OF CHAR.=28
0649	04411	066476	LDB	IAD49	ST. ADDR. OF PRINT BUFFER
0650	04412	114102	JSB	102B,I	OUTPUT MESSAGE
0651	04413	120222	JMP	TRVER,I	EXIT CHECK
0652	04414	005727	PROUT	BLF,BLF	B8-B15 TO B0-B7
0653	04415	005200	RBL		
0654	04416	114113	JSB	CONV,I	CONVERT OCTAL TO ASCII
0655	04417	060206	LDA	S812	377 TO A

0656	04420	010111	AND CARRY+1	RETAIN M.S. DIGIT
0657	04421	070001	STA 1	
0658	04422	060475	LDA S831	177400 MASK
0659	04423	010112	AND CARRY+2	MIDDLE DIGIT
0660	04424	001727	ALF,ALF	
0661	04425	005727	RLF,RLF	
0662	04426	030001	IOR 1	
0663	04427	072514	STA MESS1+8	SETUP PRINT MESSAGE
0664	04430	060206	LDA S812	377 TO A
0665	04431	010112	AND CARRY+2	RETAIN LOW DIGIT
0666	04432	001727	ALF,ALF	
0667	04433	030476	IOR S832	
0668	04434	072515	STA MESS1+9	SETUP PRINT MESSAGE
0669	04435	165100	LDR CMEM,1	PICKUP ERROR TR. VALUE
0670	04436	005200	RBL	
0671	04437	005727	RLF,RLF	B8-B15 TO B0-B7
0672	04440	114113	JSR CONV,1	CONVERT OCTAL TO ASCII
0673	04441	060206	LDA S812	377 TO A
0674	04442	010111	AND CARRY+1	RETAIN M.S. DIGIT
0675	04443	070001	STA 1	
0676	04444	060475	LDA S831	177400 MASK
0677	04445	010112	AND CARRY+2	MIDDLE DIGIT
0678	04446	001727	ALF,ALF	
0679	04447	005727	RLF,RLF	
0680	04450	030001	IOR 1	
0681	04451	072525	STA MESS1+17	SETUP PRINT MESSAGE
0682	04452	060206	LDA S812	377 TO A
0683	04453	010112	AND CARRY+2	RETAIN LOW DIGIT
0684	04454	001727	ALF,ALF	
0685	04455	072526	STA MESS1+18	SETUP PRINT MESSAGE
0686	04456	062501	LDA CHA50	NO. OF CHAR.=19
0687	04457	066500	LDR IAD50	ST. ADDR. OF PRINT BUFFER
0688	04460	114102	JSR I02B,1	OUTPUT ERROR MESSAGE
0689	04461	062503	LDA CHA51	NO. OF CHAR.=36
0690	04462	066502	LDR IAD51	ST. ADDR. OF PRINT BUFFER
0691	04463	114102	JSR I02B,1	OUTPUT ERROR MESSAGE
0692	04464	026373	JMP S554	DO NEXT TRACK
0693	04465	004770	S501 DEF WSBUF+1	IND. ADDR.
0694	04466	005460	S502 DEF WSBUF+1	IND. ADDR.
0695	04467	002574	S503 DEF WRITE	IND. ADDR.
0696	04470	002573	S504 DEF S600	IND. ADDR.
0697	04471	003104	S505 DEF S601	IND. ADDR.
0698	04472	000200	S506 OCT 200	TRACK INCR.
0699	04473	003511	S508 DEF S602	IND. ADDR.
0700	04474	004527	I A148 DEF MES48	BUFFER ADDR.
0701	04475	000017	CH448 OCT 17	CHAR. COUNT
0702	04476	004537	I A149 DEF MES49	BUFFER ADDR.
0703	04477	000034	CH449 OCT 34	CHAR. COUNT
0704	04500	004555	I A150 DEF MES50	BUFFER ADDR.
0705	04501	000023	CH450 OCT 23	CHAR. COUNT
0706	04502	004504	I A151 DEF MES51	BUFFER ADDR.
0707	04503	000045	CH451 OCT 45	CHAR. COUNT
0708	04504	042530	MES51 ASC 19,EXPECTED TRACK-	ACTUAL TRACK-
	04505	050105		
	04506	041524		
	04507	042504		
	04510	020124		

```

04511 051101
04512 041513
04513 020440
04514 020040
04515 020040
04516 040503
04517 052125
04520 040514
04521 020124
04522 051101
04523 041513
04524 020440
04525 020040
04526 020040
0709 04527 047117 MES48 ASC 8,NO. OF TRACKS ?
04530 027040
04531 047506
04532 020124
04533 051101
04534 041513
04535 051440
04536 037440
0710 04537 052122 MES49 ASC 14,TRACK ADDRESS CHECK COMPLETE
04540 040503
04541 045440
04542 040504
04543 042122
04544 042523
04545 051440
04546 041510
04547 042503
04550 045440
04551 041517
04552 046520
04553 046105
04554 052105
0711 04555 052122 MES50 ASC 10,TRACK ADDRESS ERROR
04556 040503
04557 045440
04560 040504
04561 042122
04562 042523
04563 051440
04564 042522
04565 051117
04566 051040
0712 04567 000000 WTEUF ESS 128 WRITE TRACK BUFFER
0713 04767 000000 WSEUF ESS 184 WRITE SECTOR BUFFER
0714 05257 000000 RTEUF ESS 128 READ TRACK BUFFER
0715 05457 000000 RSEUF ESS 184 READ SECTOR BUFFER
0716 05747 000000 S000 ESS 1
0717 00105 CRG 105B
0718 00105 005747 IEF S000
0719 END
** NO ERRORS**

```

**TABLE 6-3.
CODE LIST OF MANUFACTURERS**

The following code numbers are from the Federal Supply Code for Manufacturers Cataloging Handbooks H4-1 (Name to Code) and H4-2 (Code to Name) and their latest supplements. The date of revision and the date of the supplements used appear at the bottom of each page. Alphabetical codes have been arbitrarily assigned to suppliers not appearing in the H4 Handbooks.

Code No.	Manufacturer	Address	Code No.	Manufacturer	Address	Code No.	Manufacturer	Address
00900	U. S. A. Common	Any supplier of U. S.	05397	Union Carbide Corp., Linde Div.	Kemet Dept. Cleveland, Ohio	11242	Bay State Electronics Corp.	Waltham, Mass.
01136	McCoy Electronics	Mount Holly Springs, Pa.	05593	Illumitronic Engineering Co.	Sunnyvale, Calif.	11312	Teledyne Inc., Microwave Div.	Palo Alto, Calif.
00213	Sage Electronics Corp.	Rochester, N. Y.	05616	Cosmo Plastic (c/o Electrical Spec. Co.)	Cleveland, Ohio	11314	National Seal	Downey, Calif.
00267	Cemco Inc.	Danielson, Conn.	05624	Barber Colman Co.	Rockford, Ill.	11534	Duncan Electronics Inc.	Costa Mesa, Calif.
00334	Humbidial	Colton, Calif.	05728	Tiffen Optical Co.	Roslyn Heights, Long Island, N. Y.	11711	General Instrument Corp., Semiconductor Div., Products Group	Newark, N. J.
00348	Microtron Co., Inc.	Valley Stream, N. Y.	05729	Metro-Tel Corp.	Westbury, N. Y.	11717	Imperial Electronic, Inc.	Buena Park, Calif.
00373	Garlock Inc.	Cherry Hill, N. J.	05783	Stewart Engineering Co.	Santa Cruz, Calif.	11870	Melabs, Inc.	Palo Alto, Calif.
00556	Aerovox Corp.	New Bedford, Mass.	05820	Wakefield Engineering Inc.	Wakefield, Mass.	12136	Philadelphia Handle Co.	Camden, N. J.
00779	Amp. Inc.	Harrisburg, Pa.	06004	Bassick Co., Div. of Stewart Warner Corp.	Bridgeport, Conn.	12361	Grove Mfg. Co., Inc.	Shady Grove, Pa.
00781	Aircraft Radio Corp.	Boonton, N. J.	06090	Raychem Corp.	Redwood City, Calif.	12574	Gulton Ind. Inc., Data System Div.	Albuquerque, N. M.
00815	Northern Engineering Laboratories, Inc.	Burlington, Wis.	06175	Bausch and Lomb Optical Co.	Rochester, N. Y.	12697	Clarostat Mfg. Co.	Dover, N. H.
00853	Sangamo Electric Co., Pickens Div.	Pickens, S. C.	06402	E. T. A. Products Co. of America	Chicago, Ill.	12728	Elmar Filter Corp.	W. Haven, Conn.
00855	Goe Engineering Co.	City of Industry, Cal.	06540	Amatom Electronic Hardware Co., Inc.	New Rochelle, N. Y.	12859	Nippon Electric Co., Ltd.	Tokyo, Japan
00891	Carl E. Holmes Corp.	Los Angeles, Calif.	06555	Beede Electrical Instrument Co., Inc.	Penacook, N. H.	12881	Metex Electronics Corp.	Clark, N. J.
00929	Microtab Inc.	Livingston, N. J.	06666	General Devices Co., Inc.	Indianapolis, Ind.	12930	Delta Semiconductor Inc.	Newport Beach, Calif.
01002	General Electric Co., Capacitor Dept.	Hudson Falls, N. Y.	06751	Semcor Div. Components Inc.	Phoenix, Ariz.	12954	Dickson Electronics Corp.	Scottsdale, Arizona
01009	Alden Products Co.	Brockton, Mass.	06812	Torrington Mfg. Co., West Div.	Van Nuys, Calif.	13103	Thermolloy	Dallas, Texas
01121	Allen Bradley Co.	Milwaukee, Wis.	06980	Varian Assoc. Eimac Div.	San Carlos, Calif.	13396	Telefunken (GmbH)	Hanover, Germany
01255	Litton Industries, Inc.	Beverly Hills, Calif.	07088	Kelvin Electric Co.	Van Nuys, Calif.	13835	Muland-Wright Div. of Pacific Industries, Inc.	Kansas City, Kansas
01281	TRW Semiconductors, Inc.	Lawndale, Calif.	07126	Digitran Co.	Pasadena, Calif.	14099	Sem-Tech	Newbury Park, Calif.
01295	Texas Instruments, Inc., Transistor Products Div.	Dallas, Texas	07137	Transistor Electronics Corp.	Minneapolis, Minn.	14193	Calif. Resistor Corp.	Santa Monica, Calif.
01349	The Alliance Mfg. Co.	Alliance, Ohio	07138	Westinghouse Electric Corp. Electronic Tube Div.	Elmira, N. Y.	14298	American Components, Inc.	Conshohocken, Pa.
01529	Pacific Relays, Inc.	Van Nuys, Calif.	07149	Filmohm Corp.	New York, N. Y.	14433	ITT Semiconductor, A Div. of Int. Telephone & Telegraph Corp.	West Palm Beach, Fla.
01930	Amerock Corp.	Rockford, Ill.	07233	Cinch-Graphix Co.	City of Industry, Calif.	14493	Hewlett-Packard Company	Loveland, Colo.
01951	Pulse Engineering Co.	Santa Clara, Calif.	07261	Avnet Corp.	Culver City, Calif.	14555	Cornell Dublier Electric Corp.	Newark, N. J.
02114	Ferroxcube Corp. of America	Saugerties, N. Y.	07263	Fairchild Camera & Inst. Corp. Semiconductor Div.	Mountain View, Calif.	14674	Corning Glass Works	Corning, N. Y.
02116	Wheelock Signals, Inc.	Long Branch, N. J.	07322	Minnesota Rubber Co.	Minneapolis, Minn.	14752	Electro Cube Inc.	San Gabriel, Calif.
02266	Cole Rubber and Plastics Inc.	Sunnyvale, Calif.	07387	Bircher Corp., The	Monterey Park, Calif.	14960	Williams Mfg. Co.	San Jose, Calif.
02560	Amphenol-Borg Electronics Corp.	Chicago, Ill.	07397	Sylvania Elect. Prod. Inc., Mt. View Operations	Mountain View, Calif.	15203	Webster Electronics Co.	New York, N. Y.
02735	Radio Corp. of America, Semiconductor and Materials Div.	Somerville, N. J.	07700	Technical Wire Products Inc.	Cranford, N. J.	15287	Scronics Corp.	Northridge, Calif.
02771	Vocaline Co. of America, Inc.	Old Saybrook, Conn.	07910	Continental Device Corp.	Hawthorne, Calif.	15291	Adjustable Basing Co.	N. Hollywood, Calif.
02777	Hopkins Engineering Co.	San Fernando, Calif.	07933	Raytheon Mfg. Co., Semiconductor Div.	Mountain View, Calif.	15558	Micron Electronics	Long Island, N. Y.
03508	G. E. Semiconductor Prod. Dept.	Syracuse, N. Y.	07980	Hewlett-Packard Co., Boonton Radio Div.	Rockaway, N. J.	15566	Amprobe Inst.	Lynbrook, N. Y.
03705	Apex Machine & Tool Co.	Dayton, Ohio	08289	Blinn, Delbert Co.	Pomona, Calif.	15631	Cabletronics	Costa Mesa, Calif.
03797	Eldema Corp.	Compton, Calif.	08358	Burgess Battery Co.	Niagara Falls, Ontario, Canada	15772	Twentieth Century Coil Spring Co.	Santa Clara, Calif.
03877	Transitron Electric Corp.	Wakefield, Mass.	08524	Deutsch Fastener Corp.	Los Angeles, Calif.	15801	Fenwal Electronics	Framingham, Mass.
03888	Pyrofilm Resistor Co., Inc.	Cedar Knolls, N. J.	08664	Bristol Co., The	Waterbury, Conn.	15818	Amelco Inc.	Mt. View, Calif.
03954	Singer Co., Diehl Div. Findeine Plant	Sumerville, N. J.	08717	Sloan Company	Sun Valley, Calif.	16037	Spruce Pine Mfg. Co.	Spruce Pine, N. C.
04009	Arrow, Hart and Hegeman Elect. Co.	Hartford, Conn.	08718	ITT Cannon Electric Inc., Phoenix Div.	Phoenix, Arizona	16179	Omni-Spectra Inc.	Detroit, Ill.
04013	Taurus Corp.	Lambertville, N. J.	08792	CBS Electronics Semiconductor Operations, Div. of C. B. S. Inc.	Lowell, Mass.	16352	Computer Diode Corp.	Lodi, N. J.
04062	Arco Electronic Inc.	Great Neck, N. Y.	08984	Mel-Rain	Indianapolis, Ind.	16688	Ideal Prec. Meter Co., Inc. De Jur Meter Div.	Brooklyn, N. Y.
04222	H-Q Division of Aerovox	Myrtle Beach, S. C.	09026	Babcock Relays Div.	Costa Mesa, Calif.	16758	Delco Radio Div. of G.M. Corp.	Kokoma, Ind.
04354	Precision Paper Tube Co.	Wheeling, Ill.	09134	Texas Capacitor Co.	Houston, Texas	17109	Thermonetics Inc.	Canoga Park, Calif.
04404	Dymec Division of Hewlett-Packard Co.	Palo Alto, Calif.	09145	Tech. Ind. Inc. Atohm Elect.	Burbank, Calif.	17474	Tranex Company	Mountain View, Calif.
04551	Sylvania Electric Products, Microwave Device Div.	Mountain View, Calif.	09250	Electro Assemblies, Inc.	Chicago, Ill.	17675	Hamlin Metal Products Corp.	Akron, Ohio
04713	Motorola, Inc., Semiconductor Prod. Div.	Phoenix, Arizona	09569	Mallory Battery Co. of Canada, Ltd.	Toronto, Ontario, Canada	17745	Amstrohm Prec. Inc.	No. Hollywood, Calif.
04732	Filtion Co., Inc. Western Div.	Culver City, Calif.	10214	General Transistor Western Corp.	Los Angeles, Calif.	17870	McGraw-Edison Co.	Manchester, N. H.
04773	Automatic Electric Co.	Northlake, Ill.	10411	Ti-Tal, Inc.	Berkeley, Calif.	18042	Power Design Pacific Inc.	Palo Alto, Calif.
04796	Sequoia Wire Co.	Redwood City, Calif.	10646	Carborundum Co.	Niagara Falls, N. Y.	18083	Clevite Corp., Semiconductor Div.	Palo Alto, Calif.
04811	Precision Coil Spring Co.	El Monte, Calif.	11236	CTS of Berne, Inc.	Berne, Ind.	18324	Signetics Corp.	Sunnyvale, Calif.
04870	P. M. Motor Company	Westchester, Ill.	11237	Chicago Telephone of California, Inc.	So. Pasadena, Calif.	18476	Ty-Car Mfg. Co., Inc.	Holliston, Mass.
04919	Component Mfg. Service Co.	W. Bridgewater, Mass.				18486	TRW Elect. Comp. Div.	Des Plaines, Ill.
05005	Twentieth Century Plastics, Inc.	Los Angeles, Calif.				18583	Curtis Instrument, Inc.	Mt. Kisco, N. Y.
05277	Westinghouse Electric Corp. Semi-Conductor Dept.	Youngwood, Pa.				18873	E. I. DuPont and Co., Inc.	Wilmington, Del.
05347	Ultrox, Inc.	San Mateo, Calif.				18911	Durant Mfg. Co.	Milwaukee, Wis.
						19315	The Bendix Corp., Navigation & Control Div.	Teterboro, N. J.
						19500	Thomas A. Edison Industries, Div. of McGraw-Edison Co.	West Orange, N. J.
						19585	Concoa	Baldwin Park, Calif.
						19644	LRC Electronics	Horseheads, N. Y.
						19701	Electra Mfg. Co.	Independence, Kansas

TABLE 6-3.
CODE LIST OF MANUFACTURERS (Cont'd)

Code No.	Manufacturer	Address	Code No.	Manufacturer	Address	Code No.	Manufacturer	Address
20183	General Atomics Corp.	Philadelphia, Pa.	71436	Chicago Condenser Corp.	Chicago, Ill.	77252	Philadelphia Steel and Wire Corp.	Philadelphia, Pa.
21226	Executone, Inc.	Long Island City, N. Y.	71447	Calif. Spring Co., Inc.	Pico-Rivera, Calif.			
21335	Fafnir Bearing Co., The	New Britain, Conn.	71450	CTS Corp.	Elkhart, Ind.	77342	American Machine & Foundry Co. Potter & Brumfield Div.	Princeton, Ind.
21520	Fansteel Metallurgical Corp.	N. Chicago, Ill.	71468	ITT Cannon Electric Inc.	Los Angeles, Calif.	77630	TRW Electronic Components Div.	Camden, N. J.
23783	British Radio Electronics Ltd.	Washington, D. C.	71471	Cinema, Div. Aerovox Corp.	Burbank, Calif.	77638	General Instrument Corp., Rectifier Div.	Brooklyn, N. Y.
24455	G. E. Lamp Division	Nela Park, Cleveland, Ohio	71482	C. P. Clare & Co.	Chicago, Ill.			
24655	General Radio Co.	West Concord, Mass.	71590	Centralab Div. of Globe Union Inc.	Milwaukee, Wis.	77764	Resistance Products Co.	Harrisburg, Pa.
24681	Memcor Inc., Comp. Div.	Huntington, Ind.	71616	Commercial Plastics Co.	Chicago, Ill.	77969	Rubbercraft Corp. of Calif.	Torrance, Calif.
26365	Gris Reproducer Corp.	New Rochelle, N. Y.	71700	Cornish Wire Co., The	New York, N. Y.	78189	Shakeproof Division of Illinois Tool Works	Elgin, Ill.
26462	Grobel File Co. of America, Inc.	Carlstadt, N. J.	71707	Coto Coil Co., Inc.	Providence, R. I.			
26992	Hamilton Watch Co.	Lancaster, Pa.	71744	Chicago Miniature Lamp Works	Chicago, Ill.	78283	Signal Indicator Corp.	New York, N. Y.
28480	Hewlett-Packard Co.	Palo Alto, Calif.	71785	Cinch Mfg. Co., Howard B. Jones Div.	Chicago, Ill.	78290	Struthers-Dunn Inc.	Pitman, N. J.
28520	Heyman Mfg. Co.	Kenilworth, N. J.	71984	Dow Corning Corp.	Midland, Mich.	78452	Thompson-Bremer & Co.	Chicago, Ill.
33173	G. E. Receiving Tube Dept.	Owensboro, Ky.	72136	Electro Motive Mfg. Co., Inc.	Williamatic, Conn.	78471	Tilley Mfg. Co.	San Francisco, Calif.
35434	Lectrohn Inc.	Chicago, Ill.	72619	Dialight Corp.	Brooklyn, N. Y.	78488	Stackpole Carbon Co.	St. Marys, Pa.
36196	Stanwyck Coil Products Ltd.	Hawkesbury, Ontario, Canada	72656	Indiana General Corp., Electronics Div.	Keasby, N. J.	78493	Standard Thomson Corp.	Waltham, Mass.
36287	Cunningham, W. H. & Hill, Ltd.	Toronto Ontario, Canada	72699	General Instrument Corp., Cap. Div.	Newark, N. J.	78553	Tinnerman Products, Inc.	Cleveland, Ohio
37942	P. R. Mallory & Co. Inc.	Indianapolis, Ind.	72765	Drake Mfg. Co.	Harwood Heights, Ill.	78790	Transformer Engineers	San Gabriel, Calif.
39543	Mechanical Industries Prod. Co.	Akron, Ohio	72825	Hugh H. Eby Inc.	Philadelphia, Pa.	78947	Ucinite Co.	Newtownville, Mass.
40920	Miniature Precision Bearings, Inc.	Keene, N. H.	72928	Gudeman Co.	Chicago, Ill.	79136	Waldes Kohnoor Inc.	Long Island City, N. Y.
42190	Muter Co.	Chicago, Ill.	72964	Robert M. Hadley Co.	Los Angeles, Calif.	79142	Veeder Root, Inc.	Hartford, Conn.
43990	C. A. Norgren Co.	Englewood, Colo.	72982	Erie Technological Products, Inc.	Erie, Pa.	79251	Wenco Mfg. Co.	Chicago, Ill.
44655	Ohmite Mfg. Co.	Skokie, Ill.	73061	Hansen Mfg. Co., Inc.	Princeton, Ind.	79727	Continental-Wirt Electronics Corp.	Philadelphia, Pa.
46381	Penn Eng. & Mfg. Corp.	Doylestown, Pa.	73076	H. M. Harper Co.	Chicago, Ill.	79963	Zierick Mfg. Corp.	New Rochelle, N. Y.
47904	Polaroid Corp.	Cambridge, Mass.	73138	Heliprot Div. of Beckman Inst., Inc.	Fullerton, Calif.	80031	Mepco Division of Sessions Clock Co.	Morristown, N. J.
48620	Precision Thermometer & Inst. Co.	Southampton, Pa.	73293	Hughes Products Division of Hughes Aircraft Co.	Newport Beach, Calif.	80120	Schnitzer Alloy Products Co.	Elizabeth, N. J.
49956	Microwave & Power Tube Div.	Waltham, Mass.	73445	Amperex Elect Co.	Hicksville, L. I., N. Y.	80131	Electronic Industries Association. Any brand Tube meeting EIA Standards-Washington, DC.	Washington, DC.
52090	Rowan Controller Co.	Westminster, Md.	73506	Bradley Semiconductor Corp.	New Haven, Conn.	80207	Unimax Switch, Div. Maxon Electronics Corp.	Wallingford, Conn.
52983	Sanborn Company	Waltham, Mass.	73559	Carling Electric, Inc.	Hartford, Conn.	80223	United Transformer Corp.	New York, N. Y.
54294	Shallcross Mfg. Co.	Selma, N. C.	73586	Circle F Mfg. Co.	Trenton, N. J.	80248	Oxford Electric Corp.	Chicago, Ill.
55026	Simpson Electric Co.	Chicago, Ill.	73682	George K. Garrett Co., Div. MSL Industries Inc.	Philadelphia, Pa.	80294	Bourns Inc.	Riverside, Calif.
55933	Sonotone Corp.	Elmsford, N. Y.	73734	Federal Screw Products Inc.	Chicago, Ill.	80411	Acro Div. of Robertson Controls Co.	Columbus, Ohio
55938	Raytheon Co. Commercial Apparatus & Systems Div.	So. Norwalk, Conn.	73743	Fischer Special Mfg. Co.	Cincinnati, Ohio	80485	All Star Products Inc.	Defiance, Ohio
56137	Spaulding Fibre Co., Inc.	Tonawanda, N. Y.	73793	General Industries Co., The	Elyria, Ohio	80509	Avery Label Co.	Monrovia, Calif.
56289	Sprague Electric Co.	North Adams, Mass.	73846	Goshen Stamping & Tool Co.	Goshen, Ind.	80583	Hammarlund Co., Inc.	New York, N. Y.
59446	Telex Corp.	Tulsa, Okla.	73899	JFD Electronics Corp.	Brooklyn, N. Y.	80640	Stevens, Arnold, Co., Inc.	Boston, Mass.
59730	Thomas & Betts Co.	Elizabeth, N. J.	73905	Jennings Radio Mfg. Corp.	San Jose, Calif.	81030	International Instruments Inc.	Orange, Conn.
60741	Triplett Electrical Inst. Co.	Bluffton, Ohio	73957	Groov-Pin Corp.	Ridgefield, N. J.	81073	Grayhill Co.	LaGrange, Ill.
61775	Union Switch and Signal, Div. of Westinghouse Air Brake Co.	Pittsburgh, Pa.	74276	Signalite Inc.	Neptune, N. J.	81095	Triad Transformer Corp.	Venice, Calif.
62119	Universal Electric Co.	Owosso, Mich.	74455	J. H. Winns, and Sons	Winchester, Mass.	81312	Winchester Elec. Div. Litton Ind., Inc.	Oakville, Conn.
63743	Ward-Leonard Electric Co.	Mt. Vernon, N. Y.	74861	Industrial Condenser Corp.	Chicago, Ill.	81349	Military Specification	
64959	Western Electric Co., Inc.	New York, N. Y.	74868	R. F. Products Division of Amphenol-Borg Electronics Corp.	Danbury, Conn.	81483	International Rectifier Corp.	El Segundo, Calif.
65092	Weston Inst. Inc. Weston-Newark	Newark, N. J.	74970	E. F. Johnson Co.	Waseca, Minn.	81541	Airpax Electronics, Inc.	Cambridge, Maryland
66295	Wittke Mfg. Co.	Chicago, Ill.	75042	International Resistance Co.	Philadelphia, Pa.	81860	Barry Controls, Div. Barry Wright Corp.	Watertown, Mass.
66346	Minnesota Mining & Mfg. Co. Revere Mincom Div.	St. Paul, Minn.	75378	CTS Knights Inc.	Sandwich, Ill.	82042	Carter Precision Electric Co.	Skokie, Ill.
70276	Allen Mfg. Co.	Hartford, Conn.	75382	Kufka Electric Corporation	Mt. Vernon, N. Y.	82047	Sperli Faraday Inc., Copper Hewitt Electric Div.	Hoboken, N. J.
70309	Allied Control	New York, N. Y.	75818	Lenz Electric Mfg. Co.	Chicago, Ill.	82142	Jefferis Electronics Division of Speer Carbon Co.	Du Bois, Pa.
70318	Allmetal Screw Product Co., Inc.	Garden City, N. Y.	75915	Littlefuse, Inc.	Des Plaines, Ill.	82170	Fairchild Camera & Inst. Corp. Space & Defense System Div.	Paramus, N. J.
70485	Atlantic India Rubber Works, Inc.	Chicago, Ill.	76005	Lord Mfg. Co.	Erie, Pa.	82209	Maguire Industries, Inc.	Greenwich, Conn.
70563	Amperite Co., Inc.	Union City, N. J.	76210	C. W. Marwedel	San Francisco, Calif.	82219	Sylvania Electric Prod. Inc. Electronic Tube Division	Emporium, Pa.
70674	ADC Products Inc.	Minneapolis, Minn.	76433	General Instrument Corp., Micamold Division	Newark, N. J.	82376	Astron Corp.	East Newark, N. J.
70903	Belden Mfg. Co.	Chicago, Ill.	76487	James Millen Mfg. Co., Inc.	Malden, Mass.	82389	Switchcraft, Inc.	Chicago, Ill.
70998	Bird Electronic Corp.	Cleveland, Ohio	76493	J. W. Miller Co.	Los Angeles, Calif.	82647	Metals & Controls Inc. Spencer Products	Attleboro, Mass.
71002	Birnback Radio Co.	New York, N. Y.	76530	Cinch-Monadnock, Div. of United Carr Fastener Corp.	San Leandro, Calif.	82768	Phillips-Advance Control Co.	Joliet, Ill.
71041	Boston Gear Works Div. of Murray Co. of Texas	Quincy, Mass.	76545	Mueller Electric Co.	Cleveland, Ohio	82866	Research Products Corp.	Madison, Wis.
71218	Bud Radio, Inc.	Willoughby, Ohio	76703	National Union	Newark, N. J.	82877	Rotron Mfg. Co., Inc.	Woodstock, N. Y.
71286	Camloc Fastener Corp.	Paramus, N. J.	76854	Oak Manufacturing Co.	Crystal Lake, Ill.	82893	Vector Electronic Co.	Glendale, Calif.
71313	Cardwell Condenser Corp.	Lindenhurst L. I., N. Y.	77068	The Bendix Corp., Electrodynamics Div.	N. Hollywood, Calif.			
71400	Bussmann Mfg. Div. of McGraw-Edison Co.	St. Louis, Mo.	77075	Pacific Metals Co.	San Francisco, Calif.			
			77221	Phanostron Instrument and Electronic Co.	South Pasadena, Calif.			

From: FSC. Handbook Supplements
H4-1 Dated AUGUST 1966
H4-2 Dated NOV. 1962

TABLE 6-3.
CODE LIST OF MANUFACTURERS (Cont'd)

Code No.	Manufacturer	Address	Code No.	Manufacturer	Address	Code No.	Manufacturer	Address
83058	Carr Fastener Co.	Cambridge, Mass.	91418	Radio Materials Co.	Chicago, Ill.	97464	Industrial Retaining Ring Co.	Irvington, N. J.
83085	New Hampshire Ball Bearing, Inc.	Peterborough, N. H.	91506	Augal Inc.	Attleboro, Mass.	97539	Automatic & Precision Mfg.	Englewood, N. J.
83125	General Instrument Corp., Capacitor Div.	Darlington, S. C.	91637	Dale Electronics, Inc.	Columbus, Nebr.	97979	Reon Resistor Corp.	Yonkers, N. Y.
83148	ITT Wire and Cable Div.	Los Angeles, Calif.	91662	Elco Corp.	Willow Grove, Pa.	97983	Litton System Inc., Adler-Westrex Commun. Div.	New Rochelle, N. Y.
83185	Victory Eng. Corp.	Springfield, N. J.	91737	Gremer Mfg. Co., Inc.	Wakefield, Mass.	98141	R-Tronics, Inc.	Jamaica, N. Y.
83298	Bendix Corp., Red Bank Div.	Red Bank, N. J.	91827	K F Development Co.	Redwood City, Calif.	98159	Rubber Teck, Inc.	Gardena, Calif.
83315	Hubbell Corp.	Mundelein, Ill.	91886	Malco Mfg. Co., Inc.	Chicago, Ill.	98220	Hewlett-Packard Co., Moseley Div.	Pasadena, Calif.
83332	Smith, Herman H., Inc.	Brooklyn, N. Y.	91929	Honeywell Inc., Micro Switch Div.	Freeport, Ill.	98278	Microdot, Inc.	So. Pasadena, Calif.
83332	Tech Labs	Palisade's Park, N. J.	91961	Nahm-Bros. Spring Co.	Oakland, Calif.	98291	Sealectro Corp.	Mamaroneck, N. Y.
83385	Central Screw Co.	Chicago, Ill.	92180	Tru-Connector Corp.	Peabody, Mass.	98376	Zero Mfg. Co.	Burbank, Calif.
83501	Gavitt Wire and Cable Co. Div. of Amerace Corp.	Brookfield, Mass.	92367	Elgeet Optical Co. Inc.	Rochester, N. Y.	98731	General Mills Inc., Electronics Div.	Minneapolis, Minn.
83594	Burroughs Corp. Electronic Tube Div.	Plainfield, N. J.	92607	Tensolite Insulated Wire Co., Inc.	Tarrytown, N. Y.	98734	Paeco Div. of Hewlett-Packard Co.	Palo Alto, Calif.
83740	Union Carbide Corp. Consumer Prod. Div.	New York, N. Y.	92702	IMC Magnetics Corp.	Wesbury Long Island, N. Y.	98821	North Hills Electronics, Inc.	Glen Cove, N. Y.
83777	Model Eng. and Mfg., Inc.	Huntington, Ind.	92966	Hudson Lamp Co.	Kearney, N. J.	98978	International Electronic Research Corp.	Burbank, Calif.
83821	Loyd Scruggs Co.	Festus, Mo.	93332	Sylvania Electric Prod. Inc. Semiconductor Div.	Woburn, Mass.	99109	Columbia Technical Corp.	New York, N. Y.
83942	Aeronautical Inst. & Radio Co.	Lodi, N. J.	93369	Robbins & Myers Inc.	Palisades Park, N. J.	99313	Varian Associates	Palo Alto, Calif.
84171	Arco Electronics Inc.	Great Neck, N. Y.	93410	Stevens Mfg. Co., Inc.	Mansfield, Ohio	99378	Atlee Corp.	Winchester, Mass.
84396	A. J. Giesener Co., Inc.	San Francisco, Calif.	93929	G. V. Controls	Livingston, N. J.	99515	Marshall Ind., Capacitor Div.	Monrovia, Calif.
84411	TRW Capacitor Div.	Ogallala, Neb.	94137	General Cable Corp.	Bayonne, N. J.	99707	Control Switch Division, Controls Co. of America	El Segundo, Calif.
84970	Sarkes Tarzian, Inc.	Bloomington, Ind.	94144	Raytheon Co., Comp. Div., Ind. Comp. Operations	Quincy, Mass.	99800	Delevan Electronics Corp.	East Aurora, N. Y.
85454	Boonton Molding Company	Boonton, N. J.	94148	Scientific Electronics Products, Inc.	Loveland, Colo.	99848	Wilco Corporation	Indianapolis, Ind.
85471	A. B. Boyd Co.	San Francisco, Calif.	94154	Wagner Elect. Corp., Tung-Sol Div.	Newark, N. J.	99934	Renbrandt, Inc.	Boston, Mass.
85474	R. M. Bracamonte & Co.	San Francisco, Calif.	94197	Curtiss-Wright Corp. Electronics Div.	East Paterson, N. J.	99942	Hoffman Electronics Corp. Semiconductor Div.	El Monte, Calif.
85560	Korled Kords, Inc.	Hamden, Conn.	94222	South Chester Corp.	Chester, Pa.	99957	Technology Instrument Corp. of Calif.	Newbury Park, Calif.
85911	Seamless Rubber Co.	Chicago, Ill.	94330	Wire Cloth Products, Inc.	Bellwood, Ill.			
86197	Clifton Precision Products Co., Inc.	Clifton Heights, Pa.	94682	Worcester-Pressed Aluminum Corp.	Worcester, Mass.			
86579	Precision Rubber Products Corp.	Dayton, Ohio	94696	Magnecraft Electric Co.	Chicago, Ill.			
86684	Radio Corp. of America, Electronic Comp. & Devices Div.	Harrison, N. J.	95023	George A. Philbrick Researchers, Inc.	Boston, Mass.			
87034	Marco Industries	Anaheim, Calif.	95236	Allies Products Corp.,	Dania, Fla.			
87216	Philco Corporation (Lansdale Division)	Lansdale, Pa.	95238	Continental Connector Corp.	Woodside, N. Y.			
87473	Western Fibrous Glass Products Co.	San Francisco, Calif.	95263	Leecraft Mfg. Co., Inc.	Long Island, N. Y.			
87664	Van Waters & Rogers Inc.	San Francisco, Calif.	95265	National Coil Co.	Sheridan, Wyo.			
87930	Tower Mfg. Corp.	Providence, R. I.	95275	Viltram, Inc.	Bridgeport, Conn.			
88140	Cutler-Hammer, Inc.	Lincoln, Ill.	95348	Gordos Corp.	Bloomfield, N. J.			
88220	Gould-National Batteries, Inc.	St. Paul, Minn.	95354	Methode Mfg. Co.	Rolling Meadows, Ill.	0000F	Malco Tool and Die	Los Angeles, Calif.
88598	General Mills, Inc.	Buffalo, N. Y.	95566	Arnold Engineering Co.	Marengo, Ill.	0000Z	Willow Leather Products Corp.	Newark, N. J.
89231	Graybar Electric Co.	Oakland, Calif.	95712	Dage Electric Co., Inc.	Franklin, Ind.			
89473	G. E. Distributing Corp.	Schenectady, N. Y.	95984	Siemon Mfg. Co.	Wayne, Ill.	000AB	ETA	England
89655	United Transformer Co.	Chicago, Ill.	95987	Weckesser Co.	Chicago, Ill.	000BB	Precision Instrument Components Co.	Van Nuys, Calif.
90179	US Rubber Co., Consumer Ind. & Plastics Prod. Div.	Passaic, N. J.	96067	Huggins Laboratories	Sunnyvale, Calif.	000CS	Hewlett-Packard Co.,	Colorado Springs
90970	Bearing Engineering Co.	San Francisco, Calif.	96095	Hi-Q Div. of Aerovox Corp.	Olean, N. Y.			
91146	ITT Cannon Elect, Inc., Salem Div.	Salem, Mass.	96256	Thordarson-Meissner Inc.	Mt. Carmel, Ill.	000MM	Rubber Eng. & Development	Hayward, Calif.
91260	Connor Spring Mfg. Co.	San Francisco, Calif.	96296	Solar Manufacturing Co.	Los Angeles, Calif.	000NN	A "N" D Mfg. Co.	San Jose, Calif.
91345	Miller Dial & Nameplate Co.	El Monte, Calif.	96330	Carlton Screw Co.	Chicago, Ill.	000QQ	Cooltron	Oakland, Calif.
			96341	Microwave Associates, Inc.	Burlington, Mass.	000WW	California Eastern Lab.	Burlington, Calif.
			96501	Excel Transformer Co.	Oakland, Calif.	000YY	S. K. Smith Co.	Los Angeles, Calif.

THE FOLLOWING VENDORS HAVE NO NUMBER ASSIGNED IN THE LATEST SUPPLEMENT TO THE FEDERAL SUPPLY CODE FOR MANUFACTURERS HANDBOOK.

0000F	Malco Tool and Die	Los Angeles, Calif.
0000Z	Willow Leather Products Corp.	Newark, N. J.
000AB	ETA	England
000BB	Precision Instrument Components Co.	Van Nuys, Calif.
000CS	Hewlett-Packard Co.,	Colorado Springs
		Colorado Springs, Colorado
000MM	Rubber Eng. & Development	Hayward, Calif.
000NN	A "N" D Mfg. Co.	San Jose, Calif.
000QQ	Cooltron	Oakland, Calif.
000WW	California Eastern Lab.	Burlington, Calif.
000YY	S. K. Smith Co.	Los Angeles, Calif.