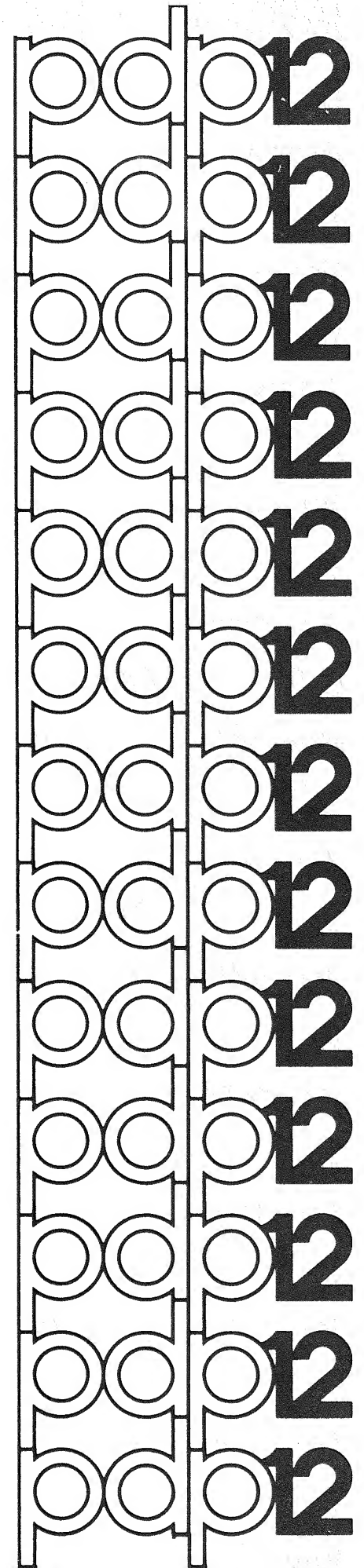


digital

ADTAPE AND ADCON



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FOREWORD

Using the programs ADTAPE and ADCON, data sampled at rates up to 1000 points/second on up to 16 analog channels can be stored by individual channels. ADTAPE is used first to collect the data and store it as sampled in four block units on tape. ADCON then takes all the stored data and places it on tape by individual channel. The two programs function separately and may be used independently.

ADTAPE is described in section 1 through 3 of this manual and ADCON is described in sections 4 and 5.

ADTAPE

1.0 USING ADTAPE

1.1 Introduction

ADTAPE permits up to sixteen AD12 A/D channels to be sampled consecutively. One or two channels can be displayed on the scope at any time during sampling simply by typing the number(s) of the channel(s) on the Teletype^(R). Sampling rates up to 1 KC (1000 points/second) and a maximum time per point of up to 40 seconds/point are acceptable. The signal to begin or end sampling can be by means of a Sense Switch, external level, or clock channel. It is also possible to begin sampling after a predetermined delay from the sync signal and to terminate the sampling after a requested number of points have been collected (up to a maximum of 10,000). A save or non-save mode provides the option of storing the data on LINtape.

ADTAPE functions in two parts; the first part, initialization, displays a series of scope messages requesting user input of the required parameters for the given experiment. The main section of the program, part 2, controls the actual experiment until its conclusion.

1.2 Hardware Requirements

PDP-12A with KW12A clock and 4K of core memory

1.3 Initial Starting Procedure

1. Mount a LAP6-DIAL¹ tape containing ADTAPE on tape unit 0. (Unit 0 is indicated by setting the tape channel indicator to 8 on TU55 transports).
2. Mount another tape on unit 1. ADTAPE uses tape 1 to store data and will replace any previous information on the tape with incoming data if that space is needed. (This tape need not be mounted until parameter initialization is completed.)
3. Set the switches of both tape units to REMOTE and set unit 0 to WRITE ENABLE.

^(R) Teletype is a registered trademark of Teletype Corporation.

¹ LAP6-DIAL is hereafter referred to as DIAL.

4. Set the mode switch to LINC mode and press I/O PRESET.
5. Set the Left Switches to 0701 and the Right Switches to 7300 by pushing down the back portion of the switches indicated by ↓ and pushing down the front portion of those indicated by ↑ in the following diagram.

↓ ↓ ↓ ↑ ↑ ↑ ↓ ↓ ↓ ↓ ↓ ↑	↑ ↑ ↑ ↓ ↑ ↑ ↓ ↓ ↓ ↓ ↓ ↓
Left Switches	Right Switches

6. Press the DO console switch.
7. When the tape has stopped moving, press the START 20 key.
8. Press the LINE FEED key, type LO ADTAPE,0 and press the RETURN key.

1.4 Responding to ADTAPE

When responding to display messages that expect a numerical reply, the number of digits acceptable is indicated by the number of dashes on the display. As each digit is typed in, it replaces the leftmost dash. Any remaining blanks are ignored; supplying no digits assumes a value of 0.

Each display includes a vertical cursor located to the left of the dash that will be replaced next. The cursor moves to the next dash as each is filled in on a line.

Each response line in a display is terminated by pressing the RETURN key. The cursor is moved to the beginning of the next line in the display. If the cursor is currently located at the last line of the display, press LINE FEED to advance to the next message. If a change is required in the value typed in for the current display, pressing RETURN when the cursor is located at the last dash in the display will move the cursor to the first dash of the current message. Press RETURN until the cursor is located at the correct line, then type in the corrected value. Press RETURN until the cursor is at the last line then press LINE FEED to proceed to the next display. Note that skipping lines that already contain values by pressing RETURN saves those values.

At any time while typing in values, Sense Switch 0 may be depressed to return to the first message and to erase all values typed in up to that point. New values can be typed in by the above procedures.

2.0 INITIALIZATION

The first part of ADTAPE is a series of displays requiring answers by the user. This sequence of messages and acceptable responses follows. Refer to section 2.13 for a chart illustrating the sequence of messages. Any errors detected in a user's response cause the message to be redisplayed when LINE FEED is pressed. All the parameters requested in the message must then be retyped.

2.1 Message 1

```
PROGRAM
A-DTAPE
TYPE C TO CONTINUE ' _
```

This message requires only that C and then LINE FEED be typed to advance to the next message.

2.2 Message 2

```
STANDARD EXPERIMENT?
IF NO, TYPE N
IF YES, TYPE Y
REPLY ' _
```

Any previously defined, stored set of parameters may be used for this experiment if their location on tape is known. If a new set of parameters is to be used for this experiment, type N followed by LINE FEED. Continue at message 6 which is displayed next. If a stored set of parameters is to be used, type Y followed by LINE FEED. Continue at message 3.

2.3 Message 3

```
PARAMETER LOCATION
TBLK NO ' _ _ _
UNIT _
```

The location on LINCtape of the previously stored parameters to be used in this experiment are defined in this message. Type the octal tape block location (TBLK), 0-777, and press RETURN. Then type the number of the tape unit holding the tape. Only unit 0 or 1 may be specified. Terminate the response by pressing LINE FEED.

2.4 Message 4

NEW START TBLK?
IF NO, TYPE N
IF YES, TYPE Y
REPLY ' _

When a previously stored parameter set is being used, it may be desirable to store the incoming data at a new tape block so that the previously stored data is not overwritten. Type Y, press LINE FEED and continue at message 5 if a new storage location is to be used. Type N, press LINE FEED and continue at message 12 if the stored data is to be overwritten.

2.5 Message 5

TBLK NO. ' _ _ _

If a new starting tape block was requested in message 4, the desired starting block must be specified. Type the octal block number (\emptyset -776) and press LINE FEED. Continue at message 10.

2.6 Message 6

STARTING CHANNEL ' _
NUMBER OF CHANNELS _ _ _

The first channel and the number of consecutive channels starting with the specified first channel to be sampled are requested by this message. The starting channel must be in the range \emptyset to 37_8 and the total number of channels to be sampled can only be 1, 2, 4, 8 or 16_{10} . If some other number of channels is typed, the next largest acceptable value is assumed. A request for 12 channels, for example, will cause sixteen channels to be sampled. Be sure that the number of channels to be sampled does not exceed the last available channel, i.e., $STARTING\ CHANNEL + NO.\ OF\ CHANNELS \leq 40_8$.

2.7 Message 7

STARTING TBLK ' _ _ _
RATE
U OR \bar{M} OR \bar{S} ?
DELAY _ _ _ X RATE

The tape block at which data storage is to start is requested in the first line of the display. Acceptable values are 0-776₈. The second line asks for the time lapse between samples and must be a multiple of 100 microseconds. Remember, that a maximum rate of 1000 points/second and maximum time of 40 seconds/point can be sampled¹. The units of the rate are designated by the response to line 3 where typing U indicates microseconds, M, milliseconds and S, seconds.

Because of the manner in which the clock operates, if a rate is entered in milliseconds that is greater than 4095 and the unit's rightmost digit is not 0, the tens digit is increased by 1 and the unit's digit is set to 0.

For example:

<u>rate requested</u>	<u>calculated rate</u>	<u>% error</u>
4096 M	4,100 M	.097
9999 M	10,000 M	.010

A delay after the SYNC pulse may be specified in line 4 of message 7. Decimal values between 0 and 999 that are a multiple of the rate are acceptable.

2.8 Message 8

```

          SYNC ON:
1.  SENSE SWITCH N
2.  EXTERNAL LEVEL N
3.  CLOCK CHANNEL N
      CODE '
        N
  
```

CODE is requesting a choice of sync device, specified as 1, 2, or 3 in the display. N refers to the choice of one of the following parameters for the specified device.

<u>Device code</u>	<u>Parameters</u>
1	0-5
2	0-5
3	1-3

Type the code number, press RETURN, type the parameter and press LINE FEED.

¹ADTAPE will try to perform the specified operation, but may produce unacceptable results when more than 1000 pts./sec. are requested. If ADTAPE detects that the sampling rate is too fast, FAST is printed on the Teletype and the experiment is terminated.

2.9 Message 9

```
END SAMPLING ON:
1. SENSE SWITCH N
2. EXTERNAL LEVEL N
3. CLOCK CHANNEL N
4. TOTAL PTS PER CH N
   CODE ' _
   N _ _ _ _
```

The signal to terminate the sampling is defined in the same manner as the sync pulse in message 8. Type the device code number (1 to 4), press RETURN, type the parameter for that device and press LINE FEED. The parameters used in message 8 apply here also; the range for choice 4 is 0-9999. Note that the response to messages 8 and 9 can not be identical; the same device may be used, but a unique parameter is required.

2.10 Message 10

```
SAVE PARAMETERS?
IF NO, TYPE N
IF YES, TYPE Y
REPLY ' _
```

The parameters specified by messages 4 through 9 can be saved for future use by typing Y. If N is typed, all parameters must be respecified for the next experiment.

2.11 Message 11

```
TBLK LOCATION?
TBLK NO ' _ _ _
UNIT _
```

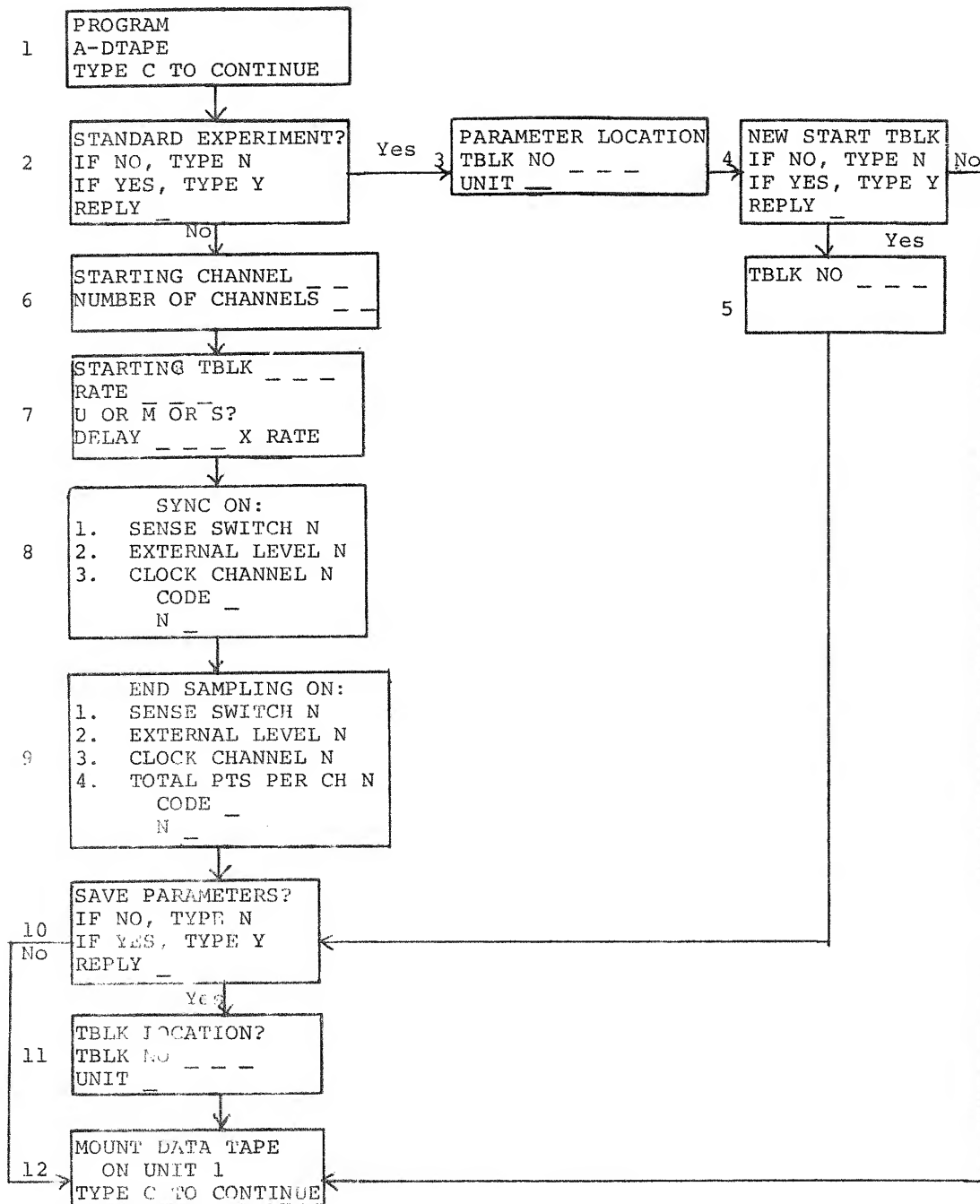
The tape block in which the parameters are to be stored is supplied by this message specified as the tape block, which must be an octal number from 0 to 777, and its unit number, 0 or 1.

2.12 Message 12

```
MOUNT DATA TAPE
ON UNIT 1
TYPE C TO CONTINUE ' _
```

Mount the data tape on unit 1 and then type C to start the experiment.

2.13 MESSAGE SEQUENCE



3.0 DATA COMMANDS

Once the experiment has been started, ADTAPE is in visual mode. The data being received on the active channels can be displayed on the scope at this time. Incoming data can also be stored by requesting store mode. Any of the following actions are implemented by typing the appropriate character. If the end of tape is reached before sampling is finished, the Teletype bell rings and TAPE is printed to alert the user to this condition.

Note that when data is being written onto tape, no check is made because the sampling rate is too fast for a write and check operation.

3.1 Channel Display

Any of the channels requested in message 6 can be displayed when the program is in visual mode. The active channels are called relative to the starting channel, as follows:

<u>to display channel</u>	<u>type</u>
n (starting channel)	1
n+1	2
n+2	3
.	.
.	.
.	.
n+8	9
n+9	A
n+10	B
.	.
.	.
.	.
n+14	F
n+15	G

Thus, if message 6 was answered as

```
STARTING CHANNEL 3
NUMBER OF CHANNELS 7
```

Then

<u>to display channel</u>	<u>type</u>
3	1
4	2
5	3
6	4
7	5
8	6
9	7
10	8

Remember that eight channels will be sampled if 5, 6, or 7 channels are requested.

The data's spectrum is traced across the scope by a single dot. If two channels are requested, two dots are displayed on the scope; they are always seen at the same X axis location. The most recently requested A/D channel is displayed on scope channel 1; the second most recently requested A/D channel is displayed on scope channel 2. The channel indicator knob must be set to the desired scope channel. The indicator knob may also be set to display both scope channels; that is the recommended setting. Before choosing a channel, a moving dot is displayed on the scope, but does not represent incoming data. The dot only represents the current value of the display buffers and is of no interest to the user.

3.2 Store Mode - S

The program starts in visual mode. S must be typed to collect and store data. Data is then displayed and collected in 1K buffers in core. When a buffer is filled, it is written out on tape and another 1K buffer continues to collect the data.

3.3 Visual (non-store) Mode - V

If the initial visual mode has been exited at any time during the experiment, it can be reentered by typing V. This mode allows the data from up to two A/D channels to be displayed on the scope. No data will be stored in core or on tape in visual mode. Storing will be resumed after store mode is entered. (Refer to section 3.2.)

3.4 Pause Mode - P

Typing P temporarily stops sampling and/or writing onto tape.

3.5 Continue - C

After entering pause mode, only typing C will continue the experiment.

3.6 Rerun - R

The experiment can be restarted using the last set of parameters supplied. All data previously collected with these parameters is lost.

3.7 Return - X

Typing X causes the program to return to DIAL.¹

3.8 End of Experiment

When the terminating signal defined in message 9 is received, the remaining locations of the buffer currently accepting data are filled with 4000 and the buffer is then written onto tape. The header block is modified to accommodate the new data (refer to Appendix A). When all tape writing is completed, the bell on the Teletype rings and END is printed. Return to DIAL (X) or rerun (R) the experiment.

If the end of the assigned LINCTape is reached before the terminating signal has been received, TAPE is printed on the Teletype and the data collected up to that point is saved. END is then printed; return to DIAL (X) or rerun the experiment (R).

¹The DIAL tape containing the ADTAPE program must be on unit 0 and unit 0 must be set to WRITE ENABLE and REMOTE before the RETURN command can be used.

ADCON

4.0 USING ADCON

4.1 Introduction

The ADCON program takes the segmented data collected by ADTAPE and stores it in contiguous blocks on a formatted LINCtape by channel number. ADCON can be used for any or all of the sampled A/D channels.

Like ADTAPE, ADCON functions in two parts; the first part is a series of scope messages requesting user information required for part two. The second part transfers the segmented data and stores it in contiguous blocks on the formatted LINCtape.

In this discussion, only those parts of ADCON that differ from ADTAPE are detailed. If not specified, an operation is performed in the same manner as in ADTAPE.

4.2 HARDWARE REQUIREMENTS

PDP-12A with 4K of core

4.3 INITIAL STARTING PROCEDURE

The starting procedure is the same as that for ADTAPE except step 8 where ADCON is substituted for ADTAPE; the command is →LO ADCON,U .

Responses to ADCON are made in the same manner as for ADTAPE.

5.0 INITIALIZATION

5.1 Message 1

ADCON
DATA FROM THE DATA TAPE IS TRANSFERRED
TO A NEW TAPE IN CONTIGUOUS BLOCKS
TYPE C TO CONTINUE ' _

This message requires only that C and then LINE FEED be typed to advance to the next message.

5.2 Message 2

LOCATION OF DATA
TO BE TRANSFERRED?
STARTING TBLK ' _ _ _
UNIT _

The location on the data tape where the standard parameters used in the experiment reside is restated here (see message 2 of ADTAPE.) When LINE FEED is pressed, a delay of a few seconds occurs until message 3 appears.

5.3 Message 3

TRANSFER LOCATION?
STARTING TBLK ' _ _ _
UNIT _

The starting location on a formatted LINCtape for output where the converted data in contiguous blocks is to be transferred is requested in message 3.

Both messages 2 and 3 require typing the 3 digit octal tape block location (TBLK), 0-777, pressing RETURN, typing the number of the tape unit 0-7, and terminating the response by pressing LINE FEED.

Note that the tape containing the segmented data (e.g., from ADTAPE) can be used to collect the contiguous data by ADCON. This method, however, has the following restrictions:

1. Much more time must be allotted for travelling up and down the tape to gather and store the data.
2. The starting tape block in message 3 must be less than the starting tape block in message 2 or it must be greater than the last block which contains the segmented data. If either of these conditions is not met, message 3 is redisplayed, waiting for acceptable values.

3. If insufficient space is provided on tape so that the contiguous data for a channel will overwrite segmented data, the message OVERRUN DATA is printed and the bell rings on the Teletype and ADCON message 1 is displayed. Contiguous data is put on tape up to the block where the segmented data starts, but the segmented data will not be overwritten.

5.4 Message 4

CREATE FILES FOR
CHANNEL NUMBER '
TYPE A FOR ALL CHANNELS SAMPLED
TYPE C WHEN FINISHED SELECTIONS

Of the A/D channels sampled, the data for any or all of them can be converted into contiguous blocks of data. Type in the specific channel numbers to be converted (octal only) one at a time, followed by a LINE FEED each time. If all the sampled channels are desired, it is not necessary to type in each channel number; type the letter A followed by LINE FEED. As each channel number is typed, it appears in the spaces at the end of the channel number display. When LINE FEED is pressed after the value, that number moves from the space at the end of that line to the space between lines 1 and 2 of the display. A list of the channel numbers typed is collected in this space; each value entered moves from the end of line 2 to the list when LINE FEED is pressed. When A is typed, it appears in line 2; when LINE FEED is pressed after it, all the channel numbers sampled appear in the space between lines 1 and 2 on the display.

Non-octal numbers or more than sixteen entries are ignored.

No check is made on duplicate channel number entries. Thus, if a legal channel number is entered more than once, a file for that channel is made as many times as it is requested.

The letter C followed by pressing LINE FEED must be typed to proceed to the next message.

5.5 Message 5

CAUTION!
IF UNIT Ø IS USED TO COLLECT
CONTIGUOUS DATA, REMOVE DIAL TAPE
TYPE T TO BEGIN TRANSFER' _

If the PDP-12 system used has only two tape transports and unit 0 is being used to accept the data, it is advisable to remove the DIAL tape from unit 0, as DIAL could be destroyed, and replace it with an output LINCtape to be used to accept the contiguous data. However, if other tape transports are available, they can accommodate the storage tape; the DIAL tape need not be removed, and message 5 is not displayed. The program will automatically proceed to the heading below in that case.

Typing T followed by LINE FEED initiates part 2 of the program which performs the transfer of data.

The Teletype prints out a heading for the data list as:

```
CHAN    STBLK    NB
```

As each specified channel is converted, the Teletype prints the sampled channel number (CHAN) followed by the block number on the formatted LINCtape where the contiguous data begins (STBLK) and the number of blocks used by the data (NB).

When all requested channels have been converted and the list on the Teletype is completed, a final message appears on the scope.

5.6 Message 6

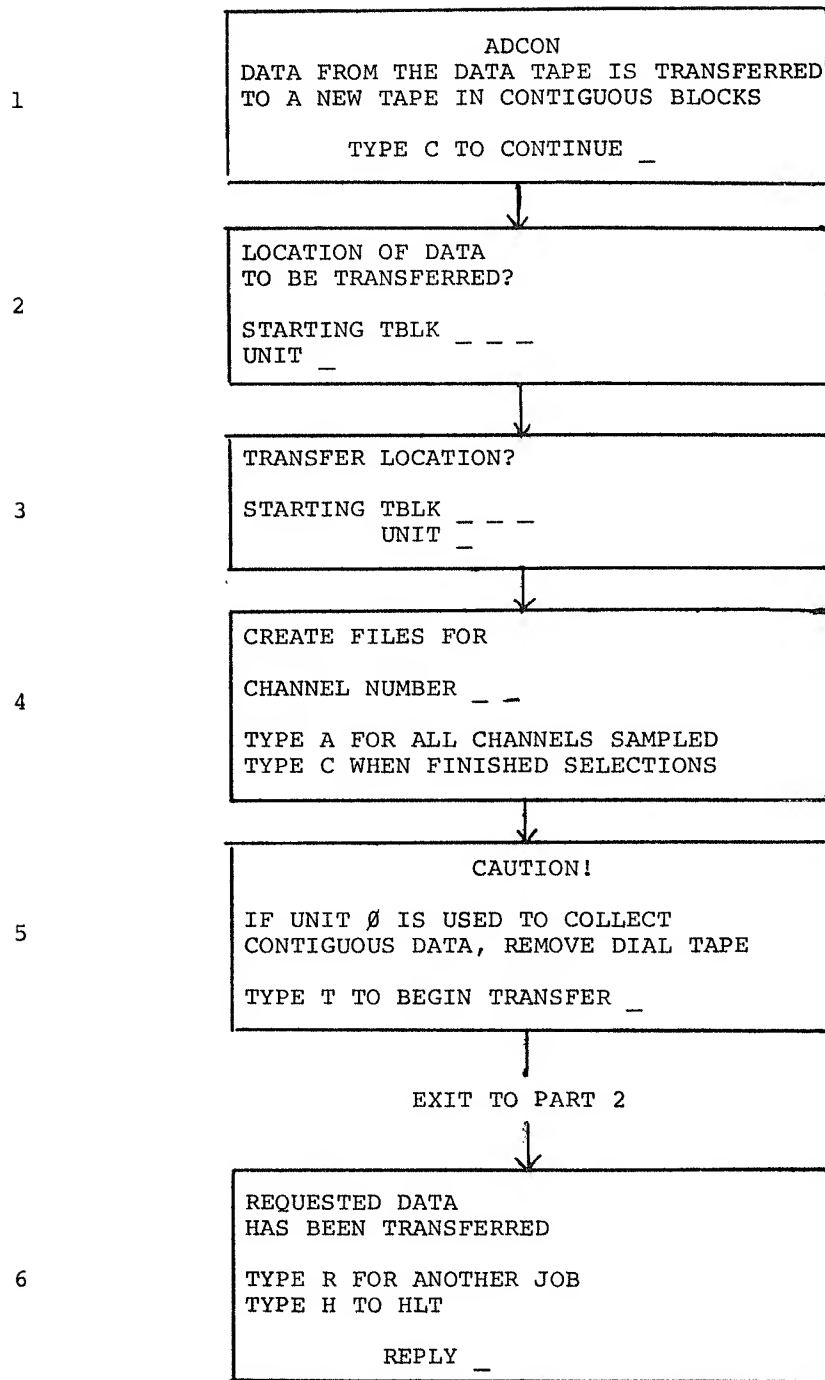
```
REQUESTED DATA  
HAS BEEN TRANSFERRED  
  
TYPE R FOR ANOTHER JOB  
TYPE H TO HLT  
REPLY '
```

Typing R followed by LINE FEED causes the program to return to the message 1. Another experiment with segmented data can now be converted. If no other transfers are needed at this time, typing H followed by LINE FEED causes the processor to HALT.

Note that Sense Switch 0 can not be set to one once message 6 of ADCON is displayed.

If the last block of tape is used up before the transfer is completed, the message E.O.TAPE is printed and the bell rings on the Teletype and message 1 is redisplayed. (None of the ADTAPE command actions can be used with ADCON.)

5.7 MESSAGE SEQUENCE



APPENDIX A
ADTAPE TAPE FORMAT

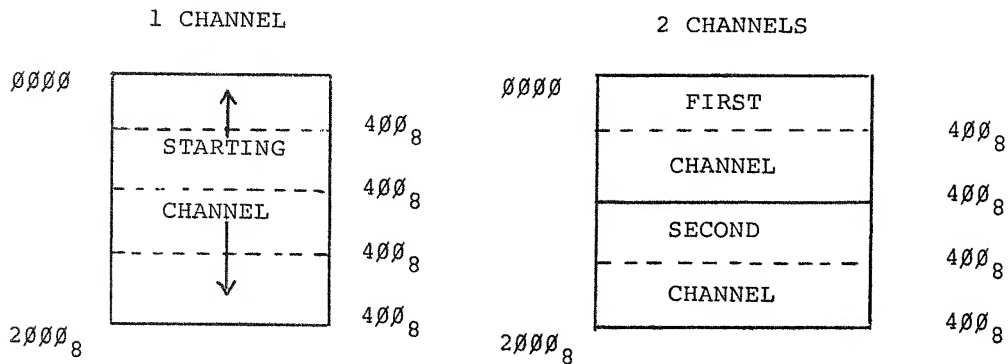
The tape block (TBLK) used to start storing data by ADTAPE is specified in message 4 or 7. The first block is used to store the set of parameters used to control the experiment in the first locations of the block as follows:

<u>Location</u>	<u>Contents</u>
1	Starting A/D channel
2	Number of consecutive A/D channels to be sampled
3	Starting tape block
4	Value used to initialize the clock control register
5	Value used to initialize the clock buffer preset register
6	Delay after sync
7	Sync code
8	Sync parameter
9	Stop code
10	Stop parameter
11	Last tape block used to store the data

The actual experimental data storage starts at block TBLK+1 and continues in succeeding blocks until the experiment is terminated.

The data is stored on tape in four block chunks (2000_8 words). Each 2000_8 word buffer is divided into a number of equal sections such that the number of sections equals the number of channels being sampled.

Remember that the number of channels sampled must be 1, 2, 4, 8, or 16. A buffer will therefore be sectioned in one of the five following configurations, depending on the number of channels sampled.




```

0000          *20
0001          /ADTAPE .20
0002          /3/31/70
0003          /
0004          /PAGE 0
0005          /
0006          PMODE
0007          *0
0010          0000 0000 0
0011          0001 5402 JMP I ,+1
0012          0002 1200 PDP8IN
0013          0003 0000 BETA3, 0
0014          0004 0000 BETA4, 0
0015          0005 0000 BETA5, 0
0016          *10
0017          0010 0000 XR0, 0
0020          0011 0000 XR1, 0
0021          0012 0000 XR2, 0
0022          0013 0000 XR3, 0
0023          *20
0024          0020 5421 JMP I ,+1
0025          0021 0200 XTART
0026          0022 0000 ENXM, 0
0027          0023 1600 OKSAMA, OKSAM
0030          0024 0660 ECA, ECHO
0031          0025 1226 DPY, DISPLY
0032          0026 1221 SAMXTA, TAPEX
0033          0027 7464 M314, -314
0034          *40
0035          0040 0000 0
0036          LMODE
0037          0041 0060 SET I 0
0040          0042 1761 LRTN
0041          0043 0002 PDP
0042          PMODE
0043          0044 5402 JMP I 2
0044          0045 1170 SMXT, SAMXIT
0045          0046 1777 C1777, 1777
0046          0047 7764 M14, -14
0047          *50
0050          0050 0001 STCHAN, 1
0051          0051 0001 NCHAN, 1
0052          0052 0001 STTBLK, 1
0053          0053 3100 CLOCK1, 3100
0054          0054 0020 CLOCK2, 20
0055          0055 0005 SYNDLY, 5
0056          0056 0001 SYNCON, 1
0057          0057 0001 SYNNUM, 1
0060          0060 0001 STOPON, 1
0061          0061 0000 STOPNM, 0
0062          0062 0000 0
0063          0063 0002 2
0064          0064 0047 PLIST, STCHAN=1
0065          0065 0400 C400, 400
0066          0066 7774 X4, -4
0067          0067 0003 C3, 3
0070          0070 1243 TAPEA, TAPE
0071          0071 0000 CCXSAV, 0
0072          0072 0303 C303, 303
0073          0073 0000 BEFORE, 0
0074          0074 0000 ENREG, 0
0075          0075 0000 IXMASK, 0

```

```

0076      *100
0077      0100 0153 STACKT, QSTACK=1
0100      0101 0167 STAC, QSTACK+13
0101      0102 0000 STACKE, 0
0102      0103 0000 DIS1, 0
0103      0104 0000 DIS2, 0
0104      0105 0000 TBLK, 0
0105      0106 0000 QCTR, 0
0106      0107 0000 DELTA, 0
0107      0110 0000 BUFTOP, 0
0110      0111 0000 BUFFUL, 0
0111      0112 0000 TOTPTS, 0
0112      0113 0000 0
0113      0114 0000 0
0114      0115 0000 SAMFLG, 0
0115      0116 0000 STORFG, 0
0116      0117 0000 SAMINS, 0
0117      0120 1000 C1000, 1000
0120      0121 2000 C2000, 2000
0121      0122 0000 DISP1, 0
0122      0123 0000 DISP2, 0
0123      0124 0000 PUTPTR, 0
0124      0125 0000 DISCTR, 0
0125      0126 1613 SAMSTT, SSTRING=1
0126      0127 1605 FSAM, FSTSAM
0127      0130 0000 BINIT, 0
0130      0131 0000 CLKDL, 0
0131      0132 5533 SJMP, JMP I ,+1
0132      0133 1000 SAMEND
0133      0134 4535 SJMS, JMS I ,+1
0134      0135 1040 THING
0135      0136 0000 AC, 0
0136      0137 0000 LI, 0
0137      0140 0000 BUFLIM, 0
0140      0141 0000 RET, 0
0141      0142 0000 CCMASK, 0
0142      0143 0000 INMASK, 0
0143      0144 0000 OUMASK, 0
0144      0145 0000 MONSW, 0
0145      0146 1040 THINGA, THING
0146      0147 1064 QSETA, QSET
0147      0150 1113 TIDLEA, TIDLE
0150      0151 0472 MONA, MONITOR
0151      0152 7000 X1000, -1000
0152      0153 0100 C100, 100
0153      0154 4001 QSTACK, 4001
0154      0155 5001 5001
0155      0156 6001 6001
0156      0157 7001 7001
0157      0160 4002 4002
0160      0161 5002 5002
0161      0162 6002 6002
0162      0163 7002 7002
0163      0164 4003 4003
0164      0165 5003 5003
0165      0166 6003 6003
0166      0167 7003 7003
0167      /
0170      /INITIALIZE MODE FOR ADTAPE
0171      /
0172      PMODE
0173      *200
0174      /

```


0175	0200	7300	XTART,	CLA CLL
0176	0201	6002		IOF
0177	0202	6141		LINC
0200				LMODE
0201	0203	7345		JMP GOGO
0202	0204	0002		PDP
0203				PMODE
0204	0205	7001		IAC
0205	0206	1052		TAD STTBLK
0206	0207	3105		DCA TBLK
0207	0210	1105		TAD TBLK
0210	0211	1152		TAD X1000
0211	0212	7700		SMA CLA
0212	0213	7402		HLT
0213	0214	1365		TAD SAMAN
0214	0215	3141		DCA RET
0215	0216	1100		TAD STACKT
0216	0217	3011		DCA XR1
0217	0220	3003		DCA BETA3
0220	0221	7130		STL RAR
0221	0222	3004		DCA BETA4
0222	0223	3103		DCA DIS1
0223	0224	1101		TAD STAC
0224	0225	7041		CIA
0225	0226	3102		DCA STACKE
0226	0227	1375		TAD ISZDL
0227	0230	3423		DCA I OKSAMA
0230	0231	3104		DCA DIS2
0231	0232	7040		CMA
0232	0233	3073		DCA BEFORE
0233	0234	7040		CMA
0234	0235	1051		TAD NCHAN
0235	0236	7440		SZA
0236	0237	5242		JMP .+3
0237	0240	1121		TAD C2000
0240	0241	5263		JMP EX
0241	0242	1366		TAD X1
0242	0243	7440		SZA
0243	0244	5247		JMP .+3
0244	0245	1120		TAD C1000
0245	0246	5263		JMP EX
0246	0247	1367		TAD X2
0247	0250	7540		SMA SZA
0250	0251	5255		JMP .+4
0251	0252	7200		CLA
0252	0253	1065		TAD C400
0253	0254	5263		JMP EX
0254	0255	1066		TAD X4
0255	0256	7740		SMA SZA CLA
0256	0257	5262		JMP .+3
0257	0260	1371		TAD C200
0260	0261	5263		JMP EX
0261	0262	1153		TAD C100
0262	0263	3140	EX,	DCA BUFLIM
0263	0264	1121		TAD C2000
0264	0265	3110		DCA BUFTOP
0265	0266	1140		TAD BUFLIM
0266	0267	7041		CIA
0267	0270	3111		DCA BUFFUL
0270	0271	3112		DCA TOTPTS
0271	0272	3113		DCA TOTPTS+1
0272	0273	3114		DCA TOTPTS+2
0273	0274	1140		TAD BUFLIM

0274	0275	3107	DCA	DELTA
0275	0276	3115	DCA	SAMFLG
0276	0277	3122	DCA	DISP1
0277	0300	3123	DCA	DISP2
0300	0301	6046	TLS	
0301	0302	4424	JMS I	ECA
0302	0303	1121	TAD	C2000
0303	0304	3130	DCA	BINIT
0304	0305	1050	TAD	STCHAN
0305	0306	0370	AND	C37
0306	0307	1153	TAD	C100
0307	0310	3117	DCA	SAMINS
0310	0311	1117	TAD	SAMINS
0311	0312	3773	DCA I	FSTA
0312	0313	1126	TAD	SAMSTT
0313	0314	3010	DCA	XR0
0314	0315	1051	TAD	NCHAN
0315	0316	7041	CIA	
0316	0317	5116	DCA	STORFG
0317	0320	1364	IN1, TAD	LINCI
0320	0321	5410	DCA I	XR0
0321	0322	2117	ISZ	SAMINS
0322	0323	1117	TAD	SAMINS
0323	0324	3410	DCA I	XR0
0324	0325	1363	TAD	C2
0325	0326	3410	DCA I	XR0
0326	0327	1134	TAD	SJMS
0327	0330	3410	DCA I	XR0
0330	0331	2116	ISZ	STORFG
0331	0332	5320	JMP	IN1
0332	0333	1132	TAD	SJMP
0333	0334	3410	DCA I	XR0
0334	0335	6132	CLLR	
0335	0336	6133	CLAB	
0336	0337	1153	TAD	C100
0337	0340	6132	CLLR	
0340	0341	7200	CLA	
0341	0342	1054	TAD	CLOCK2
0342	0343	7041	CIA	
0343	0344	6133	CLAB	
0344	0345	7200	CLA	
0345	0346	1374	TAD	C300
0346	0347	6134	CLEN	
0347	0350	3074	DCA ENREG	
0350	0351	5071	DCA CCXSAV	
0351	0352	1056	TAD	SYNCON
0352	0353	1357	TAD	INJUMP
0353	0354	3356	DCA	,+2
0354	0355	1057	TAD	SYNNUM
0355	0356	0000	0	
0356	0357	5757	INJUMP, JMP I	,+0
0357	0360	0400	INSSW	
0360	0361	0403	INEXF	
0361	0362	0406	INCCX	
0362	0363	0002	C2, 2	
0363	0364	6141	LINCI, 6141	
0364	0365	1020	SAMAN, SAMEN	
0365	0366	7777	X1, -1	
0366	0367	7776	X2, -2	
0367	0370	0037	C37, 37	
0370	0371	0200	C200, 200	
0371	0372	0004	C4, 4	
0372	0373	1605	FSTA, FSTSAM	

0373	0374	0300	C300,	300	
0374	0375	2131	ISZDL,	ISZ CLKDL	
0375			/		
0376			*400		
0377			/		
0400	0400	4313	INSSW,	JMS SSSET	
0401	0401	3702		DCA I SSA	
0402	0402	5213		JMP IN4	
0403	0403	4321	INEXF,	JMS EXLSET	
0404	0404	3703		DCA I EXA	
0405	0405	5213		JMP IN4	
0406	0406	4326	INCCX,	JMS CCXSET	
0407	0407	1075		TAD IXMASK	
0410	0410	3022		DCA ENXM	
0411	0411	1142		TAD CCMASK	
0412	0412	3143		DCA INMASK	
0413	0413	1060	IN4,	TAD STOPON	
0414	0414	0317		AND C7	
0415	0415	1221		TAD JMPSTI	
0416	0416	3220		DCA ,+2	
0417	0417	1063		TAD STOPNM+2	
0420	0420	0000		0	
0421	0421	5621	JMPSTI,	JMP I ,+0	
0422	0422	0426		OUSSW	
0423	0423	0431		OUEXL	
0424	0424	0434		OUCCX	
0425	0425	0437		IN5	
0426	0426	4313	OUSSW,	JMS SSSET	/SSW
0427	0427	5704		DCA I SS0	
0430	0430	5237		JMP IN5	
0431	0431	4321	OUEXL,	JMS EXLSET	/EXL
0432	0432	3705		DCA I EX0	
0433	0433	5237		JMP IN5	
0434	0434	4326	OUCCX,	JMS CCXSET	/CCX
0435	0435	1142		TAD CCMASK	
0436	0436	3144		DCA OUMASK	
0437	0437	7200	IN5,	CLA	
0440	0440	1306		TAD C140	
0441	0441	6141		LINC	
0442				LMODE	
0443	0442	0004		ESF	
0444	0443	0011		CLR	
0445	0444	2105		ADD TBLK	
0446	0445	4447		STC SBLX	
0447	0446	0717		CHK 10	
0450	0447	0000	SBLX,	0	
0451	0450	0011		CLR	
0452	0451	2507		ADD C110	
0453	0452	0001		AXO	
0454	0453	0002		POP	
0455				PMODE	
0456	0454	7201		CLA IAC	
0457	0455	3145		DCA MONSW	
0460	0456	3106		DCA QCTR	
0461	0457	6001		ION	
0462	0460	7000		NOP	
0463	0461	4710	MON1,	JMS I SYNA	
0464	0462	4711		JMS I CHTTYA	
0465	0463	5261		JMP MON1	
0466	0464	4712	MON2,	JMS I STOA	
0467	0465	4711		JMS I CHTTYA	
0470	0466	4425		JMS I DPY	
0471	0467	5264		JMP MON2	

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0670
0671      0660  0000  ECHO,  0
0672      0661  6041  TSF
0673      0662  5261  JMP  ,-1
0674      0663  6046  TLS
0675      0664  3257  DCA      KHAR
0676      0665  1344  TAD      C212
0677      0666  6041  TSF
0700      0667  5266  JMP      ,-1
0701      0670  6046  TLS
0702      0671  1067  TAD      C3
0703      0672  6041  TSF
0704      0673  5272  JMP      ,-1
0705      0674  6046  TLS
0706      0675  7200  CLA
0707      0676  5660  JMP I    ECHO
0710
0711      /
0712      /PAUS AFTER P UNTIL C IS TYPED
0713      /
0713      0677  6002  PAUS,  IOF
0714      0700  6031  KSF
0715      0701  5300  JMP      ,-1
0716      0702  6036  KRB
0717      0703  1345  TAD      M303
0720      0704  7640  SZA CLA
0721      0705  5277  JMP      PAUS
0722      0706  1072  TAD      C303
0723      0707  4260  JMS      ECHO
0724      0710  6001  ION
0725      0711  5600  JMP I    CHKTTY
0726
0727      /
0728      /SET UP DISPLAY REGISTERS DIS1 AND DIS2
0729      /
0731      0712  1257  DISSET, TAD      KHAR
0732      0713  1346  TAD      M260
0733      0714  3257  DCA      KHAR
0734      0715  1257  TAD      KHAR
0735      0716  1347  TAD      M12
0736      0717  7710  SPA CLA
0737      0720  5324  JMP      DISS1
0740      0721  1257  TAD      KHAR
0741      0722  1350  TAD      M7
0742      0723  3257  DCA      KHAR
0743      0724  1103  DISS1, TAD      DIS1
0744      0725  3104  DCA      DIS2
0745      0726  1257  TAD      KHAR
0746      0727  7041  CIA
0747      0730  3103  DCA      DIS1
0750      0731  5600  JMP I    CHKTTY
0751      0732  7467  M311,  -311
0752      0733  7456  M322,  -322
0753      0734  7460  M320,  -320
0754      0735  7450  M330,  -330
0755      0736  7455  M323,  -323
0756      0737  7452  M326,  -326
0757      0740  7517  M261,  -261
0760      0741  7506  M272,  -272
0761      0742  0301  M301,  301
0762      0743  7470  M310,  -310
0763      0744  0212  C212,  212
0764      0745  7475  M303,  -303
0765      0746  7520  M260,  -260
0766      0747  7766  M12,   -12

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0767	0750	7771	M7,	-7	
0770	0751	1716	DIALA,	DIAL	
0771	0752	1071	CCX,	TAD CCXSAV	
0772	0753	0143		AND INMASK	
0773	0754	7650		SNA CLA	
0774	0755	5365		JMP CCX1	
0775	0756	6134		CLEN	
0776	0757	1074		TAD ENREG	
0777	0760	0022		AND ENXM	
1000	0761	6134		CLEN	
1001	0762	3074		DCA ENREG	
1002	0763	5764		JMP I ,+1	
1003	0764	1744		CLOCKG	
1004	0765	1771	CCX1,	TAD I SYN15	
1005	0766	3370		DCA ,+2	
1006	0767	5770		JMP I ,+1	
1007	0770	0000		0	
1010	0771	1400	SYN15,	SYNGO	
1011			*1000		
1012	1000	1116	SAMEND,	TAD	STORFG
1013	1001	7650		SNA CLA	
1014	1002	5445		JMP I	SMXT
1015	1003	2114		ISZ	TOTPTS+2
1016	1004	5210		JMP	SAM3
1017	1005	2113		ISZ	TOTPTS+1
1020	1006	7000		NOP	
1021	1007	7000		NOP	
1022	1010	2111	SAM3,	ISZ	BUFFUL
1023	1011	5236		JMP	SAM5
1024	1012	4264		JMS	QSET
1025	1013	4313	SAM7,	JMS	TIDLE
1026	1014	7450		SNA	
1027	1015	5220		JMP	SAMEN
1030	1016	3115		DCA	SAMFLG
1031	1017	5470		JMP I	TAPEA
1032	1020	3115	SAMEN,	DCA	SAMFLG
1033	1021	7100	SAM11,	CLL	
1034	1022	1130		TAD	BINIT
1035	1023	1121		TAD	C2000
1036	1024	7420		SNL	
1037	1025	7410		SKP	
1040	1026	1121		TAD	C2000
1041	1027	3130		DCA	BINIT
1042	1030	1130		TAD	BINIT
1043	1031	3110		DCA	BUFTOP
1044	1032	1140		TAD	BUFLIM
1045	1033	7041		CIA	
1046	1034	3111		DCA	BUFFUL
1047	1035	5445		JMP I	SMXT
1050	1036	2110	SAM5,	ISZ	BUFTOP
1051	1037	5445		JMP I	SMXT
1052			/ROUTINE TO BE USED IN SAM LOOP		
1053			/		
1054	1040	0000	THING,	0	
1055	1041	3524		DCA I	PUTPTR
1056	1042	1125		TAD	DISCTR
1057	1043	1103		TAD	DIS1
1060	1044	7640		SZA CLA	
1061	1045	5251		JMP	THING2
1062	1046	1524		TAD I	PUTPTR
1063	1047	3122		DCA	DISP1
1064	1050	5257		JMP	THING1
1065	1051	1125	THING2,	TAD	DISCTR

1066	1052	1104	TAD	DIS2
1067	1053	7640	SZA	CLA
1070	1054	5257	JMP	THING1
1071	1055	1524	TAD	I PUTPTR
1072	1056	3123	DCA	DISP2
1073	1057	2125	THING1,	ISZ DISCTR
1074	1060	1124	TAD	PUTPTR
1075	1061	1107	TAD	DELTA
1076	1062	3124	DCA	PUTPTR
1077	1063	5040	JMP	I THING
1100			/	
1101			/TIME	(LONGEST 49.5 USECS
1102			/	
1103	1064	0000	QSET,	0
1104	1065	1312	TAD	C4X
1105	1066	1106	TAD	QCTR
1106	1067	1275	TAD	MLIM
1107	1070	7500	SMA	
1110	1071	5277	JMP	TYPAX
1111	1072	1276	TAD	LIMX
1112	1073	3106	DCA	QCTR
1113	1074	5664	JMP	I QSET
1114	1075	7763	MLIM,	-15
1115	1076	0015	LIMX,	15
1116	1077	7200	TYPAX,	CLA
1117	1100	1304	TAD	LT
1120	1101	3010	DCA	XR0
1121	1102	5703	JMP	I ,+1
1122	1103	1313	TYPGO	
1123	1104	1104	LT,	.
1124	1105	0306		306
1125	1106	0301		301
1126	1107	0323		323
1127	1110	0324		324
1130	1111	0000		0
1131			/	
1132	1112	0004	C4X,	4
1133			/CHECKS	STATUS OF TAPE-EXIT WITH AC NOT= 0 IF IDLE
1134			/	
1135	1113	0000	TIDLE,	0
1136	1114	7001	IAC	
1137	1115	6141	LINC	
1140	1116	0416		416
1141	1117	0011		11
1142	1120	0002		2
1143	1121	5713	JMP	I TIDLE
1144			/CHECK	TOTAL PIS TO STOP
1145	1122	7200	TOTP,	CLA
1146	1123	1062	TAD	STOPNM+1
1147	1124	7161	CLL	CML CIA
1150	1125	1113	TAD	TOTPTS+1
1151	1126	7530	SZL	SPA
1152	1127	5337	JMP	TOTP1
1153	1130	7440	SZA	
1154	1131	5745	JMP	I ALDA
1155	1132	1063	TAD	STOPNM+2
1156	1133	7141	CIA	CLL
1157	1134	1114	TAD	TOTPTS+2
1160	1135	7630	SZL	CLA
1161	1136	5745	JMP	I ALDA
1162	1137	7200	TOTP1,	CLA
1163	1140	1744	TAD	I STOPPP
1164	1141	3343	DCA	,+2

1165	1142	5743	JMP I ,+1	
1166	1143	0000	0	
1167	1144	1431	STOPPP, STOPP	
1170	1145	1465	ALDA, ALDONE	
1171			/	
1172	1146	1357	ENSEN, TAD EN1	
1173	1147	3013	DCA XR3	
1174	1150	1413	TAD I XR3	
1175	1151	6041	TSF	
1176	1152	5351	JMP , -1	
1177	1153	6046	TLS	
1200	1154	7640	SZA CLA	
1201	1155	5350	JMP , -5	
1202	1156	5551	JMP I MONA	
1203	1157	1157	EN1, .	
1204	1160	0207	207	
1205	1161	0207	207	
1206	1162	0215	215	
1207	1163	0212	212	
1210	1164	0305	305	
1211	1165	0316	316	
1212	1166	0304	304	
1213	1167	0000	0	
1214	1170	6141	SAMXIT, LINC	
1215			LMODE	
1216	1171	0223	XSK I BETA3	
1217	1172	0016	NOP	
1220	1173	0224	XSK I BETA4	
1221	1174	0016	NOP	
1222	1175	0002	PDP	
1223			PMODE	
1224	1176	5426	JMP I SAMXTA	
1225			/INTERRUPT HANDLER	
1226			*1200	
1227	1200	3136	PDP8IN, DCA AC	
1230	1201	7010	RAR	
1231	1202	3137	DCA LI	
1232	1203	1153	TAD C100	
1233	1204	6151	6151	
1234	1205	5210	JMP CLOCK	
1235	1206	7200	CLA	
1236	1207	5243	JMP TAPE	
1237	1210	7200	CLOCK, CLA	
1240	1211	6131	6131	
1241	1212	7402	HLT	
1242	1213	6135	CLSA	
1243	1214	7500	SMA	
1244	1215	5220	JMP DISAB	
1245	1216	7200	CLA	
1246	1217	5423	JMP I OKSAMA	
1247	1220	3071	DISAB, DCA CCXSAV	
1250	1221	1137	TAPEX, TAD LI	
1251	1222	7104	CLL RAL	
1252	1223	1136	TAD AC	
1253	1224	6001	GOCAT, ION	
1254	1225	5400	JMP I 0	
1255	1226	0000	DISPLY, 0	/BYE BYE
1256	1227	6141	LINC	
1257			LMODE	
1260	1230	2122	ADD DISP1	
1261	1231	0341	SCR 1	
1262	1232	0143	DIS BETA3	
1263	1233	0011	CLR	

1264	1234	2123	ADD DISP2
1265	1235	0341	SCR 1
1266	1236	0144	DIS BETA4
1267	1237	0011	CLR
1270	1240	0002	PDP
1271			PMODE
1272	1241	5626	JMP I DISPLY
1273	1242	7777	M1X, =1
1274			/TAPE INTERRUPT HANDLER
1275			/
1276	1243	1340	TAPE, TAD C200X
1277	1244	6151	6151
1300			
1301	1245	7200	CLA
1302	1246	1106	TAD QCTR
1303	1247	7450	SNA
1304	1250	5221	JMP TAPEX
1305	1251	1242	TAD M1X
1306	1252	3106	DCA QCTR
1307	1253	1411	TAD I XR1
1310	1254	3337	DCA TEMP
1311	1255	1337	TAD TEMP
1312	1256	0341	AND C7000
1313	1257	1105	TAD TBLK
1314	1260	3270	DCA WRITE
1315	1261	1337	TAD TEMP
1316	1262	0342	AND C7X
1317	1263	1343	TAD C640X
1320	1264	3266	DCA ,+2
1321	1265	6141	LINC
1322	1266	0000	0
1323	1267	0716	716
1324	1270	0000	WRITE, 0
1325	1271	0002	2
1326	1272	2105	ISZ TBLK
1327	1273	1105	TAD TBLK
1330	1274	1152	TAD X1000
1331	1275	7700	SMA CLA
1332	1276	5311	JMP TAPE1
1333	1277	1011	TAD XR1
1334	1300	1102	TAD STACKE
1335	1301	7640	SZA CLA
1336	1302	5305	JMP TAPE3
1337	1303	1100	TAD STACKT
1340	1304	3011	DCA XR1
1341	1305	1115	TAPE3, TAD SAMFLG
1342	1306	7650	SNA CLA
1343	1307	5221	JMP TAPEX
1344	1310	5541	JMP I RET
1345	1311	1322	TAPE1, TAD LISTP
1346	1312	3010	DCA R0
1347	1313	6041	TYPGO, TSF
1350	1314	5313	JMP , -1
1351	1315	1410	TAD I R0
1352	1316	6046	TLS
1353	1317	7640	SZA CLA
1354	1320	5313	JMP APE1+2
1355	1321	5744	JMP I AAKE
1356	1322	1322	LISTP, ,
1357	1323	0215	215
1360	1324	0212	212
1361	1325	0324	324
1362	1326	0301	301

1363	1327	0320	320
1364	1330	0305	305
1365	1331	0215	215
1366	1332	0212	212
1367	1333	0212	212
1370	1334	0207	207
1371	1335	0207	207
1372	1336	0000	0
1373	1337	0000	TEMP, 0
1374	1340	0200	C200X, 200
1375	1341	7000	C7000, 7000
1376	1342	0007	C7X, 7
1377	1343	0640	C640X, 640
1400	1344	1532	ALFAKE, AL14
1401			/
1402			LMODE
1403	1345	0011	GOGO, CLR
1404	1346	3354	ADD C2X0
1405	1347	0004	ESF
1406	1350	0011	CLR
1407	1351	0001	AXO
1410	1352	0004	ESF
1411	1353	6000	JMP 0
1412	1354	0200	C2X0, 200
1413			PMODE
1414			/
1415			*1400
1416			/
1417	1400	0000	SYNGO, 0
1420	1401	7200	CLA
1421	1402	1206	TAD
1422	1403	1056	TAD
1423	1404	3205	DCA
1424	1405	0000	0
1425	1406	5606	JMP I
1426	1407	1412	SSW
1427	1410	1423	EXL
1430	1411	0752	CCX
1431	1412	7001	SSW, IAC
1432	1413	6141	LINC
1433	1414	0000	SSWSYN, 0
1434	1415	0011	11
1435	1416	0002	2
1436	1417	7650	SYNC1, SNA CLA
1437	1420	5600	JMP I
1440	1421	5622	JMP I
1441	1422	1744	CLAD, CLOCKG
1442	1423	7001	EXL, IAC
1443	1424	6141	LINC
1444	1425	0000	EXLSYN, 0
1445	1426	0011	11
1446	1427	0002	2
1447	1430	5217	JMP
1450			SYNC1
1451			/
1452	1431	0000	/CHECK FOR STOP SIGNAL
1453	1432	7200	STOPP, 0
1454	1433	1237	CLA
1455	1434	1060	TAD
1456	1435	3236	TAD
1457	1436	0000	DCA
1460	1437	5637	JMP I
1461	1440	1444	SSSW

JMP SYN
SYNCON

.+1
.+0

SYNGO
CLAD

/PDP

JMP STO
STOPON

.+0

1462	1441	1454	SEXL	
1463	1442	1462	SCCX	
1464	1443	1122	TOTP	
1465	1444	7001	SSSW, IAC	
1466	1445	6141	LINC	
1467	1446	0000	SSWSTO, 0	
1470	1447	0011	11	
1471	1450	0002	2	
1472	1451	7650	STOP1, SNA CLA	
1473	1452	5631	JMP I STOPP	
1474	1453	5265	JMP ALDONE	
1475	1454	7001	SEXL, IAC	
1476	1455	6141	LINC	
1477	1456	0000	EXLSTO, 0	
1500	1457	0011	11	
1501	1460	0002	2	
1502	1461	5251	JMP STOP1	
1503	1462	1071	SCCX, TAD CCXSAV	/CLSA
1504	1463	0144	AND OUMASK	
1505	1464	5251	JMP STOP1	
1506	1465	7200	ALDONE, CLA	
1507	1466	6132	CLLR	
1510	1467	1140	TAD BUFLIM	
1511	1470	1111	TAD BUFFUL	
1512	1471	7650	SNA CLA	
1513	1472	5324	JMP AL3	
1514	1473	1110	AL1, TAD BUFTOP	
1515	1474	3124	DCA PUTPTR	
1516	1475	1051	TAD NCHAN	
1517	1476	7041	CIA	
1520	1477	3140	DCA BUFLIM	
1521	1500	7130	AL2, STL RAR	
1522	1501	4546	JMS I THINGA	
1523	1502	2140	ISZ BUFLIM	
1524	1503	5300	JMP AL2	
1525	1504	2111	ISZ BUFFUL	
1526	1505	7410	SKP	
1527	1506	5311	JMP ,+3	
1530	1507	2110	ISZ BUFTOP	
1531	1510	5273	JMP AL1	
1532	1511	6002	IOF	
1533	1512	4547	JMS I QSETA	
1534	1513	4550	JMS I TIDLEA	
1535	1514	7450	SNA	
1536	1515	5322	JMP AL5	
1537	1516	3115	DCA SAMFLG	
1540	1517	1370	TAD AL5A	
1541	1520	3141	DCA RET	
1542	1521	5470	JMP I TAPEA	
1543	1522	6001	AL5, ION	
1544	1523	3115	DCA SAMFLG	
1545	1524	1106	AL3, TAD QCTR	
1546	1525	7640	SZA CLA	
1547	1526	5324	JMP AL3	
1550	1527	4550	AL6, JMS I TIDLEA	
1551	1530	7650	SNA CLA	
1552	1531	5327	JMP AL6	
1553	1532	6002	AL14, IOF	
1554	1533	7200	CLA	
1555	1534	6141	LINC	
1556	1535	0001	1	
1557	1536	0002	2	
1560	1537	1064	TAD PLIST	

1561	1540	3010	DCA	XR0
1562	1541	1047	TAD	M14
1563	1542	3107	DCA	DELTA
1564	1543	1046	TAD	C1777
1565	1544	3011	DCA	XR1
1566	1545	1410	TAD I	XR0
1567	1546	3411	DCA I	XR1
1570	1547	2107	ISZ	DELTA
1571	1550	5345	JMP	AL10
1572	1551	7040	CMA	
1573	1552	1105	TAD	TBLK
1574	1553	3411	DCA I	XR1
1575	1554	7130	STL	RAR
1576	1555	1052	TAD	STTBLK
1577	1556	3362	DCA	AL15
1600	1557	6141	LINC	
1601	1560	0641	641	
1602	1561	0716	716	
1603	1562	0000	AL15,	0
1604	1563	0002		2
1605	1564	1067	TAD	C3
1606	1565	3145	DCA	MONSW
1607	1566	5767	JMP I	,+1
1610	1567	1146	ENSEN	
1611	1570	1522	AL5A,	AL5
1612	1571	0104	ADPTR,	0104
1613	1572	2401		2401
1614	1573	2005		2005
1615	1574	7777		7777
1616	1575	0000		0
1617			*1600	
1620	1600	2131	OXSAM,	ISZ CLKOL
1621	1601	5426	JMP I	SAMXTA
1622	1602	1515	TAD	JMPBY
1623	1603	3200	DCA	OXSAM
1624	1604	6141	LINC	
1625	1605	0000	FSTSAM,	0
1626	1606	0002		2
1627	1607	7200	CLA	
1630	1610	1110	TAD	BUFTOP
1631	1611	3124	DCA	PUTPTR
1632	1612	7001	IAC	
1633	1613	3125	DCA	DISCTR
1634	1614	0000	SSTRING,0	
1635			/	
1636			*.+100	
1637	1715	5204	JMPBY,	JMP FSTSAM-1
1640			/	
1641			/CALL DIAL "X" FROM TTY	
1642			/	
1643	1716	6002	DIAL,	IOF
1644	1717	6141		LINC
1645				LMODE
1646	1720	7740	JMP	FIXUP
1647	1721	0642	LDF	2
1650	1722	0063	SET I	BETA3
1651	1723	2014	2014	
1652	1724	0064	SET I	BETA4
1653	1725	1733	DITAB-1	
1654	1726	1024	LDA I	BETA4
1655	1727	1063	STA I	BETA3
1656	1730	0450	AZE	
1657	1731	7726	JMP	,=3

1660	1732	0602	LIF	2
1661	1733	6015	JMP	15
1662	1734	0643	DITAB, LDF	3
1663	1735	0721	RCG I	
1664	1736	7300	7\300	
1665	1737	0000	0	
1666	1740	0011	FIXUP, CLR	
1667	1741	0001	AXO	
1670	1742	0004	ESF	
1671	1743	6000	JMP 0	
1672			Pmode	
1673			/START CLOCK	
1674	1744	1055	CLOCKG, TAD SYNDLY	
1675	1745	7041	CIA	
1676	1746	7440	SZA	
1677	1747	5353	JMP ,+4	
1700	1750	1315	TAD JMPBY	
1701	1751	3200	DCA OKSAM	
1702	1752	7410	SKP	
1703	1753	3131	DCA CLKDL	
1704	1754	1053	TAD CLOCK1	
1705	1755	6132	CLLR	
1706	1756	7200	CLA	
1707	1757	2145	ISZ MONSW	
1710	1760	5551	JMP I MONA	
1711	1761	6002	LRTN, IOF	
1712	1762	6141	LINC	
1713			Lmode	
1714	1763	5774	STC ZZ	
1715	1764	2040	ADD 40	
1716	1765	1620	BSE I	
1717	1766	6000	6000	
1720	1767	5773	STC QIT	
1721	1770	3774	ADD ZZ	
1722	1771	0500	IOB	
1723	1772	6001	6001	
1724	1773	0000	QIT, 0	
1725	1774	0000	ZZ, 0	
1726			SEGMNT 2	
1727			*20	
1730	0020	1020	LDA I	
1731	0021	0020	20	
1732	0022	0004	ESF	
1733	0023	1020	LDA I	
1734	0024	0702	QAINIT-1	
1735	0025	1040	STA	
1736	0026	0011	11	
1737	0027	1120	ADA I	
1740	0030	2000	2000	
1741	0031	4012	STC 12	
1742	0032	0641	LDF 1	
1743	0033	1020	LDA I	
1744	0034	0702	QAINIT=1	
1745	0035	1120	ADA I	
1746	0036	6206	-AAAEND	
1747	0037	4013	STC 13	
1750	0040	1031	LDA I 11	
1751	0041	1072	STA I 12	
1752	0042	0233	XSK I 13	
1753	0043	6040	JMP , -3	
1754	0044	6057	START, JMP M1	
1755	0045	6064	JMP MA	
1756	0046	6071	JMP M2	

1757	0047	6105		JMP M3
1760	0050	6121		JMP M4
1761	0051	6135		JMP M5
1762	0052	6151	JMPME,	JMP ME
1763	0053	6203	JMPM6,	JMP M6
1764	0054	0002		PDP
1765				Pmode
1766	4055	5656		JMP I LOCX
1767	4056	0200	LOCX,	200
1770				Lmode
1771	0057	0057	M1,	SET 17
1772	0060	0000		0
1773	0061	0601		LIF 1
1774	0062	6020		JMP M1A
1775	0063	6017		JMP 17
1776	0064	0057	MA,	SET 17
1777	0065	0000		0
2000	0066	0601		LIF 1
2001	0067	6041		JMP MAA
2002	0070	6017		JMP 17
2003	0071	0057	M2,	SET 17
2004	0072	0000		0
2005	0073	6703	M2A,	JMP QAINIT
2006	0074	0232		MESS2
2007	0075	0671		ANSWER
2010	0076	6227		JMP CHKSNS
2011	0077	0070		SET I 10
2012	0100	0671		ANSWER
2013	0101	0603		LIF 3
2014	0102	6020		JMP M2B
2015	0103	6017		JMP 17
2016	0104	6073		JMP M2A
2017	0105	0057	M3,	SET 17
2020	0106	0000		0
2021	0107	6703	M3A,	JMP QAINIT
2022	0110	0262		MESS3
2023	0111	0671		ANSWER
2024	0112	6227		JMP CHKSNS
2025	0113	0070		SET I 10
2026	0114	0671		ANSWER
2027	0115	0603		LIF 3
2030	0116	6141		JMP M3B
2031	0117	6017		JMP 17
2032	0120	6107		JMP M3A
2033	0121	0057	M4,	SET 17
2034	0122	0000		0
2035	0123	6703	M4A,	JMP QAINIT
2036	0124	0331		MESS4
2037	0125	0671		ANSWER
2040	0126	6227		JMP CHKSNS
2041	0127	0070		SET I 10
2042	0130	0671		ANSWER
2043	0131	0603		LIF 3
2044	0132	6231		JMP M4B
2045	0133	6017		JMP 17
2046	0134	6123		JMP M4A
2047	0135	0057	M5,	SET 17
2050	0136	0000		0
2051	0137	6703	M5A,	JMP QAINIT
2052	0140	0421		MESS5
2053	0141	0671		ANSWER
2054	0142	6227		JMP CHKSNS
2055	0143	0070		SET I 10

2056	0144	0671	ANSWER
2057	0145	0603	LIF 3
2060	0146	6320	JMP M5B
2061	0147	6017	JMP 17
2062	0150	6137	JMP M5A
2063	0151	0057	ME, SET 17
2064	0152	0000	0
2065	0153	6703	MEA, JMP QAINIT
2066	0154	0566	MESSE
2067	0155	0671	ANSWER
2070	0156	6227	JMP CHKSNS
2071	0157	0070	SET I 10
2072	0160	0671	ANSWER
2073	0161	1330	LDH I 10
2074	0162	1420	SHD I
2075	0163	1600	1600
2076	0164	6017	JMP 17
2077	0165	1420	SHD I
2100	0166	3100	3100
2101	0167	6171	JMP MFA
2102	0170	6153	JMP MEA
2103	0171	6703	MFA, JMP QAINIT
2104	0172	0636	MESSF
2105	0173	0671	ANSWER
2106	0174	6227	JMP CHKSNS
2107	0175	0070	SET I 10
2110	0176	0671	ANSWER
2111	0177	0603	LIF 3
2112	0200	6531	JMP MFB
2113	0201	6017	JMP 17
2114	0202	6171	JMP MFA
2115	0203	0057	M6, SET 17
2116	0204	0000	0
2117	0205	6703	M6A, JMP QAINIT
2120	0206	0527	MESS6
2121	0207	0671	ANSWER
2122	0210	6227	JMP CHKSNS
2123	0211	0070	SET I 10
2124	0212	0671	ANSWER
2125	0213	1330	LDH I 10
2126	0214	1420	SHD I
2127	0215	0300	0300
2130	0216	6017	JMP 17
2131	0217	6205	JMP M6A
2132	0220	0045	ANSBUF, SET 5
2133	0221	0000	0
2134	0222	1330	LDH I 10
2135	0223	0603	LIF 3
2136	0224	0040	SET 0
2137	0225	0005	5
2140	0226	6000	JMP 0
2141	0227	0440	CHKSNS, SNS 0
2142	0230	6756	JMP QARFSH
2143	0231	6044	JMP START
2144	0232	0623	
2144	0233	2401	
2144	0234	2224	
2144	0235	1116	
2144	0236	0740	
2144	0237	0310	
2144	0240	0116	
2144	0241	1605	
2144	0242	1440	

2144	0243	4074	
2144			MESS2, TEXT ZFSTARTING CHANNEL <2
2145	0244	6243	
2145			
2146	0245	4743	
2146	0246	0616	
2146	0247	2515	
2146	0250	0205	
2146	0251	2240	
2146	0252	1706	
2146	0253	4003	
2146	0254	1001	
2146	0255	1616	
2146	0256	0514	
2146	0257	2340	
2146	0260	7462	
2146	0261	3400	
2146			FNUMBER OF CHANNELS <2\Z
2147	0262	0623	
2147	0263	2401	
2147	0264	2224	
2147	0265	1116	
2147	0266	0740	
2147	0267	2402	
2147	0270	1413	
2147	0271	4074	
2147			MESS3, TEXT ZFSTARTING TBLK <3
2150	0272	6343	
2150			
2151	0273	4743	
2151	0274	0640	
2151	0275	4040	
2151	0276	4040	
2151	0277	4040	
2151	0300	4040	
2151	0301	2201	
2151	0302	2405	
2151	0303	4074	
2151			F RATE <4
2152	0304	6443	
2152			
2153	0305	4743	
2153	0306	0640	
2153	0307	2540	
2153	0310	1722	
2153	0311	4015	
2153	0312	4017	
2153	0313	2240	
2153	0314	2377	
2153	0315	4074	
2153			F U OR M OR S? <1
2154	0316	6143	
2154			
2155	0317	4743	
2155	0320	0604	
2155	0321	0514	
2155	0322	0131	
2155	0323	7540	
2155	0324	7463	
2155	0325	4030	
2155	0326	4022	
2155	0327	0124	
2155	0330	0534	

2155			FDELAY= <3 X RATE\Z	
2156	0331	0640		
2156	0332	4040		
2156	0333	4040		
2156	0334	4023		
2156	0335	3116		
2156	0336	0340		
2156	0337	1716		
2156			MESS4, TEXT ZF	SYNC ON:
2157	0340	7243		
2157				
2160	0341	4743		
2160	0342	0661		
2160	0343	5640		
2160	0344	2305		
2160	0345	1623		
2160	0346	0540		
2160	0347	2327		
2160	0350	1124		
2160	0351	0310		
2160			F1, SENSE SWITCH N	
2161	0352	4016		
2161	0353	4306		
2161	0354	6256		
2161	0355	4005		
2161	0356	3024		
2161	0357	0522		
2161	0360	1601		
2161	0361	1440		
2161	0362	1405		
2161	0363	2605		
2161	0364	1440		
2161			F2, EXTERNAL LEVEL N	
2162	0365	1643		
2162	0366	0663		
2162	0367	5640		
2162	0370	0314		
2162	0371	1703		
2162	0372	1340		
2162	0373	0310		
2162	0374	0116		
2162	0375	1605		
2162	0376	1440		
2162			F3, CLOCK CHANNEL N	
2163	0377	1643		
2163				
2164	0400	4743		
2164	0401	0640		
2164	0402	4040		
2164	0403	4040		
2164	0404	4040		
2164	0405	4003		
2164	0406	1704		
2164	0407	0540		
2164			F	CODE <1
2165	0410	7461		
2165	0411	4306		
2165	0412	4040		
2165	0413	4040		
2165	0414	4040		
2165	0415	4040		
2165	0416	1640		
2165	0417	7461		

2165	0420	3400	
2165			F N <1\Z
2166			
2167	0421	0640	
2167	0422	4040	
2167	0423	0516	
2167	0424	0440	
2167	0425	2301	
2167	0426	1520	
2167	0427	1411	
2167	0430	1607	
2167	0431	4017	
2167			MESS5, TEXT ZF END SAMPLING ON:
2170	0432	1672	
2170			
2171	0433	4347	
2171	0434	4306	
2171	0435	6156	
2171	0436	4023	
2171	0437	0516	
2171	0440	2305	
2171	0441	4023	
2171	0442	2711	
2171	0443	2403	
2171	0444	1040	
2171			F1, SENSE SWITCH N
2172	0445	1643	
2172	0446	0662	
2172	0447	5640	
2172	0450	0530	
2172	0451	2405	
2172	0452	2216	
2172	0453	0114	
2172	0454	4014	
2172	0455	0526	
2172	0456	0514	
2172			F2, EXTERNAL LEVEL N
2173	0457	4016	
2173	0460	4306	
2173	0461	6356	
2173	0462	4003	
2173	0463	1417	
2173	0464	0313	
2173	0465	4003	
2173	0466	1001	
2173	0467	1616	
2173	0470	0514	
2173			F3, CLOCK CHANNEL N
2174	0471	4016	
2174	0472	4306	
2174	0473	6456	
2174	0474	4024	
2174	0475	1724	
2174	0476	0114	
2174	0477	4020	
2174	0500	2423	
2174	0501	4020	
2174	0502	0522	
2174	0503	4003	
2174	0504	1056	
2174			F4, TOTAL PTS PER CH, N
2175	0505	4016	
2175			

2176	0506	4347		
2176	0507	4306		
2176	0510	4040		
2176	0511	4040		
2176	0512	4040		
2176	0513	4040		
2176	0514	0317		
2176	0515	0405		
2176	0516	4074		
2176			F	CODE <1
2177	0517	6143		
2177	0520	0640		
2177	0521	4040		
2177	0522	4040		
2177	0523	4040		
2177	0524	4016		
2177	0525	4074		
2177	0526	6434		
2177			F	N <4\Z
2200				
2201	0527	0640		
2201	0530	4015		
2201	0531	1725		
2201	0532	1624		
2201	0533	4004		
2201	0534	0124		
2201	0535	0140		
2201	0536	2401		
2201				MESS6, TEXT ZF MOUNT DATA TAPE
2202	0537	2005		
2202				
2203	0540	4347		
2203	0541	4306		
2203	0542	4040		
2203	0543	4040		
2203	0544	4017		
2203	0545	1640		
2203	0546	2516		
2203	0547	1124		
2203			F	ON UNIT 1
2204	0550	4061		
2204				
2205	0551	4347		
2205	0552	4306		
2205	0553	2431		
2205	0554	2005		
2205	0555	4003		
2205	0556	4024		
2205	0557	1740		
2205	0560	0317		
2205	0561	1624		
2205	0562	1116		
2205	0563	2505		
2205	0564	7461		
2205	0565	3400		
2205				FTYPE C TO CONTINUE<1\Z
2206	0566	0640		
2206	0567	4023		
2206	0570	0126		
2206	0571	0540		
2206	0572	2001		
2206	0573	2201		
2206	0574	1505		

2206	0575	2405	
2206	0576	2223	
2206			MESSE, TEXT ZF SAVE PARAMETERS?
2207	0577	7743	
2207			
2210	0600	4743	
2210			
2211	0601	4743	
2211	0602	0640	
2211	0603	4040	
2211	0604	1106	
2211	0605	4016	
2211	0606	1754	
2211	0607	2431	
2211	0610	2005	
2211	0611	4040	
2211			F IF NO,TYPE N
2212	0612	1643	
2212	0613	0640	
2212	0614	4040	
2212	0615	1106	
2212	0616	4031	
2212	0617	0523	
2212	0620	5424	
2212	0621	3120	
2212	0622	0540	
2212			F IF YES,TYPE Y
2213	0623	4031	
2213			
2214	0624	4347	
2214	0625	4306	
2214	0626	4040	
2214	0627	4040	
2214	0630	4040	
2214	0631	2205	
2214	0632	2014	
2214	0633	3140	
2214	0634	7461	
2214	0635	3400	
2214			F REPLY <1\Z
2215	0636	0640	
2215	0637	4040	
2215	0640	2402	
2215	0641	1413	
2215	0642	4014	
2215	0643	1703	
2215	0644	0124	
2215	0645	1117	
2215			MESSF, TEXT ZF TBLK LOCATION?
2216	0646	1677	
2216			
2217	0647	4347	
2217			
2220	0650	4347	
2220	0651	4306	
2220	0652	4040	
2220	0653	4040	
2220	0654	2402	
2220	0655	1413	
2220	0656	4016	
2220	0657	1756	
2220	0658	4074	
2220			F TBLK NO, <3

2221	0661	6343	
2221	0662	0640	
2221	0663	4040	
2221	0664	4025	
2221	0665	1611	
2221	0666	2440	
2221	0667	4074	
2221	0670	6134	
2221			F UNIT <1\Z
2222	0671	0000	ANSWER, 0
2223			*,*11
2224			NOLIST
3201			SEGMNT 3
3202			*20
3203	0020	0055	M2B, SET 15
3204	0021	0000	0
3205	0022	0054	SET 14
3206	0023	0655	INPTR
3207	0024	0640	LDF 0
3210	0025	1020	LDA I
3211	0026	0010	10
3212	0027	1040	STA
3213	0030	0647	MULWD
3214	0031	0017	COM
3215	0032	4641	STC UPLIM
3216	0033	6611	JMP CHAR
3217	0034	0467	SKP
3220	0035	7016	JMP ERRORX
3221	0036	1000	LDA
3222	0037	0656	OCTAC
3223	0040	1120	ADA I
3224	0041	7740	=37
3225	0042	0471	APO I
3226	0043	7016	JMP ERRORX
3227	0044	1000	LDA
3230	0045	0656	OCTAC
3231	0046	1460	SAE I
3232	0047	7777	7777
3233	0050	0467	SKP
3234	0051	0011	CLR
3235	0052	4657	STC STCHTP
3236	0053	1020	LDA I
3237	0054	0012	12
3240	0055	1040	STA
3241	0056	0647	MULWD
3242	0057	0017	COM
3243	0060	4641	STC UPLIM
3244	0061	6611	JMP CHAR
3245	0062	0467	SKP
3246	0063	7016	JMP ERRORX
3247	0064	1000	LDA
3250	0065	0656	OCTAC
3251	0066	0470	AZE I
3252			
3253	0067	7016	JMP ERRORX
3254	0070	1120	ADA I
3255	0071	7757	=20
3256	0072	0471	APO I
3257	0073	7016	JMP ERRORX
3260	0074	1120	ADA I
3261	0075	0010	10
3262	0076	0471	APO I
3263	0077	6130	JMP NCH20

3264	0100	1120	ADA I	
3265	0101	0004	4	
3266	0102	0471	APO I	
3267	0103	6133	JMP NCH10	
3270	0104	1120	ADA I	
3271	0105	0002	2	
3272	0106	0471	APO I	
3273	0107	6136	JMP NCH4	
3274	0110	1000	LDA	
3275	0111	0656	OCTAC	
3276	0112	1040	SUMCHN, STA	
3277	0113	0660	NCHTP	
3300	0114	2657	ADD STCHTP	
3301	0115	1120	ADA I	
3302	0116	7737	-40	
3303	0117	0471	APO I	
3304	0120	7016	JMP ERRORX	
3305	0121	1000	LDA	
3306	0122	0657	STCHTP	
3307	0123	1074	STA I 14	
3310	0124	1000	LDA	
3311	0125	0660	NCHTP	
3312	0126	1074	STA I 14	
3313	0127	7017	JMP NORMX	
3314	0130	1020	NCH20, LDA I	
3315	0131	0020	20	
3316	0132	6112	JMP SUMCHN	
3317	0133	1020	NCH10, LDA I	
3320	0134	0010	10	
3321	0135	6112	JMP SUMCHN	
3322	0136	1020	NCH4, LDA I	
3323	0137	0004	4	
3324	0140	6112	JMP SUMCHN	
3325	0141	0055	M3B, SET 15	
3326	0142	0000	0	
3327	0143	1020	LDA I	
3330	0144	7767	-10	
3331	0145	4724	STC UPLIM1	
3332	0146	1020	LDA I	
3333	0147	7223	JMP M8TAC	
3334	0150	4750	STC MULWD1	
3335	0151	6662	JMP CHRTPL	
3336	0152	0467	SKP	
3337	0153	7016	JMP ERRORX	
3340	0154	1000	LDA	
3341	0155	1203	LOTAC	
3342	0156	1040	STA	/STR STBLK TEMP
3343	0157	1370	STBLK	
3344	0160	1120	ADA I	/STBLK < 777?
3345	0161	7001	-776	
3346	0162	0471	APO I	
3347	0163	7016	JMP ERRORX	/NO
3350	0164	1020	LDA I	/CONVERT RATE &
3351	0165	7765	-12	/DELAY FROM DEC,
3352	0166	4724	STC UPLIM1	/INP TO OCT SUM
3353	0167	1020	LDA I	
3354	0170	7235	JMP M10TAC	
3355	0171	4750	STC MULWD1	
3356	0172	6662	JMP CHRTPL	
3357	0173	0467	SKP	
3360	0174	7016	JMP ERRORX	
3361	0175	0602	LIF 2	
3362	0176	6220	JMP ANSBUF	

3363	0177	1420	SHD I	/IS CHAR A U?
3364	0200	2500	2500	
3365	0201	7023	JMP UCHK	/YES
3366	0202	1420	SHD I	/IS CHAR AN M?
3367	0203	1500	1500	
3370	0204	7040	JMP MCHK	/YES
3371	0205	1420	SHD I	/IS CHAR AN S?
3372	0206	2300	2300	
3373	0207	7050	JMP SCHK	/YES
3374	0210	7016	JMP ERRORX	
3375	0211	0602	LIF 2	
3376	0212	6220	JMP ANSBUF	
3377	0213	1420	SHD I	/NEXT CHAR
3400	0214	7400	7400	/IS A 74?
3401	0215	0467	SKP	/YES
3402	0216	7016	JMP ERRORX	/HAS TO BE
3403	0217	7267	JMP CNTREG	
3404	0220	0467	SKP	
3405	0221	7016	JMP ERRORX	
3406	0222	6662	JMP CHRTPL	
3407	0223	0467	SKP	
3410	0224	7016	JMP ERRORX	
3411	0225	1000	LDA	/GET DELAY
3412	0226	1203	LOTAC	/NUM
3413	0227	1074	STA I 14	/STORE SYNDLY
3414	0230	7017	JMP NORMX	
3415	0231	0055	SET 15	
3416	0232	0000	0	
3417	0233	1020	LDA I	/CONVERT SYNCON
3420	0234	0010	10	/NUM FROM
3421	0235	1040	STA	/OCTAL INPUT
3422	0236	0647	MULWD	/TO
3423	0237	0017	COM	/OCTAL
3424	0240	4641	STC UPLIM	/SUM
3425	0241	6611	JMP CHAR	
3426	0242	0467	SKP	
3427	0243	7016	JMP ERRORX	
3430	0244	1000	LDA	
3431	0245	0656	OCTAC	
3432	0246	4657	STC STCHTP	/TEMP STORE
3433	0247	6611	JMP CHAR	
3434	0250	0467	SKP	
3435	0251	7016	JMP ERRORX	
3436	0252	1000	LDA	
3437	0253	0657	STCHTP	/GET SYNCON NUM
3440	0254	1460	SAE I	/IS IT CL,CH,?
3441	0255	0003	3	
3442	0256	6270	JMP BYCLK	/NO
3443	0257	1000	LDA	/YES
3444	0260	0656	OCTAC	
3445	0261	0451	APO	
3446	0262	7016	JMP ERRORX	
3447	0263	1120	ADA I	/CCH IS NONNEG
3450	0264	7774	MINUS3, ~3	/CCH LESS THAN 4
3451	0265	0471	APO I	
3452	0266	7016	JMP ERRORX	/SHOULD BE
3453	0267	6305	JMP DONE	/YES
3454	0270	1460	BYCLK, SAE I	/IS IT EXTL?
3455	0271	0002	2	
3456	0272	0467	SKP	
3457	0273	6277	JMP BYCLK1	
3460	0274	1460	SAE I	/IS IT SSW?
3461	0275	0001	1	

3462	0276	7016	JMP ERRORX	/NO
3463	0277	1000	BYCLK1, LDA	
3464	0300	0656	OCTAC	
3465	0301	1120	ADA I	/IS SSW OR EXTL
3466	0302	7772	MINUS5, -5	/NUM LESS THAN 6
3467	0303	0471	APO I	
3470	0304	7016	JMP ERRORX	/NO
3471	0305	1000	DONE, LDA	/YES
3472	0306	0657	STCHTP	
3473	0307	1074	STA I 14	/STORE SYNCON
3474	0310	1000	LDA	
3475	0311	0656	OCTAC	
3476	0312	1460	SAE I	
3477	0313	7777	7777	
3500	0314	0467	SKP	
3501	0315	0011	CLR	
3502	0316	1074	STA I 14	/STORE SYNNUM
3503	0317	7017	JMP NORMX	
3504	0320	0055	M5B, SET 15	
3505	0321	0000	0	
3506	0322	6662	JMP CHRTPL	
3507	0323	0467	SKP	
3510	0324	7016	JMP ERRORX	
3511	0325	7204	JMP TACMOV	
3512	0326	1103	HOTAC1	/SAVE STOPON
3513	0327	6662	JMP CHRTPL	
3514	0330	0467	SKP	
3515	0331	7016	JMP ERRORX	
3516	0332	7204	JMP TACMOV	
3517	0333	1106	NTAC1	/SAVE STOPNO
3520	0334	0062	SET I 2	/ADDR-1 OF
3521	0335	2055	2055	/SYNCON NUM
3522	0336	1022	LDA I 2	/GET SYNCON
3523	0337	0017	COM	
3524	0340	3105	ADD LOTAC1	/ADD STOPON
3525	0341	0450	AZE	/SYNCON=STOPON?
3526	0342	6347	JMP ,+5	/NO
3527	0343	1022	LDA I 2	/GET SYNNUM
3530	0344	0017	COM	
3531	0345	3110	ADD NTAC3	/ADD STOPNO
3532	0346	0450	AZE	/SYNNUM=STOPNO?
3533	0347	0467	SKP	/NO
3534	0350	7016	JMP ERRORX	/THEY MUST DIFF,
3535	0351	1000	LDA	
3536	0352	1105	LOTAC1	/GET STOPON
3537	0353	1460	SAE I	/TOTAL PTS
3540	0354	0004	4	/PER CHAN?
3541	0355	0467	SKP	
3542	0356	6412	JMP DONE1	/YES
3543	0357	1460	SAE I	/CL,CH,?
3544	0360	0003	3	
3545	0361	6375	JMP BYCLK2	/NO
3546	0362	1000	LDA	/YES
3547	0363	1106	NTAC1	
3550	0364	0451	APO	/CL,CH,>0?
3551	0365	7016	JMP ERRORX	/SHOULD BE
3552	0366	7111	JMP TPLADD	/CL, CH,<4?
3553	0367	0427	SUBT3	
3554	0370	1000	LDA	
3555	0371	1201	HOTAC	
3556	0372	0471	APO I	
3557	0373	7016	JMP ERRORX	/NO,SHOULD BE
3560	0374	6412	JMP DONE1	/YES

3561	0375	1460	BYCLK2,	SAE I	
3562	0376	0002		2	/EXT LEVEL?
3563	0377	0467		SKP	
3564	0400	6404		JMP BYCLK3	
3565	0401	1460		SAE I	
3566	0402	0001		1	/SSW?
3567	0403	7016		JMP ERRORX	
3570	0404	7111	BYCLK3,	JMP TPLADD	/IS EXTL
3571	0405	0432		SUBT6	/OR SSW<6?
3572	0406	1000		LDA	
3573	0407	1201		HOTAC	
3574	0410	0471		APO I	
3575	0411	7016		JMP ERRORX	/NO
3576	0412	1000	DONE1,	LDA	/YES
3577	0413	1105		LOTAC1	
3600	0414	1074		STA I 14	/STORE STOPON
3601	0415	1000		LDA	
3602	0416	1106		NTAC1	/STORE
3603	0417	1074		STA I 14	/STOPNO
3604	0420	1000		LDA	/IT
3605	0421	1107		NTAC2	/IS
3606	0422	1074		STA I 14	/A
3607	0423	1000		LDA	/TRIPPLE
3610	0424	1110		NTAC3	/PREC
3611	0425	1074		STA I 14	/NUM
3612	0426	7017		JMP NORMX	
3613	0427	7777	SUBT3,	7777	
3614	0430	7777		7777	
3615	0431	7774		7774	/-3
3616	0432	7777	SUBT6,	7777	
3617	0433	7777		7777	
3620	0434	7772		7772	/-5
3621	0435	0055	MBB,	SET 15	
3622	0436	0000		0	
3623	0437	0640		LDF 0	
3624	0440	1020		LDA I	
3625	0441	0010		10	
3626	0442	1040		STA	
3627	0443	1012		MULWD3	
3630	0444	0017		COM	
3631	0445	5004		STC UPLIM3	
3632	0446	6754		JMP CHRTER	
3633	0447	0467		SKP	
3634	0450	6604		JMP ERORX	
3635	0451	1000		LDA	/SAVE
3636	0452	0656		OCTAC	/PARAMETER
3637	0453	4602		STC PTBNSV	/TBK NO.
3640	0454	6754		JMP CHRTER	
3641	0455	0467		SKP	
3642	0456	6604		JMP ERORX	
3643	0457	1000		LDA	
3644	0460	0656		OCTAC	
3645	0461	1040		STA	/SAVE
3646	0462	0603		UNITSV	/UNIT NO.
3647	0463	1120		ADA I	
3650	0464	7776		-1	
3651	0465	0471		APO I	
3652	0466	6604		JMP ERORX	
3653	0467	1000		LDA	
3654	0470	0603		UNITSV	
3655	0471	0470		AZE I	
3656	0472	6475		JMP .+3	
3657	0473	1020		LDA I	

3660	0474	0010	10	
3661	0475	1120	ADA I	
3662	0476	0700	RDC	
3663	0477	4504	STC TPWRD1	
3664	0500	1020	LDA I	/MBLK = 0 OF
3665	0501	4000	4000	/CURRENT OF
3666	0502	2602	ADD PTBNSV	
3667	0503	4505	STC TPWRD2	
3670	0504	0000	TPWRD1, 0	
3671	0505	0000	TPWRD2, 0	
3672	0506	6605	JMP NOMX	
3673	0507	0055	MDB, SET 15	
3674	0510	0000	0	
3675	0511	6754	JMP CHRTER	
3676	0512	0467	SKP	
3677	0513	6604	JMP ERORX	
3700	0514	1000	LDA	
3701	0515	0656	OCTAC	
3702	0516	1460	SAE I	
3703	0517	7777	7777	
3704	0520	0467	SKP	
3705	0521	0011	CLR	
3706	0522	1040	STA	
3707	0523	2052	2000+52	
3710	0524	1120	ADA I	
3711	0525	7001	=776	
3712	0526	0471	AP0 I	/STIBLK < 777?
3713	0527	6604	JMP ERORX	/NO
3714	0530	6605	JMP NOMX	
3715	0531	0055	MFB, SET 15	
3716	0532	0000	0	
3717	0533	1020	LDA I	
3720	0534	0010	10	
3721	0535	1040	STA	
3722	0536	0647	MULWD	
3723	0537	0017	COM	
3724	0540	4641	STC UPLIM	
3725	0541	6611	JMP CHAR	
3726	0542	0467	SKP	
3727	0543	7016	JMP ERRORX	
3730	0544	1000	LDA	/SAVE
3731	0545	0656	OCTAC	/PARAMETER
3732	0546	4602	STC PTBNSV	/IBLK NO.
3733	0547	6611	JMP CHAR	
3734	0550	0467	SKP	
3735	0551	7016	JMP ERRORX	
3736	0552	1000	LDA	
3737	0553	0656	OCTAC	
3740	0554	1040	STA	/SAVE
3741	0555	0603	UNITSV	/UNIT NO.
3742	0556	1120	ADA I	
3743	0557	7776	-1	
3744	0560	0471	AP0 I	
3745	0561	7016	JMP ERRORX	
3746	0562	1000	LDA	
3747	0563	0603	UNITSV	
3750	0564	0470	AZE I	
3751	0565	6570	JMP .+3	
3752	0566	1020	LDA I	
3753	0567	0010	10	
3754	0570	1120	ADA I	
3755	0571	0704	WRC	
3756	0572	4577	STC TAPEW1	

3757	0573	1020	LDA I	/MBLK=0 OF
3760	0574	4000	4000	/CURRENT DF
3761	0575	2602	ADD PTBNSV	
3762	0576	4600	STC TAPEW2	
3763	0577	0000	TAPEW1, 0	
3764	0600	0000	TAPEW2, 0	
3765	0601	7017	JMP NORMX	
3766	0602	0000	PTBNSV, 0	
3767	0603	0000	UNITSV, 0	
3770	0604	0235	ERORX, XSK I 15	
3771	0605	0601	NOMX, LIF 1	
3772	0606	0040	SET 0	
3773	0607	0015	15	
3774	0610	6000	JMP 0	
3775	0611	0056	CHAR, SET 16	
3776	0612	0000	0	
3777	0613	0011	CLR	
4000	0614	4656	STC OCTAC	/CLR LOC OCTAC
4001	0615	0602	LOOP1, LIF 2	
4002	0616	6220	JMP ANSBUF	
4003	0617	1420	SHD I	
4004	0620	7400	7400	/END OF ANS F.?
4005	0621	6016	JMP 16	/YES
4006	0622	1420	SHD I	/NO
4007	0623	3400	3400	/EOM?
4010	0624	6016	JMP 16	/YES
4011	0625	1420	SHD I	/NO
4012	0626	0000	0	/A BLANK?
4013	0627	6615	JMP LOOP1	/YES
4014	0630	1120	ADA I	/NO
4015	0631	7717	=60	/A DIGIT?
4016	0632	1040	STA	
4017	0633	0661	NUM	
4020	0634	1120	ADA I	
4021	0635	0001	1	
4022	0636	0451	APO	/NUM IS NONNEG?
4023	0637	6653	JMP XIT	/SHOULD BE
4024	0640	1120	ADA I	/YES
4025	0641	0000	UPLIM, 0	/IS NUM LESS
4026	0642	0471	APO I	/THAN 10 OR 12?
4027	0643	6653	JMP XIT	/IT SHOULD BE
4030	0644	1000	LDA	/YES
4031	0645	0656	OCTAC	/MUL BY 10 OR 12
4032	0646	1260	MUL I	/FOR OCT OR DEC
4033	0647	0000	MULWD, 0	/CONVERSION
4034	0650	2661	ADD NUM	
4035	0651	4656	STC OCTAC	
4036	0652	6615	JMP LOOP1	
4037	0653	0236	XIT, XSK I 16	/BEGIN MESS AGN,
4040	0654	6016	JMP 16	
4041	0655	2047	INPTR, 2047	
4042	0656	0000	OCTAC, 0	
4043	0657	0000	STCHTP, 0	
4044	0660	0000	NCHTP, 0	
4045	0661	0000	NUM, 0	
4046	0662	0056	CHRTPL, SET 16	/RTN JMP TO
4047	0663	0000	0	/CURRENT MESS
4050	0664	0011	CLR	
4051	0665	5074	STC NUMSAV	
4052	0666	7253	JMP TPLCLR	/CLR TAC
4053	0667	1201	HOTAC	
4054	0670	7253	JMP TPLCLR	/CLR A T.P. REG
4055	0671	1106	NTAC1	

4056	0672	0064	SET I 4	
4057	0673	0000	0	
4060	0674	0602	LOOP2, LIF 2	
4061	0675	6220	JMP ANSBUF	
4062	0676	1420	SHD I	
4063	0677	7400	7400	/E,O,ANS,F,?
4064	0700	6016	JMP 16	
4065	0701	1420	SHD I	
4066	0702	3400	3400	/EOM?
4067	0703	6016	JMP 16	
4070	0704	1420	SHD I	
4071	0705	0000	0	/A BLANK?
4072	0706	6674	JMP LOOP2	
4073	0707	1120	ADA I	
4074	0710	7717	-60	/A DIGIT?
4075	0711	0450	AZE	
4076	0712	6715	JMP ,+3	
4077	0713	1020	LDA I	/MAKE +0
4100	0714	0000	0	
4101	0715	1040	STA	
4102	0716	0661	NUM	
4103	0717	1120	ADA I	
4104	0720	0001	1	
4105	0721	0451	APO	/NON NEG?
4106	0722	6653	JMP XIT	/SHOULD BE
4107	0723	1120	ADA I	/YES
4110	0724	0000	UPLIM1, 0	/IS NO<10 OR 12?
4111	0725	0471	APO I	
4112	0726	6653	JMP XIT	/SHOULD BE
4113	0727	0224	XSK I 4	/INCR B4
4114	0730	1000	LDA	
4115	0731	0004	4	
4116	0732	1460	SAE I	/C(B3)=3?
4117	0733	0003	3	
4120	0734	0467	SKP	/NO
4121	0735	6741	JMP ,+4	/YES
4122	0736	1460	SAE I	/C(B3)=4?
4123	0737	0004	4	
4124	0740	6745	JMP ,+5	/NO
4125	0741	1000	LDA	/YES
4126	0742	1074	NUMSAV	/SAVE SUM
4127	0743	2661	ADD NUM	/OF 3RD AND
4130	0744	5074	STC NUMSAV	/4TH DIGITS
4131	0745	1000	LDA	
4132	0746	0661	NUM	/GET DIGIT BACK
4133	0747	5110	STC NTAC3	
4134	0750	0000	MULWD1, 0	
4135	0751	7111	JMP TPLADD	/ADD NUM
4136	0752	1106	NTAC1	/TO TAC
4137	0753	6674	JMP LOOP2	/GET NEXT CHAR
4140	0754	0056	CHRTER, SET 16	
4141	0755	0000	0	
4142	0756	0011	CLR	
4143	0757	4656	STC OCTAC	
4144	0760	0601	LOOP3, LIF 1	
4145	0761	6133	JMP ANSBF	
4146	0762	1420	SHD I	
4147	0763	7400	7400	
4150	0764	6016	JMP 16	
4151	0765	1420	SHD I	
4152	0766	3400	3400	
4153	0767	6016	JMP 16	
4154	0770	1420	SHD I	

4155	0771	0000	0		
4156	0772	6760	JMP	LOOP3	
4157	0773	1120	ADA	I	
4160	0774	7717	=60		
4161	0775	1040	STA		
4162	0776	0661	NUM		
4163	0777	1120	ADA	I	
4164	1000	0001	1		
4165	1001	0451	APO		
4166	1002	6653	JMP	XIT	
4167	1003	1120	ADA	I	
4170	1004	0000	UPLIM3,	0	
4171	1005	0471	APO	I	
4172	1006	6653	JMP	XIT	
4173	1007	1000	LDA		
4174	1010	0656	OCTAC		
4175	1011	1260	MUL	I	
4176	1012	0000	MULWD3,	0	
4177	1013	2661	ADD	NUM	
4200	1014	4656	STC	OCTAC	
4201	1015	6760	JMP	LOOP3	
4202	1016	0235	ERRORX,	XSK I 15	
4203	1017	0602	NORMX,	LIF 2	
4204	1020	0040	SET	0	
4205	1021	0015	15		
4206	1022	6000	JMP	0	
4207	1023	7204	UCHK,	JMP TACMOV	
4210	1024	1103	HOTAC1		/LOC OF T,P. NUM
4211	1025	1000	LDA		
4212	1026	1074	NUMSAV		
4213	1027	0450	AZE		/MULT OF 100USEC
4214	1030	7016	JMP	ERRORX	/NO
4215	1031	7111	JMP	TPLADD	/YES
4216	1032	1075	M1000		/IS NO>=1000?
4217	1033	1000	LDA		
4220	1034	1201	HOTAC		
4221	1035	0451	APO		
4222	1036	7016	JMP	ERRORX	/IT MUST BE
4223	1037	6211	JMP	RTN	/YES
4224	1040	0063	MCHK,	SET I 3	
4225	1041	7774	-3		
4226	1042	7235	JMP	M10TAC	/MUL BY 1000
4227	1043	0223	XSK	I 3	/CHG TO USEC
4230	1044	7042	JMP	,-2	
4231	1045	7204	JMP	TACMOV	
4232	1046	1103	HOTAC1		/LOC OF T,P. NUM
4233	1047	6211	JMP	RTN	
4234	1050	0063	SCHK,	SET I 3	
4235	1051	7771	-6		
4236	1052	7204	JMP	TACMOV	
4237	1053	1103	HOTAC1		/SAVE T,P. NUM
4240	1054	7111	JMP	TPLADD	
4241	1055	1100	M50		/NUM<=40?
4242	1056	1000	LDA		
4243	1057	1201	HOTAC		
4244	1060	0471	APO	I	
4245	1061	7016	JMP	ERRORX	/NO
4246	1062	7253	JMP	TPLCLR	
4247	1063	1201	HOTAC		/CLR TAC
4250	1064	7111	JMP	TPLADD	
4251	1065	1103	HOTAC1		
4252	1066	7235	JMP	M10TAC	/MUL BY 1000000
4253	1067	0223	XSK	I 3	/CHG TO U=SEC

4254	1070	7066	JMP ,-2	
4255	1071	7204	JMP TACMOV	
4256	1072	1103	HOTAC1	/LOC OF T,P. NUM
4257	1073	6211	JMP RTN	
4260	1074	0000	NUMSAV, 0	
4261	1075	7777	M1000, 7777	
4262	1076	7777	7777	
4263	1077	6030	6030	/-1747 OCTAL
4264	1100	7777	M50, 7777	
4265	1101	7777	7777	
4266	1102	7727	7727	/-50 OCTAL
4267	1103	0000	HOTAC1, 0	
4270	1104	0000	MOTAC1, 0	
4271	1105	0000	LOTAC1, 0	
4272	1106	0000	NTAC1, 0	
4273	1107	0000	NTAC2, 0	
4274	1110	0000	NTAC3, 0	
4275	1111	0053	TPLADD, SET 13	
4276	1112	0000	0	
4277	1113	7172	JMP TPLGET	
4300	1114	0002	P3, PDP	
4301			PMODE	
4302	7115	7100	CLL	
4303	7116	7510	SPA	/ADD OR SUBT?
4304	7117	7060	CML CMA	/SUBT, SET L &
4305	7120	6141	LINC	/MAKE ADDR +
4306			LMODE	
4307	1121	4011	STC 11	/ADDR OF TPUW
4310	1122	1011	LDA 11	/HI ORDER 3RD
4311	1123	0452	LZE	/ADD OR SUBT?
4312	1124	0017	COM	/SUBT, MAKE
4313	1125	5153	STC ADDHI	/ARG -
4314	1126	1031	LDA I 11	/MID ORDER 3RD
4315	1127	0452	LZE	
4316	1130	0017	COM	
4317	1131	5150	STC ADDMED	
4320	1132	1031	LDA I 11	/LO ORDER 3RD
4321	1133	0452	LZE	
4322	1134	0017	COM	
4323	1135	5167	STC ADDLO	
4324	1136	0071	SET I 11	/PTR TO TAC
4325	1137	1201	HOTAC	/HI ORD 3RD
4326	1140	0067	SET I 7	/PTR TO TAC
4327	1141	1202	MOTAC	/MID ORD 3RD
4330	1142	0066	SET I 6	/PTR TO TAC
4331	1143	1203	LOTAC	/LO ORD 3RD
4332	1144	0011	CLR	/CLR LINK BIT
4333	1145	3167	ADD ADDLO	/ARG1+LOTAC
4334	1146	1206	LAM 6	/TO LOTAC
4335	1147	1020	LDA I	
4336	1150	0000	ADDMED, 0	/ARG2+MOTAC
4337	1151	1207	LAM 7	/TO MOTAC
4340	1152	1020	LDA I	
4341	1153	0000	ADDHI, 0	/ARG3+HOTAC
4342	1154	1211	LAM 11	/TO HOTAC
4343	1155	5153	STC ADDHI	/CLR AC&NOT L.
4344	1156	0474	FLO I	/OVRFLO ON HI
4345				/ORDER LAM?
4346	1157	0017	COM	/YES, 7777 TO
4347			/ADDLO(ERROR FLAG)	
4350	1160	5167	STC ADDLO	/NO, 0 TO ER, FLG.
4351	1161	1206	LAM 6	/L & LOTAC TO LOT
4352	1162	5150	STC ADDMED	/CLR AC&NOT L.

4353	1163	1207	LAM 7	/L&MOTAC TO MOT
4354	1164	5153	STC ADDHI	/CLR AC&NOT L.
4355	1165	1211	LAM 11	/L&HOTAC TO HOT
4356	1166	1020	LDA I	/ERROR FLG TO
4357	1167	0000	ADDLO, 0	/AC
4360	1170	0233	XSK I 13	/RETURN
4361	1171	6013	JMP 13	/TO P+2
4362	1172	1000	TPLGET, LDA	/GET ADDR OF
4363	1173	0013	13	/T,P,WD PTR
4364	1174	1560	BCL I	/MASK OUT JMP
4365	1175	6000	6000	
4366	1176	4012	STC 12	/PUT ADDR OF
4367	1177	1012	LDA 12	/T,P, WD IN AC
4370	1200	6000	JMP 0	
4371	1201	0000	HOTAC, 0	
4372	1202	0000	MOTAC, 0	
4373	1203	0000	LOTAC, 0	
4374	1204	0053	TACMOV, SET 13	/MOVE TAC TO
4375	1205	0000	0	/A TPL WD
4376	1206	7172	JMP TPLGET	/GET ADDR
4377	1207	4012	STC 12	/FROM AC
4400	1210	3201	ADD HOTAC	
4401	1211	1052	STA 12	/SAVE HOTAC
4402	1212	1000	LDA	
4403	1213	1202	MOTAC	/SAVE MOTAC
4404	1214	1072	STA I 12	
4405	1215	1000	LDA	
4406	1216	1203	LOTAC	/AVE LOTAC
4407	1217	1072	STA I 12	
4410	1220	0011	CLR	
4411	1221	0233	XSK I 13	/RTN TO
4412	1222	6013	JMP 13	
4413	1223	1000	M8TAC, LDA	
4414	1224	0000	0	
4415	1225	5234	STC M8RTN	
4416	1226	7111	JMP TPLADD	
4417	1227	1201	HOTAC	/2 X TAC
4420	1230	7111	JMP TPLADD	
4421	1231	1201	HOTAC	/4 X TAC
4422	1232	7111	JMP TPLADD	
4423	1233	1201	HOTAC	/8 X TAC
4424	1234	0000	M8RTN, 0	
4425	1235	1000	M10TAC, LDA	/SAVE
4426	1236	0000	0	/RETURN
4427	1237	5252	STC MULRTN	/JMP
4430	1240	7111	JMP TPLADD	
4431	1241	1201	HOTAC	/2 X TAC
4432	1242	7204	JMP TACMOV	
4433	1243	1264	TEMPSV	/SAVE 2 X TAC
4434	1244	7111	JMP TPLADD	
4435	1245	1201	HOTAC	/4 X TAC
4436	1246	7111	JMP TPLADD	
4437	1247	1201	HOTAC	/8 X TAC
4440	1250	7111	JMP TPLADD	
4441	1251	1264	TEMPSV	/10 X TAC
4442	1252	0000	MULRTN, 0	/RTN
4443	1253	0053	TPLCLR, SET 13	
4444	1254	0000	0	
4445	1255	7172	JMP TPLGET	
4446	1256	4012	STC 12	
4447	1257	1052	STA 12	
4450	1260	1072	STA I 12	
4451	1261	1072	STA I 12	

4452	1262	0233		XSK I 13	
4453	1263	6013		JMP 13	
4454	1264	0000	TEMPSV,	0	
4455	1265	0000		0	
4456	1266	0000		0	
4457	1267	0056	CNTREG,	SET 16	
4460	1270	0000		0	
4461	1271	0065		SET I 5	
4462	1272	7773		=4	
4463	1273	1020		LDA I	
4464	1274	1366		ADDR-3	
4465	1275	5325		STC ADRESS	/PTR TO CL.RATE
4466	1276	1020		LDA I	
4467	1277	2100		2100	
4470	1300	5367		STC CR	
4471	1301	0011	TPHERE,	CLR	
4472	1302	5366		STC CC	
4473	1303	1020		LDA I	
4474	1304	1000		1000	
4475	1305	3367		ADD CR	
4476	1306	5367		STC CR	/UPDATE CR 10 X
4477	1307	3325		ADD ADRESS	
4500	1310	3365		ADD A3	
4501	1311	5325		STC ADRESS	
4502	1312	0225		XSK I 5	
4503	1313	0467		SKP	
4504	1314	6653		JMP XIT	
4505	1315	1000		LDA	
4506	1316	1103		HOTAC1	
4507	1317	5201		STC HOTAC	/HI OR RATE
4510	1320	3104		ADD MOTAC1	
4511	1321	5202		STC MOTAC	/MED OR RATE
4512	1322	3105		ADD LOTAC1	
4513	1323	5203		STC LOTAC	/LO OR RATE
4514	1324	7111		JMP TPLADD	/CALL T,P. RTN
4515	1325	0000	ADRESS,	0	
4516	1326	0002		PDP	
4517				PMODE	
4520	7327	2366		ISZ CC	/CC>4096?
4521	7330	7410		SKP	
4522	7331	5363		JMP TPH	
4523	7332	6141		LINC	
4524				LMODE	
4525	1333	1000		LDA	
4526	1334	1201		HOTAC	/SAMRATE
4527	1335	0451		APO	/HAS GONE
4530	1336	7351		JMP DATA	/TO ZERO
4531	1337	0450		AZE	/OR IS
4532	1340	7324		JMP ADRESS-1	/NEG.?
4533	1341	1000		LDA	
4534	1342	1202		MOTAC	
4535	1343	0450		AZE	
4536	1344	7324		JMP ADRESS-1	
4537	1345	1000		LDA	
4540	1346	1203		LOTAC	
4541	1347	0450		AZE	
4542	1350	7324		JMP ADRESS-1	
4543	1351	1000	DATA,	LDA	
4544	1352	1370		STBLK	
4545	1353	1074		STA I 14	
4546	1354	1000		LDA	/YES
4547	1355	1367		CR	
4550	1356	1074		STA I 14	/CL CONT RATE

4551	1357	1000		LDA	
4552	1360	1366		CC	
4553	1361	1074		STA I 14	/BUF=PRE REG
4554	1362	6016		JMP 16	
4555				PMODE	
4556	7363	6141	TPH,	LINC	
4557				LMODE	
4560	1364	7301		JMP TPERE	/GET SLOWER CL R
4561	1365	0003	A3,	3	
4562	1366	0000	CC,	0	
4563	1367	0000	CR,	0	
4564	1370	0000	STBLK,	0	
4565	1371	7777	ADDR,	7777	
4566	1372	7777		7777	
4567	1373	7633		=144	/=100 U=SEC
4570	1374	7777		7777	
4571	1375	7777		7777	
4572	1376	6027		=1750	/=1000 U=SEC
4573	1377	7777		7777	
4574	1400	7775		7775	
4575	1401	4357		4357	/=10000 U=SEC
4576				SEGMENT 1	
4577				*20	
4600	0020	0047	M1A,	SET 7	
4601	0021	0000		0	
4602	0022	6703	M1AA,	JMP QAINIT	
4603	0023	0142		MESS1	
4604	0024	0671		ANSWER	
4605	0025	6127		JMP CHKSN	
4606	0026	0070		SET I 10	
4607	0027	0671		ANSWER	
4610	0030	1330		LDH I 10	
4611	0031	1420		SHD I	
4612	0032	0300		0300	/IT IS A C?
4613	0033	0467		SKP	/YES
4614	0034	6022		JMP M1AA	/NO
4615	0035	0602	NORMXX,	LIF 2	
4616	0036	0040		SET 0	
4617	0037	0007		7	
4620	0040	6000		JMP 0	
4621	0041	0047	MAA,	SET 7	
4622	0042	0000		0	
4623	0043	6703	MAAA,	JMP QAINIT	
4624	0044	0201		MESSA	
4625	0045	0671		ANSWER	
4626	0046	6127		JMP CHKSN	
4627	0047	0070		SET I 10	
4630	0050	0671		ANSWER	
4631	0051	1330		LDH I 10	
4632	0052	1420		SHD I	
4633	0053	1600		1600	/AN N?
4634	0054	6035		JMP NORMXX	/YES
4635	0055	1420		SHD I	
4636	0056	3100		3100	/A Y?
4637	0057	6061		JMP MBA	/YES
4640	0060	6043		JMP MAAA	/NO
4641	0061	6703	MBA,	JMP QAINIT	
4642	0062	0252		MESS0	
4643	0063	0671		ANSWER	
4644	0064	6127		JMP CHKSN	
4645	0065	0070		SET I 10	
4646	0066	0671		ANSWER	
4647	0067	0603		LIF 3	

4650	0070	6435	JMP MBB	
4651	0071	6073	JMP MCA	
4652	0072	6061	JMP MBA	/ERROR
4653	0073	6703	JMP QAINIT	
4654	0074	0306	MESSC	
4655	0075	0671	ANSWER	
4656	0076	6127	JMP CHKSN	
4657	0077	0070	SET I 10	
4660	0100	0671	ANSWER	
4661	0101	1330	LDH I 10	
4662	0102	1420	SHD I	
4663	0103	1600	1600	/AN N?
4664	0104	6111	JMP ,+5	/YES
4665	0105	1420	SHD I	
4666	0106	3100	3100	/A Y?
4667	0107	6113	JMP MDA	/YES
4670	0110	6073	JMP MCA	/N OR Y PLEASE
4671	0111	0602	LIF 2	
4672	0112	6053	JMP JMPM6	
4673	0113	6703	JMP QAINIT	
4674	0114	0356	MESSD	
4675	0115	0671	ANSWER	
4676	0116	6127	JMP CHKSN	
4677	0117	0070	SET I 10	
4700	0120	0671	ANSWER	
4701	0121	0603	LIF 3	
4702	0122	6507	JMP MDB	
4703	0123	0467	SKP	
4704	0124	6113	JMP MDA	
4705	0125	0602	LIF 2	
4706	0126	6052	JMP JMPME	
4707	0127	0440	SNS 0	
4710	0130	6756	JMP QARFSH	
4711	0131	0602	LIF 2	
4712	0132	6044	JMP START	
4713	0133	0045	SET 5	
4714	0134	0000	0	
4715	0135	1330	LDH I 10	
4716	0136	0603	LIF 3	
4717	0137	0040	SET 0	
4720	0140	0005	5	
4721	0141	6000	JMP 0	
4722	0142	0640		
4722	0143	4040		
4722	0144	4040		
4722	0145	4040		
4722	0146	2022		
4722	0147	1707		
4722	0150	2201		
4722			MESS1, TEXT ZF	PROGRAM
4723	0151	1543		
4723				
4724	0152	4743		
4724	0153	0640		
4724	0154	4040		
4724	0155	4040		
4724	0156	0155		
4724	0157	0440		
4724	0160	2417		
4724	0161	4024		
4724	0162	0120		
4724			F A-D TO TAPE	
4725	0163	0543		

4725		
4726	0164	4743
4726	0165	0640
4726	0166	2431
4726	0167	2005
4726	0170	4003
4726	0171	4024
4726	0172	1740
4726	0173	0317
4726	0174	1624
4726	0175	1116
4726	0176	2505
4726	0177	7461
4726	0200	3400
4726		
4727		
4730	0201	0623
4730	0202	2401
4730	0203	1604
4730	0204	0122
4730	0205	0440
4730	0206	0530
4730	0207	2005
4730	0210	2211
4730	0211	1505
4730	0212	1624
4730		
4731	0213	7743
4731		
4732	0214	4743
4732		
4733	0215	4743
4733	0216	0640
4733	0217	4040
4733	0220	1106
4733	0221	4016
4733	0222	1754
4733	0223	4024
4733	0224	3120
4733	0225	0540
4733		
4734	0226	4016
4734	0227	4306
4734	0230	4040
4734	0231	4011
4734	0232	0640
4734	0233	3105
4734	0234	2354
4734	0235	2431
4734	0236	2005
4734	0237	4040
4734		
4735	0240	3143
4735		
4736	0241	4743
4736	0242	0640
4736	0243	4040
4736	0244	4040
4736	0245	4022
4736	0246	0520
4736	0247	1431
4736	0250	4074
4736	0251	6134

F TYPE C TO CONTINUE<1\Z

MESSA, TEXT ZFSTANDARD EXPERIMENT?

F IF NO, TYPE N

F IF YES,TYPE Y

4736			F	REPLY <1\Z
4737	0252	0620		
4737	0253	0122		
4737	0254	0115		
4737	0255	0524		
4737	0256	0522		
4737	0257	4014		
4737	0260	1703		
4737	0261	0124		
4737	0262	1117		
4737				
4740	0263	1677		MESSB, TEXT ZFPARAMETER LOCATION?
4740				
4741	0264	4347		
4741				
4742	0265	4347		
4742	0266	4306		
4742	0267	4040		
4742	0270	4040		
4742	0271	2402		
4742	0272	1413		
4742	0273	4016		
4742	0274	1756		
4742	0275	4074		
4742			F	TBLK NO, <3
4743	0276	6343		
4743	0277	0640		
4743	0300	4040		
4743	0301	4025		
4743	0302	1611		
4743	0303	2440		
4743	0304	4074		
4743	0305	6134		
4743			F	UNIT <1\Z
4744	0306	0640		
4744	0307	4016		
4744	0310	0527		
4744	0311	4023		
4744	0312	2401		
4744	0313	2224		
4744	0314	4024		
4744	0315	0214		
4744				
4745	0316	1377		MESSC, TEXT ZF NEW START TBLK?
4745				
4746	0317	4347		
4746				
4747	0320	4347		
4747	0321	4306		
4747	0322	4040		
4747	0323	4011		
4747	0324	0640		
4747	0325	1617		
4747	0326	5440		
4747	0327	2431		
4747	0330	2005		
4747	0331	4040		
4747			F	IF NO, TYPE N
4750	0332	1643		
4750	0333	0640		
4750	0334	4040		
4750	0335	1106		
4750	0336	4031		

4750	0337	0523		
4750	0340	5440		
4750	0341	2431		
4750	0342	2005		
4750	0343	4040		
4750			F	IF YES, TYPE Y
4751	0344	3143		
4751				
4752	0345	4743		
4752	0346	0640		
4752	0347	4040		
4752	0350	4040		
4752	0351	4022		
4752	0352	0520		
4752	0353	1431		
4752	0354	4074		
4752	0355	6134		
4752			F	REPLY <1\Z
4753	0356	0640		
4753	0357	4040		
4753	0360	4024		
4753	0361	0214		
4753	0362	1340		
4753	0363	1617		
4753	0364	5674		
4753	0365	6334		
4753			MESSD,	TEXT ZF TBLK NO,<3\Z

0000 ERRORS

AAAEND 5571
AC 0136
ADDHI 7153
ADDLO 7167
ADDMED 7150
ADDR 7371
ADPTR 1571
ADRESS 7325
ALDA 1145
ALDONE 1465
ALFAKE 1344
AL1 1473
AL10 1545
AL14 1532
AL15 1562
AL2 1500
AL3 1524
AL5 1522
AL5A 1570
AL6 1527
ANSBF 2133
ANSBUF 4220
ANSWER 4671
A3 7365
BEFORE 0073
BETA3 0003
BETA4 0004
BETA5 0005
BINIT 0130
BUFFUL 0111
BUFLIM 0140
BUFTOP 0110
BYCLK 6270

•

BYCLK1 6277
BYCLK2 6375
BYCLK3 6404
CC 7366
CCMASK 0142
CCX 0752
CCXSAV 0071
CCXSET 0526
CCX1 0765
CHAN1 0537
CHAN2 0545
CHAN3 0553
CHAR 6611
CHKSN 2127
CHKSNS 4227
CHKTTY 0600
CHRTER 6754
CHRTPL 6662
CHTTYA 0511
CLAD 1422
CLKDL 0131
CLOCK 1210
CLOCKG 1744
CLOCK1 0053
CLOCK2 0054
CNTREG 7267
CR 7367
C100 0153
C1000 0120
C110 0507
C14 0574
C140 0506
C17 0525
C1777 0046
C2 0363
C2X0 1354
C200 0371
C200X 1340
C2000 0121
C212 0744
C3 0067
C300 0374
C303 0072
C37 0370
C4 0372
C4X 1112
C400 0065
C440 0520
C60 0571
C640X 1343
C7 0517
C7X 1342
C7000 1341
C7717 0570
C7737 0567
C7763 0573
C7767 0572
C7774 0576
C7775 0575
DATA 7351
DELTA 0107
DIAL 1716
DIALA 0751

DISAB	1220
DISCTR	0125
DISPLY	1226
DISP1	0122
DISP2	0123
DISSET	0712
DISS1	0724
DIS1	0103
DIS2	0104
DITAB	1734
DONE	6305
DONE1	6412
DPY	0025
ECA	0024
ECHO	0660
ENREG	0074
ENSEN	1146
ENXM	0022
EN1	1157
ERORX	6604
ERRORX	7016
EX	0263
EXA	0503
EXL	1423
EXLSET	0521
EXLSTO	1456
EXLSYN	1425
EXO	0505
FIXUP	1740
FSAM	0127
FSTA	0373
FSTSAM	1605
GETKBD	5424
GOCAT	1224
GOGO	1345
HOTAC	7201
HOTAC1	7103
INCCX	0406
INEXF	0403
INJUMP	0357
INMASK	0143
INPTR	6655
INSSW	0400
IN1	0320
IN10	0560
IN4	0413
IN5	0437
ISZDL	0375
IXMASK	0075
JMPBY	1715
JMPME	4052
JMPM6	4053
JMPSTI	0421
JMPSTO	1437
JMPSYN	1406
JUMPST	0533
KHAR	0657
LI	0137
LIMX	1076
LINCI	0364
LISTP	1322
LOCX	4056
LOOP1	6615

LOOP2	6674
LOOP3	6760
LOTAC	7203
LOTAC1	7105
LRTN	1761
LT	1104
MA	4064
MAA	2041
MAAA	2043
MBA	2061
MBB	6435
MCA	2073
MCHK	7040
MDA	2113
MDB	6507
ME	4151
MEA	4153
MESSA	2201
MESSB	2252
MESSC	2306
MESSD	2356
MESSE	4566
MESSF	4636
MESS1	2142
MESS2	4232
MESS3	4262
MESS4	4331
MESS5	4421
MESS6	4527
MFA	4171
MFB	6531
MINUS3	6264
MINUS5	6302
MLIM	1075
MONA	0151
MONITO	0472
MONJMP	0476
MONSW	0145
MON1	0461
MON2	0464
MON3	0470
MOTAC	7202
MOTAC1	7104
MULRTN	7252
MULWD	6647
MULWD1	6750
MULWD3	7012
M1	4057
M1A	2020
M1AA	2022
M1X	1242
M10TAC	7235
M1000	7075
M12	0747
M14	0047
M2	4071
M2A	4073
M2B	6020
M260	0746
M261	0740
M272	0741
M3	4105
M3A	4107

M3B	6141
M301	0742
M303	0745
M310	0743
M311	0732
M314	0027
M320	0734
M322	0733
M323	0736
M326	0737
M330	0735
M4	4121
M4A	4123
M4B	6231
M5	4135
M5A	4137
M5B	6320
M50	7100
M6	4203
M6A	4205
M7	0750
M8RTN	7234
M8TAC	7223
NCHAN	0051
NCHTP	6660
NCH10	6133
NCH20	6130
NCH4	6136
NOMX	6605
NORMX	7017
NORMXX	2035
NTAC1	7106
NTAC2	7107
NTAC3	7110
NUM	6661
NUMSAV	7074
OCTAC	6656
OKSAM	1600
OKSAMA	0023
OUCCX	0434
QUEXL	0431
OUMASK	0144
OUSSW	0426
PAUS	0677
PDP8IN	1200
PLIST	0064
PTBNSV	6602
PUTPTR	0124
P3	7114
QAB	4707
QACA	4720
QACHAR	5560
QACKLF	5524
QACNTR	5507
QAD	4731
QAE	4753
QAEXIT	5540
QAF	5421
QAG	4765
QAH	5017
QAI	5034
QAINIT	4703
QAJ	5041

QAK	5210
QAKRB	6036
QAL	5100
QALEGL	5500
QAM	5004
QAN	5126
QAO	5134
QAP	5145
QAQ	5166
QARFSH	4756
QAT	5173
QATLS	6046
QATPE	5547
QATSF	6041
QATY	5441
QAU	5411
QAV	5221
QAW	5415
QAX	5327
QAY	5315
QAZ	5204
QCTR	0106
QIT	1773
QSET	1064
QSETA	0147
QSTACK	0154
RET	0141
RTN	6211
SAMAN	0365
SAMEN	1020
SAMEND	1000
SAMFLG	0115
SAMINS	0117
SAMSTT	0126
SAMXIT	1170
SAMXTA	0026
SAM11	1021
SAM3	1010
SAM5	1036
SAM7	1013
SBLX	0447
SCCX	1462
SCHK	7050
SEXL	1454
SJMP	0132
SJMS	0134
SMXT	0045
SSA	0502
SSO	0504
SSSET	0513
SSSW	1444
SSTRIN	1614
SSW	1412
SSWSTO	1446
SSWSYN	1414
STAC	0101
STACKE	0102
STACKT	0100
START	4044
STBLK	7370
STCHAN	0050
STCHTP	6657
STOA	0512

STOPNM	0061
STOPON	0060
STOPP	1431
STOPPP	1144
STOP1	1451
STORFG	0116
STTBLK	0052
SUBT3	6427
SUBT6	6432
SUMCHN	6112
SYNA	0510
SYNCON	0056
SYNC1	1417
SYNDLY	0055
SYNGO	1400
SYNNUM	0057
SYN15	0771
TACMOV	7204
TAPE	1243
TAPEA	0070
TAPEW1	6577
TAPEW2	6600
TAPEX	1221
TAPE1	1311
TAPE3	1305
TBLK	0105
TEMP	1337
TEMPSV	7264
THING	1040
THINGA	0146
THING1	1057
THING2	1051
TIOLE	1113
TIDLEA	0150
TOTP	1122
TOTPTS	0112
TOTP1	1137
TPH	7363
TPHERE	7301
TPLADD	7111
TPLCLR	7253
TPLGET	7172
TPWRD1	6504
TPWRD2	6505
TYPAX	1077
TYPGO	1313
UCHK	7023
UNITSV	6603
UPLIM	6641
UPLIM1	6724
UPLIM3	7004
WRITE	1270
XIT	6653
XR0	0010
XR1	0011
XR2	0012
XR3	0013
XTART	0200
X1	0366
X1000	0152
X2	0367
X4	0066
ZZ	1774

```

0000                                *20                                ADCON
0001                                SEGMENT 2
0002                                *20
0003      0020  1020  BEGIN,  LDA I
0004      0021  0020                                20
0005      0022  0004                                ESF
0006      0023  1020  BEGIN1, LDA I                                /CORE
0007      0024  1001                                QAINIT-1                /MOVE
0010      0025  1040                                STA                    /OF
0011      0026  0011                                11                    /QANDA
0012      0027  1120                                ADA I                    /TO
0013      0030  2000                                2000                    /SEGMENT 0
0014      0031  4012                                STC 12
0015      0032  0640                                LDF 0
0016      0033  1020                                LDA I
0017      0034  1001                                QAINIT-1
0020      0035  1120                                ADA I
0021      0036  6107                                -AAAEND
0022      0037  4013                                STC 13
0023      0040  1031                                LDA I 11
0024      0041  1072                                STA I 12
0025      0042  0233                                XSK I 13                /CORE MOVE DONE?
0026      0043  6040                                JMP ,=3                /NO
0027      0044  0643                                LDF 3
0030      0045  6072  START,  JMP F1                /YES
0031      0046  6107                                JMP F3
0032      0047  6123                                JMP F4
0033      0050  6137                                JMP F5
0034      0051  6171                                JMP F6
0035      0052  0600                                LIF 0
0036      0053  6463                                JMP RESET2
0037      0054  0002                                PDP
0040                                PMODE
0041      4055  7200                                CLA
0042      4056  6046                                TLS
0043      4057  7200  HEADNG, CLA
0044      4060  6041                                TSF
0045      4061  5260                                JMP HEADNG+1                /FLAG SET?
0046      4062  1412                                TAD I XR2                /NO
0047      4063  6046                                TLS                /GET CHAR.
0050      4064  7450                                SNA                /PRINT CHAR.
0051      4065  7410                                SKP                /EOM?
0052      4066  5257                                JMP HEADNG                /YES
0053      4067  6141                                LINC                /NO
0054                                LMODE
0055      0070  0601                                LIF 1
0056      0071  6375                                JMP NXTCHN
0057      0072  0057  F1,  SET 17
0060      0073  0000                                0
0061      0074  7002  F1A,  JMP QAINIT
0062      0075  0434                                FRAME1
0063      0076  0774                                ANSWER
0064      0077  6377                                JMP CHKSNS
0065      0100  0070                                SET I 10
0066      0101  0774                                ANSWER
0067      0102  1330                                LDH I 10
0070      0103  1420                                SHD I
0071      0104  0300                                0300
0072      0105  6017                                JMP 17                /A C?
0073      0106  6074                                JMP F1A                /YES
0074      0107  0057  F3,  SET 17                /NO
0075      0110  0000                                0

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0076	0111	7002	F3A,	JMP QAINIT	
0077	0112	0530		FRAME3	
0100	0113	0774		ANSWER	
0101	0114	6377		JMP CHKSNS	
0102	0115	0070		SET I 10	
0103	0116	0774		ANSWER	
0104	0117	0601		LIF 1	
0105	0120	6020		JMP F3B	
0106	0121	6017		JMP 17	
0107	0122	6111		JMP F3A	
0110	0123	0057	F4,	SET 17	
0111	0124	0000		0	
0112	0125	7002	F4A,	JMP QAINIT	
0113	0126	0603		FRAME4	
0114	0127	0774		ANSWER	
0115	0130	6377		JMP CHKSNS	
0116	0131	0070		SET I 10	
0117	0132	0774		ANSWER	
0120	0133	0601		LIF 1	
0121	0134	6050		JMP F4B	
0122	0135	6017		JMP 17	
0123	0136	6125		JMP F4A	
0124	0137	0057	F5,	SET 17	
0125	0140	0000		0	
0126	0141	6402		JMP RESTR	
0127	0142	0074		SET I 14	/PTR TO ADDR
0130	0143	0657		FRAME5+13	/OF Q,F, SPACES
0131	0144	0073		SET I 13	/CTR FOR 24
0132	0145	0000		0	/LOC OF Q,F,
0133	0146	0072		SET I 12	/PTR TO ADDR=1
0134	0147	0335		QUE=1	/OF Q,BUFF,
0135	0150	0071		SET I 11	/CTR FOR
0136	0151	7775		-2	/TWO Q,F.
0137	0152	0067		SET I 7	
0140	0153	0000		0	
0141	0154	7002	F5A,	JMP QAINIT	
0142	0155	0644		FRAME5	
0143	0156	0774		ANSWER	
0144	0157	6377		JMP CHKSNS	
0145	0160	0070		SET I 10	
0146	0161	0774		ANSWER	
0147	0162	0601		LIF 1	
0150	0163	6116		JMP F5B	
0151	0164	0467		SKP	
0152	0165	6154		JMP F5A	
0153	0166	4430		STC TEMP1	/SAVE CH,N.
0154	0167	6176		JMP DPOSIT	
0155	0170	6154		JMP F5A	
0156	0171	0057	F6,	SET 17	
0157	0172	0000		0	
0160	0173	0600		LIF 0	
0161	0174	6470		JMP F6A	
0162	0175	6017		JMP 17	
0163	0176	1000	DPOSIT,	LDA	
0164	0177	0000		0	
0165	0200	4272		STC RTN2	
0166	0201	1000		LDA	
0167	0202	0007		7	/CHK TO SEE
0170	0203	1460		SAE I	/THAT NO, OF
0171	0204	0020		20	/CH IS 16,
0172	0205	0467		SKP	
0173	0206	6154		JMP F5A	
0174	0207	0227		XSK I 7	

0175	0210	1000	LDA	
0176	0211	0430	TEMP1	
0177	0212	1072	STA I 12	/STA CH,N. IN Q
0200	0213	0303	ROR 3	
0201	0214	1560	BCL I	
0202	0215	7770	7770	
0203	0216	0470	AZE I	/TENS DIGIT=0?
0204	0217	6245	JMP UNDIGT	/YES
0205	0220	1120	ADA I	/NO, CHANGE
0206	0221	0060	60	/TO 6 BIT CHAR
0207	0222	4357	STC SVTENS	
0210	0223	1000	LDA	/CHK TO
0211	0224	0013	13	
0212	0225	1460	SAE I	/SEE
0213	0226	0030	30	/IF
0214	0227	0467	SKP	/STORAGE
0215	0230	6234	JMP ,+4	/ROOM
0216	0231	1460	SAE I	/IN
0217	0232	0027	27	/PRESENT
0220	0233	0467	SKP	/Q.F.
0221	0234	6240	JMP ,+4	
0222	0235	1460	SAE I	
0223	0236	0026	26	
0224	0237	0467	SKP	
0225	0240	6360	JMP RESET	/NO ROOM
0226	0241	0233	XSK I 13	
0227	0242	1000	LDA	
0230	0243	0357	SVTENS	
0231	0244	1374	STH I 14	/STA TENS DIGIT
0232	0245	1000	UNDIGT, LDA	
0233	0246	0013	13	
0234	0247	1460	SAE I	/CHK
0235	0250	0030	30	/HERE
0236	0251	0467	SKP	/TOO
0237	0252	6256	JMP ,+4	
0240	0253	1460	SAE I	
0241	0254	0027	27	
0242	0255	0467	SKP	
0243	0256	6360	JMP RESET	/NO ROOM
0244	0257	1012	LDA 12	
0245	0260	1560	BCL I	
0246	0261	7770	7770	/GET UNIT DIGIT
0247	0262	1120	ADA I	/CHANGE TO
0250	0263	0060	60	/6 BIT CHAR
0251	0264	0233	XSK I 13	
0252	0265	1374	STH I 14	/STA UNIT DIGIT
0253	0266	1020	LDA I	
0254	0267	0054	54	
0255	0270	0233	XSK I 13	
0256	0271	1374	STH I 14	/STA A COMMA
0257	0272	0000	RTN2, 0	
0260	0273	1020	EXIT, LDA I	
0261	0274	1777	1777	
0262	0275	1072	STA I 12	
0263	0276	0072	SET I 12	
0264	0277	0335	QUE=1	
0265	0300	0601	LIF 1	
0266	0301	6256	JMP UNITCK	/DISPLAY FRAME6?
0267	0302	0467	SKP	/YES
0270	0303	0237	XSK I 17	/NO
0271	0304	6017	JMP 17	
0272	0305	4432	STC STCH1	
0273	0306	0601	LIF 1	

0274	0307	6000	JMP 0	
0275	0310	1040	STA	
0276	0311	0433	NCH1	
0277	0312	2432	ADD STCH1	
0300	0313	1120	ADA I	
0301	0314	7776	-1	
0302	0315	4431	STC SUM1	
0303	0316	1000	ALLRPT, LDA	
0304	0317	0432	STCH1	
0305	0320	4430	STC TEMP1	
0306	0321	6176	JMP OPOSIT	
0307	0322	1000	LDA	
0310	0323	0432	STCH1	
0311	0324	0017	COM	
0312	0325	2431	ADD SUM1	
0313	0326	0451	AP0	
0314	0327	6154	JMP F5A	
0315	0330	1000	LDA	
0316	0331	0432	STCH1	
0317	0332	1120	ADA I	
0320	0333	0001	1	
0321	0334	4432	STC STCH1	
0322	0335	6316	JMP ALLRPT	
0323	0336	0000	QUE, 0	
0324			*,+20	
0325	0357	0000	SVTENS, 0	
0326	0360	0231	RESET, XSK I 11	
0327	0361	0467	SKP	
0330	0362	6141	JMP F5+2	
0331	0363	0074	SET I 14	
0332	0364	0674	FRAME5+30	
0333	0365	0073	SET I 13	
0334	0366	0000	0	
0335	0367	6000	JMP 0	
0336	0370	0045	ANSBUF, SET 5	
0337	0371	0000	0	
0340	0372	1330	LDH I 10	
0341	0373	0601	LIF 1	
0342	0374	0040	SET 0	
0343	0375	0005	5	
0344	0376	6000	JMP 0	
0345	0377	0440	CHKSNS, SNS 0	
0346	0400	7055	JMP QARFSH	
0347	0401	6045	JMP START	
0350	0402	1000	RESTR, LDA	/SAVE RTN JMP
0351	0403	0000	0	
0352	0404	4422	STC RTN1	
0353	0405	0072	SET I 12	/CTR FOR
0354	0406	7775	-2	/TWO Q,F,
0355	0407	0074	SET I 14	/PTR TO ADDR
0356	0410	0657	FRAME5+13	/OF Q,F,SPACES
0357	0411	0073	SET I 13	/CTR FOR 24
0360	0412	7747	-30	/SPACES OF Q,F,
0361	0413	1020	LP, LDA I	/RESTORE Q,F,
0362	0414	0040	40	/WITH 40S
0363	0415	1374	STH I 14	
0364	0416	0233	XSK I 13	/Q,F. RESTORED?
0365	0417	6413	JMP LP	/NO
0366	0420	0232	XSK I 12	/BOTH Q,F. REST?
0367	0421	0467	SKP	/NO
0370	0422	0000	RTN1, 0	/YES
0371	0423	0234	XSK I 14	/STRT OF NXT QF
0372	0424	6411	JMP LP-2	

0373	0425	1032	QUEUE,	LDA I 12	
0374	0426	0601		LIF 1	
0375	0427	6000		JMP 0	
0376	0430	0000	TEMP1,	0	
0377	0431	0000	SUM1,	0	
0400	0432	0000	STCH1,	0	
0401	0433	0000	NCH1,	0	
0402	0434	0640			
0402	0435	4040			
0402	0436	4040			
0402	0437	4040			
0402	0440	0104			
0402	0441	0317			
0402			FRAME1, TEXT ZF	ADCON	
0403	0442	1643			
0403					
0404	0443	4743			
0404	0444	1040			
0404	0445	0401			
0404	0446	2401			
0404	0447	4006			
0404	0450	2217			
0404	0451	1540			
0404	0452	2410			
0404	0453	0540			
0404	0454	0401			
0404	0455	2401			
0404	0456	4024			
0404	0457	0120			
0404	0460	0540			
0404	0461	1123			
0404	0462	4024			
0404	0463	2201			
0404	0464	1623			
0404	0465	0605			
0404	0466	2222			
0404			H DATA FROM THE DATA TAPE IS TRANSFERRED		
0405	0467	0504			
0405	0470	4310			
0405	0471	4024			
0405	0472	1740			
0405	0473	0140			
0405	0474	1605			
0405	0475	2740			
0405	0476	2401			
0405	0477	2005			
0405	0500	4011			
0405	0501	1640			
0405	0502	0317			
0405	0503	1624			
0405	0504	1107			
0405	0505	2517			
0405	0506	2523			
0405	0507	4002			
0405	0510	1417			
0405	0511	0313			
0405			H TO A NEW TAPE IN CONTIGUOUS BLOCKS		
0406	0512	2343			
0406					
0407	0513	4743			
0407	0514	0624			
0407	0515	3120			
0407	0516	0540			

0407	0517	0340	
0407	0520	2417	
0407	0521	4003	
0407	0522	1716	
0407	0523	2411	
0407	0524	1625	
0407	0525	0540	
0407	0526	7461	
0407	0527	3400	
0407			FTYPE C TO CONTINUE <1\Z
0410	0530	0640	
0410	0531	4014	
0410	0532	1703	
0410	0533	0124	
0410	0534	1117	
0410	0535	1640	
0410	0536	1706	
0410	0537	4004	
0410	0540	0124	
0410			FRAME3, TEXT ZF LOCATION OF DATA
0411	0541	0143	
0411	0542	0640	
0411	0543	2417	
0411	0544	4002	
0411	0545	0540	
0411	0546	2422	
0411	0547	0116	
0411	0550	2306	
0411	0551	0522	
0411	0552	2205	
0411			F TO BE TRANSFERRED?
0412	0553	0477	
0412			
0413	0554	4347	
0413			
0414	0555	4347	
0414	0556	4306	
0414	0557	4040	
0414	0560	2324	
0414	0561	0122	
0414	0562	2411	
0414	0563	1607	
0414	0564	4024	
0414	0565	0214	
0414	0566	1340	
0414			F STARTING TBLK <3
0415	0567	7463	
0415	0570	4306	
0415	0571	4040	
0415	0572	4040	
0415	0573	4040	
0415	0574	4040	
0415	0575	4040	
0415	0576	4025	
0415	0577	1611	
0415	0600	2440	
0415	0601	7461	
0415	0602	3400	
0415			F UNIT <1\Z
0416	0603	0640	
0416	0604	2422	
0416	0605	0116	
0416	0606	2306	

0416	0607	0522	
0416	0610	4014	
0416	0611	1703	
0416	0612	0124	
0416	0613	1117	
0416			FRAME4, TEXT ZF TRANSFER LOCATION?
0417	0614	1677	
0417			
0420	0615	4347	
0420			
0421	0616	4347	
0421	0617	4306	
0421	0620	4040	
0421	0621	2324	
0421	0622	0122	
0421	0623	2411	
0421	0624	1607	
0421	0625	4024	
0421	0626	0214	
0421	0627	1340	
0421			F STARTING TBLK <3
0422	0630	7463	
0422	0631	4306	
0422	0632	4040	
0422	0633	4040	
0422	0634	4040	
0422	0635	4040	
0422	0636	4040	
0422	0637	4025	
0422	0640	1611	
0422	0641	2440	
0422	0642	7461	
0422	0643	3400	
0422			F UNIT <1\Z
0423	0644	0640	
0423	0645	4003	
0423	0646	2205	
0423	0647	0124	
0423	0650	0540	
0423	0651	0611	
0423	0652	1405	
0423	0653	2340	
0423	0654	0617	
0423			FRAME5, TEXT ZF CREATE FILES FOR
0424	0655	2243	
0424			
0425	0656	4743	
0425	0657	1040	
0425	0660	4040	
0425	0661	4040	
0425	0662	4040	
0425	0663	4040	
0425	0664	4040	
0425	0665	4040	
0425	0666	4040	
0425	0667	4040	
0425	0670	4040	
0425	0671	4040	
0425	0672	4040	
0425			H
0426	0673	4043	
0426	0674	1040	
0426	0675	4040	

0426	0676	4040
0426	0677	4040
0426	0700	4040
0426	0701	4040
0426	0702	4040
0426	0703	4040
0426	0704	4040
0426	0705	4040
0426	0706	4040
0426	0707	4040

0426		
0427	0710	4043

H

0427		
0430	0711	4743
0430	0712	0640
0430	0713	4040
0430	0714	0310
0430	0715	0116
0430	0716	1605
0430	0717	1440
0430	0720	1625
0430	0721	1502
0430	0722	0522
0430	0723	4074

F CHANNEL NUMBER <2

0430		
0431	0724	6243

0431		
0432	0725	4743
0432	0726	1040
0432	0727	4040
0432	0730	4024
0432	0731	3120
0432	0732	0540
0432	0733	0140
0432	0734	0617
0432	0735	2240
0432	0736	0114
0432	0737	1440
0432	0740	0310
0432	0741	0116
0432	0742	1605
0432	0743	1423
0432	0744	4023
0432	0745	0115
0432	0746	2014

H TYPE A FOR ALL CHANNELS SAMPLED

0432		
0433	0747	0504
0433		
0434	0750	4347
0434	0751	4310
0434	0752	4040
0434	0753	4040
0434	0754	2431
0434	0755	2005
0434	0756	4003
0434	0757	4027
0434	0760	1005
0434	0761	1640
0434	0762	0611
0434	0763	1611
0434	0764	2310
0434	0765	0504
0434	0766	4023

0434	0767	0514	
0434	0770	0503	
0434	0771	2411	
0434	0772	1716	
0434	0773	2334	
0434			H TYPE C WHEN FINISHED SELECTIONS\Z
0435	0774	0000	ANSWER, 0
0436			*,+5
0437			NOLIST
1414			SEGMENT 1
1415			*20
1416	0020	0055	F3B, SET 15
1417	0021	0000	0
1420	0022	1020	LDA I
1421	0023	0010	10
1422	0024	1040	STA
1423	0025	0227	MULWD
1424	0026	0017	COM
1425	0027	4221	STC UPLIM
1426	0030	6163	JMP CHAR
1427	0031	0467	SKP
1430	0032	6305	JMP ERRORX
1431	0033	1000	LDA
1432	0034	0133	OCTAC
1433	0035	6156	JMP ZERO
1434	0036	4134	STC STBLKD
1435	0037	6163	JMP CHAR
1436	0040	0467	SKP
1437	0041	6305	JMP ERRORX
1440	0042	1000	LDA
1441	0043	0133	OCTAC
1442	0044	6156	JMP ZERO
1443	0045	4135	STC UNITD
1444	0046	6312	JMP RDHD
1445	0047	6306	JMP NORMX
1446	0050	0055	F4B, SET 15
1447	0051	0000	0
1450	0052	6163	JMP CHAR
1451	0053	0467	SKP
1452	0054	6305	JMP ERRORX
1453	0055	1000	LDA
1454	0056	0133	OCTAC
1455	0057	6156	JMP ZERO
1456	0060	4136	STC STBLKN
1457	0061	6163	JMP CHAR
1460	0062	0467	SKP
1461	0063	6305	JMP ERRORX
1462	0064	1000	LDA
1463	0065	0133	OCTAC
1464	0066	6156	JMP ZERO
1465	0067	4137	STC UNITN
1466	0070	4155	STC FLAG
1467	0071	1000	LDA
1470	0072	0137	UNITN
1471	0073	1440	SAE
1472	0074	0135	UNITD
1473	0075	6306	JMP NORMX
1474	0076	1000	LDA
1475	0077	0146	LASTBN
1476	0100	0017	COM
1477	0101	2136	ADD STBLKN
1500	0102	0451	APQ
1501	0103	0467	SKP

/DATA TBLK NO.
/DATA UNIT NO.
/NEW TBLK NO.
/NEW UNIT NO.
/SET C(FLAG)=0
/NEW UNIT NO
/UNITN=UNITD?
/NO
/YES
/IF UNITN=UNITD
/ THEN
/STBLKN>LASTBN
/ OR
/STBLKN<STBLKD.

1502	0104	6306	JMP NORMX	/ OTHERWISE
1503	0105	2146	ADD LASTBN	/ERROR
1504	0106	0017	COM	
1505	0107	2134	ADD STBLKD	
1506	0110	0451	APD	
1507	0111	6305	JMP ERRORX	
1510	0112	1020	LDA I	
1511	0113	7767	-10	/SET A FLAG
1512	0114	4155	STC FLAG	/FOR LATER ON.
1513	0115	6306	JMP NORMX	
1514	0116	0055	SET 15	
1515	0117	0000	0	
1516	0120	6163	JMP CHAR	
1517	0121	0467	SKP	
1520	0122	6305	JMP ERRORX	
1521	0123	1000	LDA	
1522	0124	0133	OCTAC	
1523	0125	6156	JMP ZERO	
1524	0126	6235	JMP CHKCH	
1525	0127	1000	LDA	
1526	0130	0133	OCTAC	
1527	0131	6156	JMP ZERO	
1530	0132	6306	JMP NORMX	
1531	0133	0000	OCTAC, 0	
1532	0134	0000	STBLKD, 0	
1533	0135	0000	UNITD, 0	
1534	0136	0000	STBLKN, 0	
1535	0137	0000	UNITN, 0	
1536	0140	0000	NUM, 0	
1537	0141	0003	MBLK, 3	
1540	0142	0000	STCHAN, 0	
1541	0143	0000	NCHAN, 0	
1542	0144	0000	QSAVE, 0	
1543	0145	0000	QSAVE2, 0	
1544	0146	0000	LASTBN, 0	
1545	0147	0000	NUMGRP, 0	
1546	0150	0000	TEMP2, 0	
1547	0151	0000	TEMP5, 0	
1550	0152	0000	DELTA, 0	
1551	0153	0000	POWER2, 0	
1552	0154	0000	GETCHN, 0	
1553	0155	0000	FLAG, 0	
1554	0156	1460	ZERO, SAE I	
1555	0157	7777	7777	
1556	0160	0467	SKP	
1557	0161	0011	CLR	
1560	0162	6000	JMP 0	
1561				
1562	0163	0056	CHAR, SET 16	
1563	0164	0000	0	
1564	0165	0011	CLR	
1565	0166	4133	STC OCTAC	
1566	0167	0602	LOOP1, LIF 2	
1567	0170	6370	JMP ANSBUF	
1570	0171	1420	SHD I	
1571	0172	7400	7400	/E.O.ANS.F.?
1572	0173	6016	JMP 16	
1573	0174	1420	SHD I	
1574	0175	3400	3400	/EOM?
1575	0176	6016	JMP 16	
1576	0177	1420	SHD I	
1577	0200	0000	0	/A BLANK?
1600	0201	6167	JMP LOOP1	

1601	0202	1420		SHD I	
1602	0203	0100		0100	/AN A?
1603	0204	6275		JMP RALL	
1604	0205	1420		SHD I	
1605	0206	0300		0300	/A C?
1606	0207	6273		JMP REXIT	
1607	0210	1120		ADA I	
1610	0211	7717		-60	/S DIGIT?
1611	0212	1040		STA	
1612	0213	0140		NUM	
1613	0214	1120		ADA I	
1614	0215	0001		1	
1615	0216	0451		APO	/NUM IS NONNEG?
1616	0217	6233		JMP XIT	/SHOULD BE
1617	0220	1120		ADA I	
1620	0221	0000	UPLIM,	0	
1621	0222	0471		APO I	/IS NUM LESS
1622	0223	6233		JMP XIT	/THAN 10 OR 12?
1623	0224	1000		LDA	/SHOULD BE
1624	0225	0133		OCTAC	
1625	0226	1260		MUL I	/MUL BY 10 OR 12
1626	0227	0000	MULWD,	0	/FOR OCT OR DEC
1627	0230	2140		ADD NUM	/CONVERSION
1630	0231	4133		STC OCTAC	
1631	0232	6167		JMP LOOP1	
1632	0233	0236	XIT,	XSK I 16	
1633	0234	6016		JMP 16	
1634	0235	0046	CHKCH,	SET 6	
1635	0236	0000		0	
1636	0237	4144		STC QSAVE	/SAVE CH.N.
1637	0240	2142		ADD STCHAN	
1640	0241	0017		COM	
1641	0242	1120		ADA I	
1642	0243	0001		1	
1643	0244	2144		ADD QSAVE	/CH NO IS
1644	0245	0451		APO	/>=STCHAN?
1645	0246	6305		JMP ERRORX	/NO
1646	0247	4145		STC QSAVE2	/YES
1647	0250	2143		ADD NCHAN	
1650	0251	0017		COM	
1651	0252	2145		ADD QSAVE2	/CH NO IS
1652	0253	0471		APO I	/<STCH+NCHAN?
1653	0254	6305		JMP ERRORX	/NO
1654	0255	6006		JMP 6	/YES
1655	0256	0046	UNITCK,	SET 6	
1656	0257	0000		0	
1657	0260	1000		LDA	
1660	0261	0137		UNITN	
1661	0262	1460		SAE I	
1662	0263	0000		0	/UNITN = 0?
1663	0264	0467		SKP	/NO
1664	0265	6267		JMP JMPF6	/YES
1665	0266	0226		XSK I 6	
1666	0267	0602	JMPF6,	LIF 2	
1667	0270	0040		SET 0	
1670	0271	0006		6	
1671	0272	6000		JMP 0	
1672	0273	0602	REXIT,	LIF 2	
1673	0274	6273		JMP EXIT	
1674	0275	1000	RALL,	LDA	
1675	0276	0142		STCHAN	
1676	0277	0602		LIF 2	
1677	0300	6305		JMP ALL	

1700	0301	1000	LDA	
1701	0302	0143	NCHAN	
1702	0303	0602	LIF 2	
1703	0304	6310	JMP ALL+3	
1704	0305	0235	ERRORX, XSK I 15	
1705	0306	0602	NORMX, LIF 2	
1706	0307	0040	SET 0	
1707	0310	0015	15	
1710	0311	6000	JMP 0	
1711			/FROM DATA TAPE READ STCHAN AND NCHAN	
1712			/	
1713	0312	0053	RDHD, SET 13	
1714	0313	0000	0	
1715	0314	6320	JMP RDHEAD	
1716	0315	0040	SET 0	
1717	0316	0013	13	
1720	0317	6000	JMP 0	
1721	0320	1000	RDHEAD, LDA	
1722	0321	0000	0	
1723	0322	4374	STC RTN3	
1724	0323	1000	LDA	
1725	0324	0135	UNITD	
1726	0325	0341	SCR 1	
1727	0326	0001	AXO	/SET XOB
1730	0327	1000	LDA	
1731	0330	0135	UNITD	
1732	0331	4150	STC TEMP2	
1733	0332	1500	SRO	
1734	0333	0150	TEMP2	/BIT 11=0?
1735	0334	6340	JMP BIT1	/NO
1736	0335	1020	BIT0, LDA I	/YES
1737	0336	0700	RDC	
1740	0337	6344	JMP STR	
1741	0340	1020	BIT1, LDA I	
1742	0341	0700	RDC	
1743	0342	1120	ADA I	
1744	0343	0010	10	/SET BIT 8
1745	0344	4353	STR, STC TPWRD1	
1746	0345	1000	LDA	
1747	0346	0141	MBLK	
1750	0347	0303	ROR 3	
1751	0350	1100	ADA	
1752	0351	0134	STBLKD	
1753	0352	4354	STC TPWRD2	
1754	0353	0000	TPWRD1, 0	
1755	0354	0000	TPWRD2, 0	
1756	0355	1000	LDA	
1757	0356	1400	1400	
1760	0357	4142	STC STCHAN	
1761	0360	3401	ADD 1401	
1762	0361	4143	STC NCHAN	
1763	0362	3414	ADD 1414	
1764	0363	4146	STC LASTBN	
1765	0364	2134	ADD STBLKD	
1766	0365	0017	COM	/DETERMINE
1767	0366	2146	ADD LASTBN	/NUM OF
1770	0367	0342	SCR 2	/GROUPS OF
1771	0370	1120	ADA I	/4 BLKS ORIG
1772	0371	0001	1	/TRANSFERED
1773	0372	0017	COM	
1774	0373	4147	STC NUMGRP	
1775	0374	0000	RTN3, 0	
1776			/	

1777			/PART 2 OF PROGRAM	
2000			/GET CHANNEL TO BE TRANS.FROM THE Q.	
2001			/	
2002	0375	0042	NXTCHN, SET 2	
2003	0376	0147	NUMGRP	
2004	0377	0002	PDP	
2005			PMODE	
2006	2400	4420	JMS I BUFTRR	/SETUP 1 BLK BUF
2007	2401	6141	LINC	
2010			LMODE	
2011	0402	0077	SET I 17	/CTR FOR NO.
2012	0403	0000	0	/OF WRTAPES
2013	0404	0602	LIF 2	
2014	0405	6425	JMP QUEUE	/GET A
2015	0406	1460	SAE I	/CHAN NO.
2016	0407	1777	1777	/ANOTHER CHAN?
2017	0410	0467	SKP	/YES
2020	0411	7273	JMP TRANDN	/FINISHED
2021	0412	1040	STA	
2022	0413	0154	GETCHN	
2023	0414	6525	JMP BUFSUB	/SAVE CHAN
2024	0415	2552	ADD TB	/NO, AND
2025	0416	4555	STC C1	/STBLK OF
2026	0417	2553	ADD TC	/TRANSFER
2027	0420	4556	STC C2	/TAPE
2030	0421	1000	LDA	/WHICH WILL
2031	0422	0136	STBLKN	/BE
2032	0423	6525	JMP BUFSUB	/TYPED
2033	0424	2551	ADD TA	/OUT
2034	0425	4563	STC TB1	/LATER
2035	0426	2552	ADD TB	/ON
2036	0427	4564	STC TB2	
2037	0430	2553	ADD TC	
2040	0431	4565	STC TB3	
2041	0432	1000	LDA	/YES
2042	0433	0134	STBLKD	/FIRST BLK
2043	0434	1120	ADA I	/ON DATA TAPE
2044	0435	0001	1	/TO BE
2045	0436	4472	STC TBLK	/TRANSFERED
2046	0437	0467	SKP	
2047	0440	6141	RD4BLK, 6141	/LINC
2050	0441	0222	XSK I 2	/THIS CH DONE?
2051	0442	0467	SKP	/NO
2052	0443	6601	JMP TYP0UT+1	/YES
2053	0444	0643	LDF 3	
2054	0445	1000	LDA	/DATA TAPE
2055	0446	0135	UNITD	/UNIT NO
2056	0447	0341	SCR 1	
2057	0450	0001	AXO	/SET XOB
2060	0451	1000	LDA	
2061	0452	0135	UNITD	
2062	0453	4150	STC TEMP2	
2063	0454	1500	SRO	
2064	0455	0150	TEMP2	/BIT 11=0?
2065	0456	6517	JMP BITN	/NO
2066	0457	6514	JMP BITY	/YES
2067	0460	4474	STORE, STC TAPEW1	
2070	0461	0066	SET I 6	/CTR FOR MBLKS
2071	0462	7773	-4	/4,5,6,7
2072	0463	1000	LDA	
2073	0464	0524	MBLK4	
2074	0465	4467	STC MBLCK	
2075	0466	1020	LDA I	

2076	0467	0000	MBLCK,	0	
2077	0470	0303		ROR 3	
2100	0471	1120		ADA I	
2101	0472	0000	TBLK,	0	
2102	0473	4475		STC TAPEW2	
2103	0474	0000	TAPEW1,	0	
2104	0475	0000	TAPEW2,	0	
2105	0476	1000		LDA	/INCREMENT
2106	0477	0472		TBLK	/TBLK
2107	0500	1120		ADA I	/NUM
2110	0501	0001		1	
2111	0502	4472		STC TBLK	
2112	0503	0226		XSK I 6	/4 BLKS READ/
2113	0504	0467		SKP	/NO
2114	0505	6633		JMP TRANSF	/YES
2115	0506	1000		LDA	
2116	0507	0467		MBLCK	
2117	0510	1120		ADA I	
2120	0511	0001		1	
2121	0512	4467		STC MBLCK	
2122	0513	6466		JMP MBLCK=1	
2123	0514	1020	BITY,	LDA I	
2124	0515	0700		RDC	
2125	0516	6460		JMP STORE	
2126	0517	1020	BITN,	LDA I	
2127	0520	0700		RDC	
2130	0521	1120		ADA I	
2131	0522	0010		10	
2132	0523	6460		JMP STORE	
2133	0524	0004	MBLK4,	4	
2134	0525	1040	BUFSUB,	STA	/SAVE NUM TO
2135	0526	0151		TEMP5	/BE TYPED
2136	0527	0346		SCR 6	/GET HUNDREDS
2137	0530	1120		ADA I	/DIGIT
2140	0531	0260		260	
2141	0532	4551		STC TA	
2142	0533	2151		ADD TEMP5	
2143	0534	0343		SCR 3	/GET TENS DIGIT
2144	0535	1560		BCL I	
2145	0536	7770		7770	
2146	0537	1120		ADA I	
2147	0540	0260		260	
2150	0541	4552		STC TB	
2151	0542	2151		ADD TEMP5	/GET UNITS DIGIT
2152	0543	1560		BCL I	
2153	0544	7770		7770	
2154	0545	1120		ADA I	
2155	0546	0260		260	
2156	0547	4553		STC TC	
2157	0550	6000		JMP 0	
2160	0551	0000	TA,	0	
2161	0552	0000	TB,	0	
2162	0553	0000	TC,	0	
2163	0554	0240	BUFTY,	240	/SPACE
2164	0555	0000	C1,	0	
2165	0556	0000	C2,	0	
2166	0557	0240		240	/SPACE
2167	0560	0240		240	/ "
2170	0561	0240		240	/ "
2171	0562	0240		240	/ "
2172	0563	0000	TB1,	0	
2173	0564	0000	TB2,	0	
2174	0565	0000	TB3,	0	

2175	0566	0240	240	
2176	0567	0240	240	
2177	0570	0240	240	
2200	0571	0000	NB1,	0
2201	0572	0000	NB2,	0
2202	0573	0000	NB3,	0
2203	0574	0215	215	/CR
2204	0575	0212	212	/LF
2205	0576	0000	0	/EOL
2206	0577	0467	SKP	
2207	0600	6141	TYPOUT, 6141	/LINC
2210	0601	1000	LDA	/GET NO, OF
2211	0602	0017	17	/BLKS TRANSFD
2212	0603	6525	JMP BUFSUB	
2213	0604	2551	ADD TA	
2214	0605	4571	STC NB1	
2215	0606	2552	ADD TB	
2216	0607	4572	STC NB2	
2217	0610	2553	ADD TC	
2220	0611	4573	STC NB3	
2221	0612	0002	PDP	
2222			PMODE	
2223	2613	1230	TAD X5	
2224	2614	3013	DCA XR3	
2225	2615	7200	CLA	
2226	2616	6046	TLS	
2227	2617	7200	AGAIN, CLA	
2230	2620	6041	TSF	/TYPE
2231	2621	5220	JMP ,=1	/OUT
2232	2622	1413	TAD I XR3	/CHAN &
2233	2623	6046	TLS	/STBLK &
2234	2624	7450	SNA	/NB
2235	2625	7410	SKP	
2236	2626	5217	JMP AGAIN	
2237	2627	7410	SKP	
2240	2630	2553	X5, BUFTTY-1	
2241	2631	6141	LINC	
2242			LMODE	
2243	0632	6375	JMP NXTCHN	
2244			/	
2245			/TRANSFER DATA FROM 1K BUFFER(SEG 3)	
2246			/TO MBLK 3(SEG 1)AND WRITE ON TAPE,	
2247			/	
2250	0633	0064	TRANSF, SET I 4	/CTR FOR
2251	0634	0000	0	/POWER OF 2
2252	0635	1000	LDA	/OF NCHAN
2253	0636	0143	NCHAN	
2254	0637	4150	STC TEMP2	
2255	0640	1500	SRO	
2256	0641	0150	TEMP2	/BIT 11=0?
2257	0642	6645	JMP POWER	/NO
2260	0643	0224	XSK I 4	/YES
2261	0644	6640	JMP ,=4	
2262	0645	1000	POWER, LDA	
2263	0646	0004	4	/GET POWER OF 2
2264	0647	1040	STA	
2265	0650	0153	POWER2	
2266	0651	1120	ADA I	/ADD SCR
2267	0652	0340	340	
2270	0653	4656	STC NSCR	
2271	0654	1020	LDA I	/NUM WHICH AFTER
2272	0655	2000	2000	/ROT GIVES DELTA
2273	0656	0000	NSCR, 0	

2274	0657	4152	STC DELTA	
2275	0660	0002	PDP	
2276			PMODE	
2277	2661	5662	JMP I ,+1	
2300	2662	3000	3000	
2301			*3000	
2302	3000	1716	TAD I POWR2	
2303	3001	1204	TAD JMPC	
2304	3002	3203	DCA ,+1	
2305	3003	0000	0	
2306	3004	5605	JMPC, JMP I ,+1	
2307	3005	3012	CHAN1	
2310	3006	3017	CHAN2	
2311	3007	3022	CHAN4	
2312	3010	3025	CHAN10	
2313	3011	3030	CHAN20	
2314	3012	1300	CHAN1, TAD M2000	/2000 LOC CTR
2315	3013	3312	DCA CTR	
2316	3014	1307	TAD A6000	/1ST LOC=1 OF1K
2317	3015	3011	DCA XR1	
2320	3016	5246	JMP NXT1	
2321	3017	1301	CHAN2, TAD M1000	/1000 LOC CTR
2322	3020	3312	DCA CTR	
2323	3021	5232	JMP CONT	
2324	3022	1303	CHAN4, TAD M400	/400 LOC CTR
2325	3023	3312	DCA CTR	
2326	3024	5232	JMP CONT	
2327	3025	1304	CHAN10, TAD M200	/200 LOC CTR
2330	3026	3312	DCA CTR	
2331	3027	5232	JMP CONT	
2332	3030	1305	CHAN20, TAD M100	/100 LOC CTR
2333	3031	3312	DCA CTR	
2334	3032	1722	CONT, TAD I GETCH	/CH NO,
2335	3033	7041	CIA	/SET UP
2336	3034	1720	TAD I STCH	/CTR TO
2337	3035	1306	TAD M1	/LOCATE PTR
2340	3036	3313	DCA DELCTR	/AT START
2341	3037	1307	TAD A6000	/OF TRANSFER
2342	3040	2313	ISZ DELCTR	/LOCATION
2343	3041	7410	SKP	
2344	3042	5245	JMP NXT1-1	
2345	3043	1715	TAD I DELTAA	
2346	3044	5240	JMP ,=4	
2347	3045	3011	DCA XR1	
2350	3046	1411	NXT1, TAD I XR1	/END OF DATA
2351	3047	1277	TAD M4000	/FOR THIS CH?
2352	3050	7450	SNA	
2353	3051	5271	JMP DONE	/YES
2354	3052	1311	TAD A4000	/NO
2355	3053	3410	DCA I XR	
2356	3054	2314	ISZ CTR400	/BLK FULL?
2357	3055	7410	SKP	/NO
2360	3056	4421	JMS I WRTP	/YES
2361	3057	2312	ISZ CTR	/FIN BUFF?
2362	3060	5246	JMP NXT1	/NO
2363	3061	5662	JMP I RD4BK	/RDC 4 MORE BLKS
2364	3062	2440	RD4BK, RD4BLK	
2365	3063	0000	BUFTR, 0	
2366	3064	1310	TAD A3400	/1ST LOC=1 TR BU
2367	3065	3010	DCA XR	
2370	3066	1303	TAD M400	/CTR FRO 400 LOC
2371	3067	3314	DCA CTR400	/OF TRANS BUF
2372	3070	5663	JMP I BUFTR	

2373	3071	7130	DONE,	STL RAR	
2374	3072	3410		DCA I XR	
2375	3073	2314		ISZ CTR400	
2376	3074	5271		JMP DONE	
2377	3075	4421		JMS I WRTPE	
2400	3076	5723		JMP I TYP	
2401	3077	4000	M4000,	=4000	
2402	3100	6000	M2000,	=2000	
2403	3101	7000	M1000,	=1000	
2404	3102	7001	M777,	=777	
2405	3103	7400	M400,	=400	
2406	3104	7600	M200,	=200	
2407	3105	7700	M100,	=100	
2410	3106	7777	M1,	=1	
2411	3107	5777	A6000,	5777	
2412	3110	3377	A3400,	3377	
2413	3111	4000	A4000,	4000	
2414	3112	0000	CTR,	0	
2415	3113	0000	DELCTR,	0	
2416	3114	0000	CTR400,	0	
2417	3115	2152	DELTA,	DELTA	
2420	3116	2153	POWR2,	POWER2	
2421	3117	2375	NXTCH,	NXTCHN	
2422	3120	2142	STCH,	STCHAN	
2423	3121	2144	QSAV,	QSAVE	
2424	3122	2154	GETCH,	GETCHN	
2425	3123	2600	TYP,	TYPOUT	
2426				*3200	
2427	3200	0000	WRTAPE,	0	
2430	3201	6141		LINC	
2431				LMODE	
2432	1202	1000		LDA	
2433	1203	0136		STBLKN	/BLK TO BE
2434	1204	3102		ADD M777	/WRITTEN ON
2435	1205	0471		AP0 I	/<= 777?
2436	1206	7275		JMP ENDTP	/NO
2437	1207	1000		LDA	/YES
2440	1210	0137		UNITN	/OF UNITD=UNITN
2441	1211	1440		SAE	/THEN
2442	1212	0135		UNITD	/BLK TO BE
2443	1213	7226		JMP BYPASS	/WRITTEN ON
2444	1214	1000		LDA	/< STBLKD
2445	1215	0155		FLAG	
2446	1216	0471		AP0 I	/STBLKN < STBLKD
2447	1217	7226		JMP BYPASS	/NO
2450	1220	1000		LDA	/YES
2451	1221	0136		STBLKN	
2452	1222	0017		COM	
2453	1223	2134		ADD STBLKD	
2454	1224	0451		AP0	/BLK IS OK?
2455	1225	7317		JMP OVERTP	/NO
2456	1226	0237	BYPASS,	XSK I 17	/YES
2457	1227	1000		LDA	
2460	1230	0137		UNITN	
2461	1231	0341		SCR 1	
2462	1232	0001		AX0	/SET X0B
2463	1233	1000		LDA	
2464	1234	0137		UNITN	
2465	1235	4150		STC TEMP2	
2466	1236	1500		SRO	
2467	1237	0150		TEMP2	/BIT 11=0?
2470	1240	7266		JMP BITNO	/NO
2471	1241	7263		JMP BITYES	/YES

2472	1242	5251	SAVE,	STC TPWD1	
2473	1243	1000		LDA	
2474	1244	0141		MBLK	
2475	1245	0303		ROR 3	
2476	1246	1100		ADA	
2477	1247	0136		STBLKN	
2500	1250	5252		STC TPWD2	
2501	1251	0000	TPWD1,	0	
2502	1252	0000	TPWD2,	0	
2503	1253	1020		LDA I	
2504	1254	0001		1	
2505	1255	2136		ADD STBLKN	/INCR STBLKN FOR
2506	1256	4136		STC STBLKN	/NEXT ROUND
2507	1257	0002		PDP	
2510				PMODE	
2511	3260	4420		JMS I BUFTRR	
2512	3261	5600		JMP I WRTAPE	
2513	3262	6141		LINC	
2514				LMODE	
2515	1263	1020	BIT YES,	LDA I	
2516	1264	0704		WRC	
2517	1265	7242		JMP SAVE	
2520	1266	1020	BIT if,	LDA I	
2521	1267	0704		WRC	
2522	1270	1120		ADA I	
2523	1271	0010		10	/SET BIT8
2524	1272	7242		JMP SAVE	
2525	1273	0600	TRANDN,	LIF 0	
2526	1274	6505		JMP F7A	
2527	1275	0002	ENDIP,	I CP	
2530				PMODE	
2531	3276	7200		CLA	
2532	3277	1313		TAD X6	
2533	3300	3014		DCA XR4	
2534	3301	6046		TLS	
2535	3302	7200	HEAD1,	CLA	
2536	3303	6041		TSF	
2537	3304	5303		JMP ,-1	
2540	3305	1414		TAD I XR4	
2541	3306	6046		TLS	
2542	3307	7450		SNA	
2543	3310	7410		SKP	
2544	3311	5302		JMP HEAD1	
2545	3312	7410		SKP	
2546	3313	0424	X6,	TAPE-1	
2547	3314	6141		LINC	
2550				LMODE	
2551	1315	0602		LIF 2	
2552	1316	6020		JMP BEGIN	
2553	1317	0002	OVERTP,	PDP	
2554				PMODE	
2555	3320	7200		CLA	
2556	3321	1335		TAD X7	
2557	3322	3015		DCA XR5	
2560	3323	6046		TLS	
2561	3324	7200	HEAD2,	CLA	
2562	3325	6041		TSF	
2563	3326	5325		JMP ,-1	
2564	3327	1415		TAD I XR5	
2565	3330	6046		TLS	
2566	3331	7450		SNA	
2567	3332	7410		SKP	
2570	3333	5324		JMP HEAD2	

2571	3334	7410		SKP	
2572	3335	0441	X7,	SMASH=1	
2573	3336	6141		LINC	
2574				LMODE	
2575	1337	0602		LIF 2	
2576	1340	6020		JMP BEGIN	
2577				SEGMENT 0	
2600				*10	
2601	0010	0000	XR,	0	
2602	0011	0000	XR1,	0	
2603	0012	0000	XR2,	0	
2604	0013	0000	XR3,	0	
2605	0014	0000	XR4,	0	
2606	0015	0000	XR5,	0	
2607				*20	
2610	0020	3063	BUFTRR,	BUFTTR	
2611	0021	3200	WRTPR,	WRTPR	
2612				*400	
2613	0400	0212	XR22,	212	/LF
2614	0401	0212		212	/LF
2615	0402	0212		212	/LF
2616	0403	0303		303	/C
2617	0404	0310		310	/H
2620	0405	0301		301	/A
2621	0406	0316		316	/N
2622	0407	0240		240	/SPACE
2623	0410	0240		240	/ "
2624	0411	0323		323	/S
2625	0412	0324		324	/T
2626	0413	0302		302	/B
2627	0414	0314		314	/L
2630	0415	0313		313	/K
2631	0416	0240		240	/SPACE
2632	0417	0240		240	/ "
2633	0420	0316		316	/N
2634	0421	0302		302	/B
2635	0422	0215		215	/CR
2636	0423	0212		212	/LF
2637	0424	0000		0	/EOM
2640	0425	0212	TAPE,	212	/LF
2641	0426	0305		305	/E
2642	0427	0256		256	/,
2643	0430	0317		317	/O
2644	0431	0256		256	/,
2645	0432	0324		324	/T
2646	0433	0301		301	/A
2647	0434	0320		320	/P
2650	0435	0305		305	/E
2651	0436	0215		215	/CR
2652	0437	0212		212	/LF
2653	0440	0207		207	/BELL
2654	0441	0000		0	/EOM
2655	0442	0212	SMASH,	212	/LF
2656	0443	0317		317	/O
2657	0444	0326		326	/V
2660	0445	0305		305	/E
2661	0446	0322		322	/R
2662	0447	0322		322	/R
2663	0450	0325		325	/U
2664	0451	0316		316	/N
2665	0452	0240		240	/SPACE
2666	0453	0304		304	/D
2667	0454	0301		301	/A

2670	0455	0324	324	/T
2671	0456	0301	301	/A
2672	0457	0215	215	/CR
2673	0460	0212	212	/LF
2674	0461	0207	207	/BELL
2675	0462	0000	0	/EOM
2676	0463	1020	RESET2, LDA I	/RESET PTR TO
2677	0464	0377	XR22=1	/TOP OF
2700	0465	4012	STC XR2	/TTY HEADING
2701	0466	0602	LIF 2	
2702	0467	6000	JMP 0	
2703	0470	0047	F6A, SET 7	
2704	0471	0000	0	
2705	0472	7002	F6AA, JMP QAINIT	
2706	0473	0535	FRAME6	
2707	0474	0774	ANSWER	
2710	0475	6523	JMP CHKSN	
2711	0476	0070	SET I 10	
2712	0477	0774	ANSWER	
2713	0500	1330	LDH I 10	
2714	0501	1420	SHD I	
2715	0502	2400	2400	/A T?
2716	0503	6527	JMP NORMXX	/YES
2717	0504	6472	JMP F6AA	/NO
2720	0505	7002	F7A, JMP QAINIT	
2721	0506	0640	FRAME7	
2722	0507	0774	ANSWER	
2723	0510	7055	JMP QARFSH	
2724	0511	0070	SET I 10	
2725	0512	0774	ANSWER	
2726	0513	1330	LDH I 10	
2727	0514	1420	SHD I	
2730	0515	2200	2200	/AN R?
2731	0516	6533	JMP START1	
2732	0517	1420	SHD I	
2733	0520	1000	1000	/AN H?
2734	0521	0000	HLT	/STOP
2735	0522	6505	JMP F7A	/NO
2736	0523	0440	CHKSN, SNS 0	
2737	0524	7055	JMP QARFSH	
2740	0525	0602	LIF 2	
2741	0526	6023	JMP BEGIN1	
2742	0527	0602	NORMXX, LIF 2	
2743	0530	0040	SET 0	
2744	0531	0007	7	
2745	0532	6000	JMP 0	
2746	0533	0602	START1, LIF 2	
2747	0534	6020	JMP BEGIN	
2750	0535	0640		
2750	0536	4040		
2750	0537	4040		
2750	0540	4003		
2750	0541	0125		
2750	0542	2411		
2750	0543	1716		
2750			FRAME6, TEXT ZF	CAUTION!
2751	0544	4143		
2751				
2752	0545	4743		
2752				
2753	0546	4743		
2753	0547	1040		
2753	0550	4040		

2753	0551	4040
2753	0552	4011
2753	0553	0640
2753	0554	2516
2753	0555	1124
2753	0556	4060
2753	0557	4011
2753	0560	2340
2753	0561	2523
2753	0562	0504
2753	0563	4024
2753	0564	1740
2753	0565	0317
2753	0566	1414
2753	0567	0503
2753		
2754	0570	2443
2754	0571	1040
2754	0572	4040
2754	0573	0317
2754	0574	1624
2754	0575	1107
2754	0576	2517
2754	0577	2523
2754	0600	4004
2754	0601	0124
2754	0602	0154
2754	0603	4022
2754	0604	0515
2754	0605	1726
2754	0606	0540
2754	0607	0411
2754	0610	0114
2754	0611	4024
2754	0612	0120
2754		
2755	0613	0543
2755		
2756	0614	4743
2756	0615	1040
2756	0616	4040
2756	0617	4040
2756	0620	4040
2756	0621	4024
2756	0622	3120
2756	0623	0540
2756	0624	2440
2756	0625	2417
2756	0626	4002
2756	0627	0507
2756	0630	1116
2756	0631	4024
2756	0632	2201
2756	0633	1623
2756	0634	0605
2756	0635	2240
2756	0636	7461
2756	0637	3400
2756		
2757	0640	0640
2757	0641	4040
2757	0642	2205
2757	0643	2125

H

IF UNIT 0 IS USED TO COLLECT

H

CONTIGUOUS DATA, REMOVE DIAL TAPE

H

TYPE T TO BEGIN TRANSFER <1\2

2757	0644	0523	
2757	0645	2405	
2757	0646	0440	
2757	0647	0401	
2757			FRAME7, TEXT ZF REQUESTED DATA
2760	0650	2401	
2760	0651	4306	
2760	0652	1001	
2760	0653	2340	
2760	0654	0205	
2760	0655	0516	
2760	0656	4024	
2760	0657	2201	
2760	0660	1623	
2760	0661	0605	
2760	0662	2222	
2760			FHAS BEEN TRANSFERRED
2761	0663	0504	
2761			
2762	0664	4347	
2762			
2763	0665	4347	
2763	0666	4310	
2763	0667	4040	
2763	0670	4040	
2763	0671	4040	
2763	0672	4040	
2763	0673	2431	
2763	0674	2005	
2763	0675	4022	
2763	0676	4006	
2763	0677	1722	
2763	0700	4001	
2763	0701	1617	
2763	0702	2410	
2763	0703	0522	
2763	0704	4012	
2763			H TYPE R FOR ANOTHER JOB
2764	0705	1702	
2764	0706	4310	
2764	0707	4040	
2764	0710	4040	
2764	0711	4040	
2764	0712	4040	
2764	0713	2431	
2764	0714	2005	
2764	0715	4010	
2764	0716	4024	
2764	0717	1740	
2764	0720	1014	
2764			H TYPE H TO HLT
2765	0721	2443	
2765			
2766	0722	4743	
2766	0723	0640	
2766	0724	4040	
2766	0725	4040	
2766	0726	4022	
2766	0727	0520	
2766	0730	1431	
2766	0731	4074	
2766	0732	6134	
2766			F REPLY <1\Z

0000 ERRORS

AAAEND 5670
AGAIN 2617
ALL 4305
ALLRPT 4316
ANSBUF 4370
ANSWER 4774
A3400 3110
A4000 3111
A6000 3107
BEGIN 4020
BEGIN1 4023
BITN 2517
BITNO 3266
BITY 2514
BITYES 3263
BIT0 2335
BIT1 2340
BUFSUB 2525
BUFTR 3063
BUFTRR 0020
BUFTTY 2554
BYPASS 3226
CHAN1 3012
CHAN10 3025
CHAN2 3017
CHAN20 3030
CHAN4 3022
CHAR 2163
CHKCH 2235
CHKS 0523
CHKSNS 4377
CONT 3032
CTR 3112
CTR400 3114
C1 2555
C2 2556
DELCTR 3113
DELTA 2152
DELTA 3115
DONE 3071
DPOSIT 4176
ENDTP 3275
ERRORX 2305
EXIT 4273
FLAG 2155
FRAME1 4434
FRAME3 4530
FRAME4 4603
FRAME5 4644
FRAME6 0535
FRAME7 0640
F1 4072
F1A 4074
F3 4107
F3A 4111
F3B 2020
F4 4123
F4A 4125
F4B 2050
F5 4137
-

F5A	4154
F5B	2116
F6	4171
F6A	0470
F6AA	0472
F7A	0505
GETCH	3122
GETCHN	2154
GETKBD	5523
HEADNG	4057
HEAD1	3302
HEAD2	3324
JMPC	3004
JMPF6	2267
LASTBN	2146
LOOP1	2167
LP	4413
MBLCK	2467
MBLK	2141
MBLK4	2524
MULWD	2227
M1	3106
M100	3105
M1000	3101
M200	3104
M2000	3100
M400	3103
M4000	3077
M777	3102
NB1	2571
NB2	2572
NB3	2573
NCHAN	2143
NCH1	4433
NORMX	2306
NORMXX	0527
NSCR	2656
NUM	2140
NUMGRP	2147
NXTCH	3117
NXTCHN	2375
NXT1	3046
OCTAC	2133
OVERTP	3317
POWER	2645
POWER2	2153
POWR2	3116
QAB	5006
QACA	5017
QACHAR	5657
QACKLF	5623
QACNTR	5606
QAD	5030
QAE	5052
QAEEXIT	5637
QAF	5520
QAG	5064
QAH	5116
QAI	5133
QAINIT	5002
QAJ	5140
QAK	5307
QAKRB	6036

QAL	5177
QALEGL	5577
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