DH11

SINGLE LINE DATA

MD-11-DZDHF-B

EP-DZDHF-B-DL-A

OCT 1976

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FICHE 1 OF 1

digital

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C01

2. REQUIREMENTS

2.1 EQUIPMENT

[illegible] STANDARD COMPUTER WITH 4K OF MEMORY
ASR-33 TELETYPE OR EQUIVALENT
[illegible] MULTIPLEXER
[illegible] MAINTENANCE CARD INSTALLED

2.2 STORAGE

THE PROGRAM LOADS INTO 4K OF MEMORY

3. LOADING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING ABSOLUTE BINARY TAPES IS TO BE USED

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

4.1.1 AFTER PROGRAM LOAD (INITIAL PROGRAM START)

ALL CONSOLE SWITCHES DOWN

4.1.2 TO MODIFY DEVICE VECTOR AND CONTROL REGISTER ADDRESSES AFTER PROGRAM RESTART

SW00=1

4.1.3 TO START PROGRAM AT SELECTED TEST AFTER PROGRAM RESTART

SW01=1

4.2 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200

THE RESTART ADDRESS FOR ALL TESTS IS 000200

THE STARTING ADDRESS TO ENTER A SELECTED TEST IS 000200

4.3 PROGRAM AND/OR OPERATOR ACTION

4.3.1 INITIAL PROGRAM START

4.3.1.1 LOAD PROGRAM INTO MEMORY
4.3.1.2 LOAD ADDRESS 000200
4.3.1.3 CLEAR CONSOLE SWITCHES
4.3.1.4 PRESS START
4.3.1.5 THE PROGRAM WILL TYPE "KM11 SINGLE LINE DATA TEST"
AND WAIT THEN TYPE "ENTER ADDRESS=" AND WAIT FOR AN
INPUT FROM THE TELETYPE TO START.

4.3 (CONT'D)

4.3.1.6 TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
FOR THE DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

NOTE: WORDS IN ANGLE BRACKETS, I.E. <CARRIAGE RETURN> MEAN THAT
THE TELETYPE KEY WITH THE NAMED FUNCTION SHOULD BE STRUCK

IF AN INCORRECT ADDRESS IS ENTERED, THE PROGRAM
WILL TYPE "?" AND WILL REPEAT THE SECOND MESSAGE OF 4.3.1.5
4.3.1.7 THE PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS="
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.1.8 TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER OF THE
DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL TYPE
"?" AND WILL THEN REPEAT THE MESSAGE OF 4.3.1.7
4.3.1.9 THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT IS
ABOUT TO START TESTING, AND THEN TESTING WILL BEGIN

4.3.2 PROGRAM RESTART WITH ALL SWITCHES DOWN

4.3.2.1 PERFORM 4.3.1.2 TO 4.3.1.5
4.3.2.2 THE PROGRAM WILL TYPE "DH11 SINGLE LINE DATA TEST"
AND WILL THEN CONTINUE AS DESCRIBED IN 4.3.1.9

4.3.3 PROGRAM RESTART WITH SW00=1

4.3.3.1 LOAD ADDRESS 003200
4.3.3.2 SET SW01=1
4.3.3.3 PRESS START
4.3.3.4 THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.1.5 TO 4.3.1.9

4.3.4 PROGRAM RESTART WITH SW01=1

4.3.4.1 LOAD ADDRESS 003200
4.3.4.2 SET SW01=1
4.3.4.3 PRESS START
4.3.4.4 THE PROGRAM WILL TYPE "DH11 SINGLE LINE DATA TEST"
AND WILL THEN TYPE "TEST #-" AND WILL WAIT FOR AN INPUT
FROM THE TELETYPE KEYBOARD
4.3.4.5 TYPE IN THE ADDRESS OF THE TEST AT WHICH THE PROGRAM IS TO
BE STARTED FOLLOWED BY <CARRIAGE RETURN>
4.3.4.6 THE PROGRAM WILL TYPE R TO INDICATE THAT IT HAS STARTED
AND WILL START TESTING AT THE SELECTED TEST.

NOTE: CARE MUST BE TAKEN WHEN THIS FEATURE IS USED, SINCE
THERE IS NO PROTECTION AGAINST SELECTING AN ADDRESS THAT
IS IN THE MIDDLE OF A TEST

NOTE: IF IT IS DESIRED TO LOOP ON THE TEST THAT IS SELECTED
SET SW14=1 BEFORE ENTERING THE TEST ADDRESS

5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

SW15=1. HALT ON ERROR
SW14=1. LOOP ON CURRENT TEST
SW13=1. SUPPRESS ERROR TYPEOUT
SW11=1. INHIBIT ITERATIONS
SW10=1. ESCAPE TO NEXT TEST ON ERROR
SW09=1. FREEZE VARIABLE PARAMETER IN CURRENT TEST
SW01=1. START PROGRAM AT SELECTED TEST
SW00=1. CHANGE PARAMETERS AT PROGRAM RESTART

5.2 SUBROUTINE ABSTRACTS

5.2.1 TRAPCATCHER (LOCATIONS 000000-000776)

THIS ROUTINE IS USED TO INTERCEPT UNEXPECTED INTERRUPTS AND TRAPS. THE AREA FROM 000000-000776 IS LOADED WITH THE FOLLOWING SEQUENCE

2
0
4
0
...
772
0
776
0

IF AN UNEXPECTED INTERRUPT OR TRAP OCCURS, THE PROGRAM WILL HALT WITH THE PC 2 GREATER THAN THE ADDRESS TO WHICH THE PROGRAM TRAPPED. THE PROCESSOR STACK MAY BE EXAMINED TO DETERMINE WHERE THE PROGRAM WAS WHEN THE TRAP OR INTERRUPT OCCURED.

5.2.2 START (PROGRAM INITIALIZATION)

THIS ROUTINE INITIALIZES ALL PROGRAM FLAGS AND COUNTERS, TYPES THE PROGRAM TITLE MESSAGE, AND INPUTS THE VECTOR AND CONTROL REGISTER ADDRESSES OF THE DH11 TO BE TESTED.

5.2.3 BEGIN (PROGRAM START AND RESTART)

THIS ROUTINE IS ENTERED IMMEDIATLY AFTER "START" AND EACH TIME A PROGRAM PASS HAS BEEN COMPLETED. THE ROUTINE SETS UP THE PROCESSOR STACK AND STATUS WORD AND THEN TRANSFERS CONTROL TO THE TEST AT WHICH TESTING WILL BEGIN. IF SW01=0 WHEN THIS ROUTINE IS ENTERD TESTING WILL START AT T1 (TEST 1). IF SW01=1 WHEN THIS ROUTINE IS ENTERED, TESTING WILL START AT THE PC ENTERED FROM THE TELETYPE KEYBOARD.

5.2.4 EOP (END OF PASS)

THIS ROUTINE IS ENTERED ONCE PER PASS AFTER ALL TESTS HAVE BEEN COMPLETED. THIS ROUTINE TYPES THE MAINDEC IDENTIFICATION CODE OF THE PROGRAM, CLEARS ERROR FLAGS AND UPDATES THE PASS COUNT. IF THE PROGRAM WAS LOADED UNDER ACT11 OR DDP, THE ROUTINE CHECKS FOR RETURN TO THE ACT11 OR DDP MONITOR. IF THE PROGRAM IS NOT UNDER MONITOR CONTROL, THE ROUTINE TRANSFERS TO BEGIN.

5.2.5 SCOPER (SCOPE LOOP AND ITERATION HANDLER)

THIS ROUTINE IS ENTERED EACH TIME A TEST IS COMPLETED.
THE ROUTINE CHECKS FOR THE FOLLOWING UPON ENTRY
A) IF SW10=1, THE ROUTINE WILL TRANSFER TO THE NEXT TEST IN SEQUENCE, AFTER CLEARING ERROR FLAGS.
B) IF SW11=1, THE ROUTINE WILL TRANSFER TO THE NEXT TEST SEQUENCE, AFTER CLEARING ERROR FLAGS.
C) IF SW14=1, THE ROUTINE WILL LOOP ON THE CURRENT TEST REGARDLESS OF THE ITERATION COUNT.

IF NONE OF THE ABOVE IS TRUE, THE ROUTINE WILL ADD 1 TO THE COUNT OF TEST ITERATIONS, AND COMPARE THIS VALUE TO THE NUMBER OF ITERATIONS THAT SHOULD BE PERFORMED. IF THESE NUMBERS ARE EQUAL, THE ROUTINE WILL TRANSFER TO THE NEXT TEST IN SEQUENCE. THE THE NUMBERS ARE NOT EQUAL, THE TEST CURRENTLY IN PROGRESS WILL BE REPEATED.

5.2.6 SCOPIF (FREEZE ON CURRENT DATA)

THE CALL TO THIS ROUTINE FOLLOWS IMMEDIATLY AFTER THE [illegible] CALL TO THE ERROR HANDLER IN THOSE TESTS THAT HAVE [illegible] VARIABLE PARAMETERS. THIS ROUTINE IS ALWAYS ENTERED IN THOSE TESTS, WHETHER OR NOT AN ERROR OCCURS.
IF SW09=1, THE ROUTINE WILL TRANSFER CONTROL BACK TO THE TEST AT A POINT WHICH WILL ALLOW REPEATING THE FUNCTION UNDER TEST CONTINUOUSLY WITH THE SAME DATA. IF THIS OPTION IS SELECTED, THE ROUTINE "SCOPER" IS NEVER ENTERED [illegible] ITERATION COUNTS WILL NOT BE UPDATED.

5.2.7 ERRORS (ERROR HANDLER)

THIS ROUTINE IS ENTERED UPON ERROR DETECTION ONLY.
WITH ALL CONSOLE SWITCHES DOWN, THE ROUTINE PROCEEDES AS FOLLOWS:
A) THE PC OF THE INSTRUCTION THAT CALLED THE ERROR HANDLER
   IS ACCESSED THRU THE STACK, AND THEN THE EMT INSTRUCTION
   ITSELF IS FETCHED. THE 8 LSB OF THE EMT
   INSTRUCTION ARE THE ERROR CODE. THIS CODE IS
   USED TO ACCESS A TABLE OF ERROR MESSAGES AND ERROR
   DATA STORAGE LOCATIONS.
B) IF THE TEST THAT FAILED DID NOT FAIL PREVIOUSLY
   DURING THIS PASS, A COMPLETE ERROR REPORT IS MADE
   IF THE TEST THAT FAILED FAILED MOR THAT ONCE DURING
   THE CURRENT PASS, ONLY THE DATA RELATING TO THE FAILURE
   IS TYPED. IF SW13=1, NO ERROR TYPEOUT IS MADE.
C) THE ROUTINE NOW CHECKS FOR HALT ON ERROR. IF SW15=1
   THE PROGRAM WILL HALT WITH THE PC OF THE CALL TO
   THE ERROR ROUTINE IN R0. IF SW15=0, THE PROGRAM WILL
   NOT HALT, BUT WILL CHECK FOR ESCAPE TO NEXT TEST.
D) IF SW10=0, THE ROUTINE WILL RETURN
   TO THE TEST IN PROGRESS. IF SW10=1, THE ROUTINE WILL
   ABORT THE CURRENT TEST, AND TRANSFER TO THE NEXT
   TEST IN SEQUENCE, THRU THE ROUTINE "SCOPER".

5.2.8 TRPSRV (TRAP DECODE AND DISPATCH)

THIS ROUTINE DECODES THE 8 LSB OF THE TRAP INSTRUCTION
THAT CAUSED TH PROGRAM INTERRUPT, AND TRANSFERS CONTROL
TO THE ROUTINE THRU THE TABLE "TRPTAB" USING THE 8 LSB
OF THE TRAP INSTRUCTION AS AN OFFSET TO THE POINTER TO
THE ROUTINE TO BE ENTERED.

5.3 PROGRAM AND OR OPERATOR ACTION

5.3.1 PROGRAM START WITH ALL SWITCHES DOWN

5.3.1.1 REFER TO SECTIONS 4.3.1 AND 4.3.2 FOR INITIAL PROGRAM BEHAVIOR.

5.3.1.2 AFTER "R" HAS BEEN TYPED BY THE PROGRAM, TEST EXECUTION WILL BEGIN. EACH TEST WILL BE REPEATED A SELECTED NUMBER OF ITERATIONS (SEE LISTING FOR EXACT NUMBER FOR EACH TEST) AND THEN THE PROGRAM WILL PROCEED TO THE NEXT TEST.

5.3.1.3 WHEN ALL ITERATIONS HAVE BEEN COMPLETED, THE PROGRAM WILL TYPE "DZDHF" AND THEN RESTART TESTING AT TEST 1 (LOCATION T1 IN THE PROGRAM).

5.3.1.4 IF AN ERROR OCCURS, THE PROGRAM WILL TYPE AN APPROPRIATE ERROR MESSAGE, AND THEN CONTINUE THE TEST IN PROGRESS.

5.3.2 PROGRAM START WITH SW00=1

THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.1 AND 5.3.1

5.3.3 PROGRAM START WITH SW01=1

5.3.3.1 REFER TO SECTION 4.3.4 FOR INITIAL PROGRAM BEHAVIOR

5.3.3.2 TEST EXECUTION WILL START AT THE ADDRESS SPECIFIED AND WILL CONTINUE AS DESCRIBED IN 5.3.1.2

5.3.3.3 AFTER "DZDHF" HAS BEEN TYPED, THE PROGRAM WILL RESUME TESTING AT TEST 1

5.3.4 PROGRAM OPERATION WITH SW15=1

SAME AS 5.3.1, EXCEPT THAT IN THE CASE OF AN ERROR, THE PROGRAM WILL HALT AFTER THE ERROR TYPEOUT, AND THE PC+2 OF THE CALL TO THE ERROR ROUTINE WILL BE DISPLAYED IN R0.

5.3.5 PROGRAM OPERATION WITH SW13=1

SAME AS 5.3.1 EXCEPT THAT NO ERROR TYPEOUTS WILL OCCUR

5.3.6 PROGRAM OPERATION WITH SW11=1

SAME AS 5.3.1 EXCEPT THAT EACH TEST WILL BE REPEATED ONCE ONLY

5.3.7 PROGRAM OPERATION WITH SW10=1

SAME AS 5.3.1, EXCEPT THAT IN THE CASE OF AN ERROR THE CURRENT TEST WILL BE ABORTED, AND THE PROGRAM WILL PROCEED TO THE NEXT TEST IN SEQUENCE.

5. (CONT'D)

5.3.8 PROGRAM OPERATION WITH SW14=1, OR SW09=1

THESE FUNCTIONS ARE NORMALLY USED FOR TROUBLE SHOOTING.
SEE SECTION 6.3 FOR THEIR USE.

6. ERRORS

6.1 ERROR HALTS

THE ERROR MESSAGE FORMAT FOR ALL ERROR TYPEOUTS
IS AS FOLLOWS

```
PC+2    MESSAGE
        HEADER  (IF APPLICABLE)
        DATA    (IF APPLICABLE)
```

WHERE
PC+2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER + 2
MESSAGE IS AN ASCII MESSAGE DESCRIBING (BRIEFLY) THE FAILURE
HEADER IS A DESCRIPTION OF THE DATA TO FOLLOW
DATA IS OCTAL INFORMATION RELATING TO THE CAUSE OF THE FAILURE
IF THE SAME ERROR OCCURS IN A GIVEN TEST ON THE SAME
PASS, AND IF DATA IS ASSOCIATED WITH THAT ERROR, ONLY
DATA IS TYPED ON SUCCEEDING ERROR TYPEOUTS

IF NO DATA IS ASSOCIATED WITH THE ERROR
THE COMPLETE ERROR MESSAGE IS TYPED.

6.1.1 ERROR DESCRIPTIONS

SEE LISTING FOR DETAILS OF ERRORS

6.2 ERROR RECOVERY

6.2.1 SW15=0

IF THE PROGRAM IS RUN WITH SW15=0, NO OPERATOR ACTION IS
REQUIRED TO CONTINUE TESTING

6.2.2 SW15=1

IF THE PROGRAM IS RUN WITH SW15=1, TO CONTINUE TESTING
AFTER THE PROGRAM HAS HALTED, PRESS THE PROCESSOR
CONSOLE CONTINUE SWITCH.

6.2.3 ILLEGAL INTERRUPTS

IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT
SELECTED DURING PROGRAM INITIALIZATION, THE PROGRAM WILL
HALT IN THE TRAPCATCHER. THE ADDRESS AT WHICH
THE PROGRAM HALTS IS 2 GREATER THAN THE ADDRESS
TO WHICH THE INTERRUPT OCCURED. THE PROGRAM MUST BE
RESTARTED AT 200 TO RECOVER FROM THIS ERROR.

6.2 SCOPE LOOPING

6.2.1 TO SCOPE ON A SPECIFIC TEST, SET SW14=1 AND SW13=1
THIS WILL CAUSE THE PROGRAM TO CONTINUOUSLY LOOP ON THE
SAME TEST, AND WILL CAUSE ALL ERROR TYPEOUTS TO BE INHIBITED

6.2.2 TO SCOPE ON A SPECIFIC VALUE OF A PARAMETER WITHIN
A TEST, SET SW09=1 TO FREEZE THE DATA
(SEE LISTING FOR THOSE TESTS THAT INCORPORATE THIS FEATURE)

6. (CONT'D)

6.2.3 PROGRAM START TO SCOPE LOOP ON SELECTED TEST

PERFORM SECTION 4.3.4 WITH SW14=1

7. RESTRICTIONS

7.1 STARTING

THE DH11 TEST CARD MUST BE INSTALLED

7.2 RUNNING

NONE

8. MISCELLANEOUS

8.1 EXECUTION TIME

THE TIME FOR ONE PASS OF THE PROGRAM (END OF
TYPEOUT OF DZDHF TO END OF TYPEOUT OF DZDHF)
IS GIVEN FOR VARIOUS PROCESSORS IN THE TABLE BELOW

PROCESSOR	TIME
PDP-11/05,10	
PDP-11/20	
PDP-11/40	
PDP-11/45	

9. PROGRAM DESCRIPTION

THE FIRST GROUP OF TESTS TRANSMITS ALL CHARACTERS (0-377
O'E AT A TIME AT A LINE SPEED OF 9600 BAUD AND A
CHARACTER LENGTH OF 8 BITS. EACH LINE IS CHECKED IN AN
INDIVIDUAL LOOP. EACH TEST IN THIS GROUP
CAN BE SET UP UNDER PROGRAM CONTROL TO LOOP ON A SINGLE
CHARACTER USING THE FREEZE ON DATA (SW09) OPTION.

THE NEXT GROUP OF TESTS VERIFIES THAT ALL CHARACTERS CAN
BE TRANSMITTED AT EACH STANDARD SPEED (50-9600 BAUD)
AT 8 BITS PER CHARACTER. EACH LINE IS TESTED IN AN
INDIVIDUAL TEST LOOP, AND A PARTICULAR SPEED CAN BE
CHOSEN FOR SCOPING BY USING THE FREEZE ON DATA OPTION.

THE FINAL GROUP OF TESTS TRANSMITS ALL CHARACTERS AT
EACH CHARACTER LENGTH (5-8 BITS) AT 9600 BAUD ON A SINGLE
LINE. EACH LINE IS TESTED IN AN INDIVIDUAL TEST LOOP
AND A PARTICULAR CHARACTER LENGTH CAN BE CHOSEN FOR
SCOPING USING THE FREEZE ON DATA (SW09) OPTION.

10. LISTING

!

```
:DH11 SINGLE LINE DATA TEST
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        :STARTING PROCEDURE
        :LOAD PROGRAM
        :LOAD ADDRESS 000200
        :PRESS START
        ;PROGRAM WILL TYPE DH11 SINGLE LINE DATA TEST
        ;PROGRAM WILL TYPE "VECTOR ADDRESS-"
        ;TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
        ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
        ;PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"
        ;TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER
        ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
        ;AT THE END OF A PASS, PROGRAM WILL TYPE " CONTROL-F "
        ;AND THEN RESUM TESTING


;SWITCH REGISTER OPTIONS

;SW15=100000            :=1,HALT ON ERROR
;SW14=40000             :=1,LOOP ON CURRENT TEST
;SW13=20000             :=1,INHIBIT ERROR TYPEOUT
;SW12=10000
;SW11=4000              :=1,INHIBIT ITERATIONS
;SW10=2000              :=1,ESCAPE TO NEXT TEST ON ERROR
;SW09=1000              :=1,LOOP WITH CURRENT DATA
;SW08=400
```

M01


```
                                SW06=100
                                SW05=40
                                SW04=20
                                SW03=10
                                SW02=4
                                SW01=2
                                SW00=1
```

```
:RESTART PROGRAM AT SELECTED TEST
:RESELECT VECTOR AND CONTROL REGISTER
:ADDRESS AFTER PROGRAM RESTART
```

```
                                ;REGISTER DEFINITIONS

000000                          R0=%0           ;GENERAL REGISTER
000001                          R1=%1           ;GENERAL REGISTER
000002                          R2=%2           ;GENERAL REGISTER
000003                          R3=%3           ;GENERAL REGISTER
000004                          R4=%4           ;GENERAL REGISTER
000005                          R5=%5           ;GENERAL REGISTER
000006                          SP=%6           ;PROCESSOR STACK POINTER
000007                          PC=%7           ;PROGRAM COUNTER

                                ;LOCATION EQUIVALENCIES

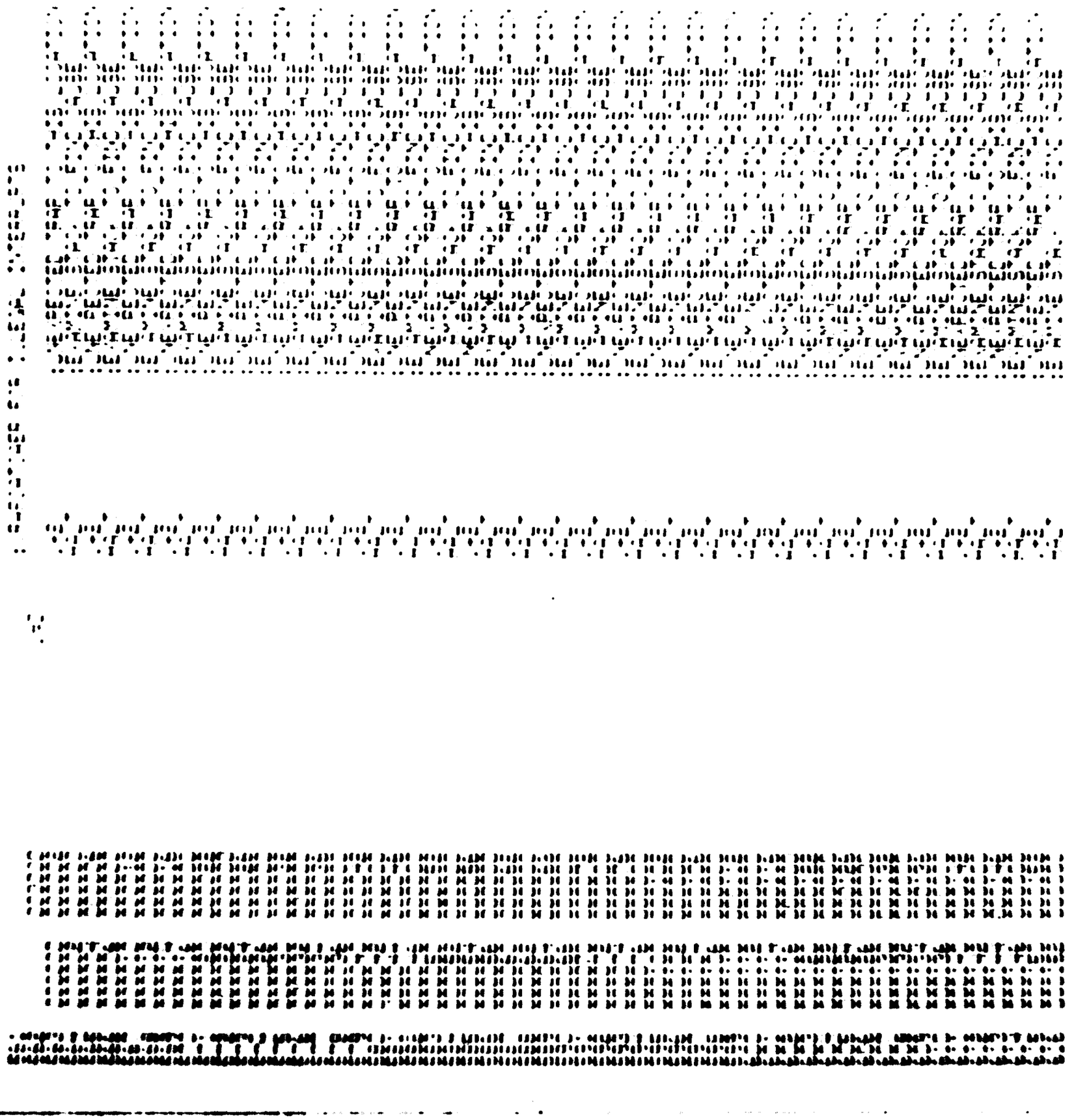
177570                          SWR=177570      ;CONSOLE SWITCH REGISTER
177570                          LIGHTS=177570   ;PDP-11/45 DISPLAY REGISTER
177776                          PS=177776       ;PROCESSOR STATUS WORD
017776                          STACK=ENDCOD+200;START OF PROCESSOR STACK

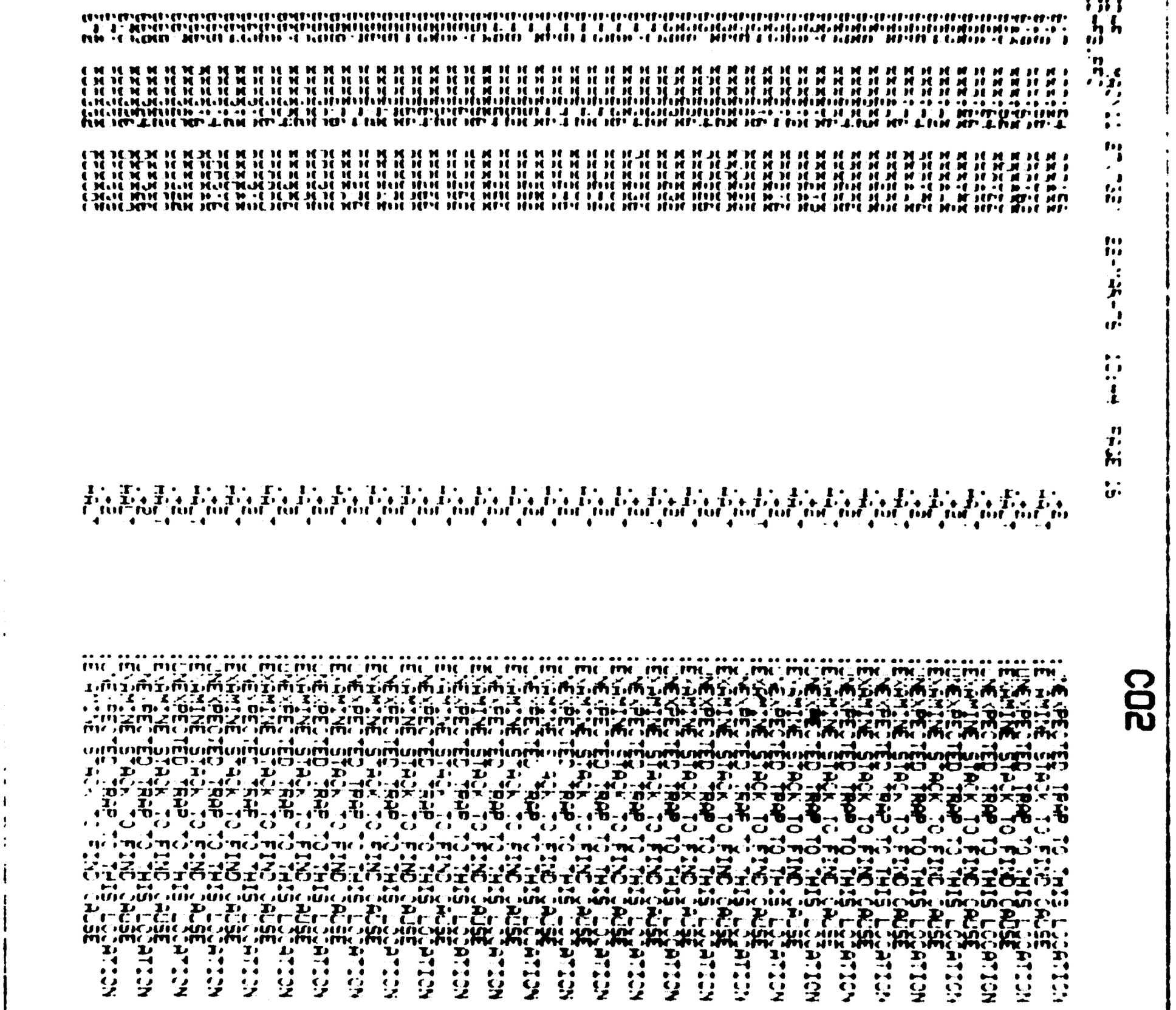
                                ;INSTRUCTION DEFINITIONS

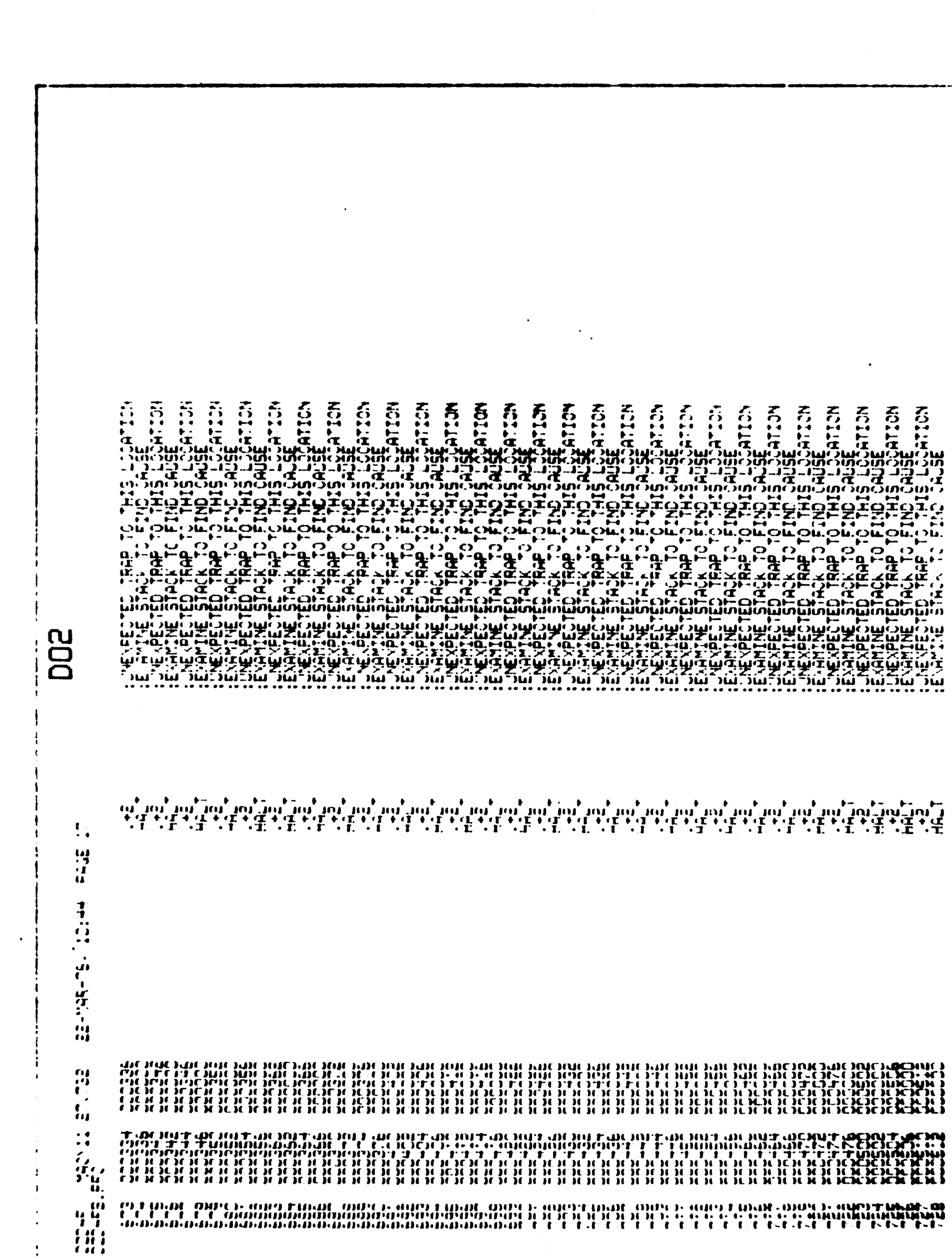
005746                          PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD
005726                          POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD
010046                          PUSHR0=10046    ;SAVE R0 ON STACK
012600                          POPR0=12600     ;RESTORE R0 FROM STACK
024646                          PUSH2SP=24646   ;DECREMENT STACK TWICE
022626                          POP2SP=22626    ;INCREMENT STACK TWICE
                                .EQUIV  EMT,ALT ;BASIC DEFINITION OF ERROR CALL


100000                          BIT15=100000
040000                          BIT14=40000
020000                          BIT13=20000
010000                          BIT12=10000
004000                          BIT11=4000
002000                          BIT10=2000
001000                          BIT09=1000
000400                          BIT08=400
000200                          BIT07=200
000100                          BIT06=100
000040                          BIT05=40
000020                          BIT04=20
000010                          BIT03=10
000004                          BIT02=4
000002                          BIT01=2
000001                          BIT00=1
```

802







E02


```
        000514  000516          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000516  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000520  000522          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000522  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000524  000526          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000526  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000530  000532          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000532  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000534  000536          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000536  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000540  000542          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000542  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000544  000546          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000546  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000550  000552          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000552  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000554  000556          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000556  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000560  000562          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000562  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000564  000566          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000566  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000570  000572          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000572  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000574  000576          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000576  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000600  000602          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000602  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000604  000606          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000606  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000610  000612          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000612  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000614  000616          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000616  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000620  000622          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000622  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000624  000626          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000626  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000630  000632          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000632  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000634  000636          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000636  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000640  000642          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000642  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000644  000646          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000646  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000650  000652          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000652  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000654  000656          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000656  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000660  000662          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000662  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000664  000666          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000666  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
        000670  000672          .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000672  000000          HALT            ;EXAMINE STACK TO FIND CAUSE
```

F02


```
785   000674  00067?          .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
[illegible]                   .+2         ;UNEXPECTED TRAP TO THIS LOCATION
[illegible]                   HALT        ;EXAMINE STACK TO FIND CAUSE
```

G02


```
                                                   ;STANDARD INTERRUPT VECTORS

         000024                         .=24
000024   016626                                    PFAIL                       ;POWER FAIL HANDLER
[illegible] [illegible]                            340                         ;SERVICE AT LEVEL 7
000030   015064                                    ERRORS                      ;ERROR HANDLER
000032   000340                                    340                         ;SERVICE AT LEVEL 7
[illegible] [illegible]                            TRPSRV                      ;GENERAL HANDLER DISPATCH SERVICE
000036   [illegible]                               340                         ;SERVICE AT LEVEL 7
         000200                         .=200
000200   000137   000574                           JMP     START               ;GO TO START OF PROGRAM

                                                   ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                                   ;POINTERS TO SUBROUTINES CAN BE FOUND STARTING
                                                   ;AT LOCATION "TRPTAB"

         104400                                    SCOPE=TRAP+Y                ;SCOPE LOOP AND ITERATION HANDLER
         [illegible]                               TYPE=TRAP+Y                 ;TELETYPE OUTPUT ROUTINE
         [illegible]                               OCTASC=TRAP+Y               ;OCTAL TO ASCII CONVERSION
         [illegible]                               INSTR=TRAP+Y                ;INPUT ASCII STRING
         [illegible]                               INSTER=TRAP+Y               ;STRING INPUT ERROR
         [illegible]                               PARAM=TRAP+Y                ;CONVERT STRING TO OCTAL, CHECK LIMITS
         [illegible]                               SAVOSP=TRAP+Y               ;SAVE RO-R5, PC
         [illegible]                               RESOS=TRAP+Y                ;RESTORE RO-R5
         [illegible]                               SCOPE1=TRAP+Y               ;CHECK FOR FREEZE ON CURRENT DATA
                                        .=46
000046   [illegible]                    [illegible]
                                        .=52
000052   [illegible]                    40000
```

H02


```
                 001000                        .=1000

                                               ;PROGRAM INITIALIZATION
                                               ;LOCK OUT INTERRUPTS
                                               ;SET UP PROCESSOR STACK
                                               ;SET UP POWER FAIL VECTOR
                                               ;CLEAR PROGRAM FLAGS AND COUNTS
                                               ;TYPE TITLE MESSAGE

        001000   012767  000340  177776  START:  MOV     #340,PS              ;LOCK OUT INTERRUPTS
        001006   012706  017776                  MOV     #STACK,SP            ;SET UP PROCESSOR STACK
        001012   012737  016626  000024          MOV     #PFAIL,@#24          ;SET UP POWER FAIL TRAP
        001020   005067  015170                  CLR     STFLG                ;CLEAR TEST START FLAG
        001024   005067  015124                  CLR     PASCNT               ;CLEAR PASS COUNT
        001030   005067  015122                  CLR     ERRCNT               ;CLEAR ERROR COUNT
        001034   005067  015112                  CLR     ERRFLG               ;CLEAR ERROR FLAG
        001040   005067  015106                  CLR     ERRFLG               ;CLEAR LAST ERROR PC
        001044   104401  015772                  TYPE    ,MTITLE              ;TYPE TITLE MESSAGE
        001050   005767  015136                  TST     INIFLG               ;CHECK INITIALIZATION FLAG
        001054   001001                          BNE     VEC1                 ;IF NOT 0, CHECK SWITCHES
                                                                              ;FOR REINITIALIZATION
        001056   000404                          BR      VEC2
        001060   032767  000001  176502  VEC1:   BIT     #SW00,SWR            ;IF SW00=1, GET NEW VECTOR
        001066   001445                          BEQ     BEGIN                ;AND CSR
        001070   012701  000300          VEC2:   MOV     #300,R1
        001074   012702  000302                  MOV     #302,R2
        001100   012703  000004                  MOV     #4,R3
        001104   010211                  1$:     MOV     R2,(R1)              ;RESTORE TRAPCATCHER
        001106   005012                          CLR     (R2)                 ;IN FLOATING VECTOR AREA
        001110   060301                          ADD     R3,R1
        001112   060302                          ADD     R3,R2
        001114   020127  001000                  CMP     R1,#1000
        001120   001371                          BNE     1$
        001122   104403                          INSTR                        ;INPUT ADDRESS OF DEVICE VECTOR
        001124   017033                          MVECTOR                      ;MESSAGE "VECTOR ADDRESS-"
        001126   104405                          PARAM                        ;CONVERT STRING TO OCTAL
        001130   000300                          300                          ;LOW LIMIT
        001132   000770                          770                          ;HIGH  LIMIT
        001134   016142                          DHRVEC                       ;LOCATIONS TO BE FILLED
        001136      003                  .BYTE   3                            ;NUMBER OF LOCATIONS
        001137      004                  .BYTE   4                            ;LSB MASK
        001140   104403                          INSTR                        ;INPUT ADDRESS OF DEVICE CSR
        001142   017055                          MREGAD                       ;MESSAGE "CONTROL REGISTER ADDRESS-"
        001144   104405                          PARAM                        ;CONVERT STRING TO OCTAL
        001146   000000                          0                            ;LOW LIMIT
        001150   177776                          177776                       ;HIGH LIMIT
        001152   016120                          DHSCR                        ;LOCATIONS TO BE FILLED
        001154      007                  .BYTE   7                            ;NUMBER OF LOCATIONS
        001155      010                  .BYTE   10                           ;LSB MASK
        001156   016767  014754  014754          MOV     DHSSR,DHSLR          ;SET UP ADDRESS OF SILO
        001164   005267  014750                  INC     DHSLR                ;STATUS REGISTER HIGH BYTE
        001170   005767  015016                  TST     INIFLG               ;IF INITIALIZATION FLAG
        001174   001002                          BNE     BEGIN                ;IS CLEARED
        001176   005167  015010                  COM     INIFLG               ;SET IT

                                                 ;PROGRAM START
```

I02


```
                                                ;CHECK FOR PROGRAM START AT SELECTED ADDRESS
                
001202  012767  000340  176566  BEGIN:  MOV     #340,PS                 ;LOCK OUT INTERRUPTS
001210  012706  017776                  MOV     #STACK,SP               ;SET UP PROCESSOR STACK
001214  032767  000002  176346          BIT     #SW01,SWR               ;IF SW01=1
001222  001410                          BEQ     1$                      ;GET PC FOR PROGRAM START
001224  104403                          INSTR                           ;GET PC
001226  017221                          MTSTPC                          ;MESSAGE "TEST PC"
001230  104405                          PARAM                           ;CONVERT STRING TO OCTAL
001232  000000                          0
001234  017500                          17500
001236  000207                          RETURN
001240      001                 .BYTE   1
001241      001                 .BYTE   1
001242  000410                          BR      2$
001244  012767  001274  014736  1$:     MOV     #T1,RETURN              ;NORMAL START, TEST 1
001252  005767  014736                  TST     STFLG                   ;IF LOOPING, BYPASS "PECU"
001256  001006                          BNE     3$
001260  005167  014730                  COM     STFLG
001264  104401  013215                  TYPE    ,MR                     ;TYPE "R" TO INDICATE START
001270  000137  014664          3$:     JMP     @RETURN                 ;START TESTING
```

```
                                        ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 0.
                                        ;CHARACTER LENGTH IS 8 BITS.
                                        ;LINE SPEED IS 9600 BAUD.

001334  012767  000340  176474  T1:   MOV     #340,@#PS               ;DISABLE ALL INTERRUPTS
001342  012767  000010  014656        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
001350  012767  001434  014644        MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
001356  012767  001360  014640        MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
001364  012777  004000  014566        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
001372  012703  000000                MOV     #0,R3           ;SET UP LINE NUMBER
001376  012767  100000  014654        MOV     #0*400+100000,TDATA
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;EXPECTED DATA
001404  012777  000000  014546        MOV     #0,@DHSCR               ;SELECT LINE 0
001412  012777  033503  014544        MOV     #33503,@DHLPR           ;SELECT 8 BITS CHARATER
                                                                ;LENGTH, 9600 BAUD SPEED
                                                                ;FOR LINE 0
001420  012777  177777  014542  1$:   MOV     #-1,@DHBC               ;TRANSMIT  1 CHARACTER
001426  012777  016220  014536        MOV     #TDATA,@DHBA            ;ADDRESS OF TRANSMIT DATA
001434  012777  000001  014530        MOV     #1,@DHBAR               ;START TRANSMITTER
001442  105777  014512        2$:   TSTB    @DHSCR                  ;WAIT FOR CHARACTER
001446  100375                      BPL     2$                      ;TO BE RECEIVED
001450  017704  014502              MOV     @DHNRC,R4               ;GET RECEIVED CHARACTER
001454  020467  014600              CMP     R4,TDATA                ;COMPARE EXPECTED AND
001460  001401                      BEQ     3$                      ;RECEIVED DATA
001462  104000                      HLT     0                       ;DATA ERROR
001464  104410              3$:   SCOPE1                          ;CHECK FOR LOOP WITH CURRENT DATA
001466  105267  014566              INCB    TDATA                   ;UPDATE TRANSMIT DATA
001472  001352                      BNE     1$
001474  104400              4$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 1.
                                        ;CHARACTER LENGTH IS 8 BITS.
                                        ;LINE SPEED IS 9600 BAUD.

001476  012767  000340  176332  T2:   MOV     #340,@#PS               ;DISABLE ALL INTERRUPTS
001504  012767  000010  014514        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
001512  012767  001576  014502        MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
001520  012767  001522  014476        MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
001526  012777  004000  014424        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
001534  012703  000001                MOV     #1,R3           ;SET UP LINE NUMBER
001540  012767  100400  014512        MOV     #1*400+100000,TDATA
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;EXPECTED DATA
001546  012777  000001  014404        MOV     #1,@DHSCR               ;SELECT LINE 1
001554  012777  033503  014402        MOV     #33503,@DHLPR           ;SELECT 8 BITS CHARATER
                                                                ;LENGTH, 9600 BAUD SPEED
                                                                ;FOR LINE 1
001562  012777  177777  014400  1$:   MOV     #-1,@DHBC               ;TRANSMIT  1 CHARACTER
001570  012777  016220  014370        MOV     #TDATA,@DHBA            ;ADDRESS OF TRANSMIT DATA
001576  012777  000002  014366        MOV     #2,@DHBAR               ;START TRANSMITTER
001604  105777  014353        2$:   TSTB    @DHSCR                  ;WAIT FOR CHARACTER
001610  100375                      BPL     2$                      ;TO BE RECEIVED
```

```
                                                        ;GET RECEIVED CHARACTER
001552 017704 014344            MOV     @DHNRC,R4       ;COMPARE EXPECTED AND
001556 020467 014336            CMP     R4,TDATA        ;RECEIVED DATA
001562 001401                   BEQ     3$              ;DATA ERROR
001564 104000                   HLT     0               ;CHECK FOR LOOP WITH CURRENT DATA
001566 104410                3$:SCOPE1                  ;UPDATE TRANSMIT DATA
001570 105267 014324            INCB    TDATA
001574 001352                   BNE     1$
001576 104401                4$:SCOPE                   ;CHECK FOR ITERATIONS, LOOP

                                ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 2.
                                ;CHARACTER LENGTH IS 8 BITS.
                                ;LINE SPEED IS 9600 BAUD.

001600 012767 000340 176170  T3:MOV     #340,PS        ;DISABLE ALL INTERRUPTS
001606 012767 000010 014352     MOV     #10.,ICOUNT    ;SET UP FOR 10 ITERATIONS
001614 012767 001740 014340     MOV     #4$,ESCAPE     ;SET UP TO ESCAPE TO NEXT TEST
001622 012767 001664 014334     MOV     #1$,FREEZ1     ;SET UP TO LOOP WITH DATA
001630 012777 004000 014262     MOV     #BIT11,@DHSCR  ;MASTER CLEAR INTERFACE
001636 012703 000002            MOV     #2,R3          ;SET UP LINE NUMBER
001642 012767 101000 014350     MOV     #2*400+1C0C0C,TDATA
                                                       ;SET EXPECTED LINE NUMBER
                                                       ;AND VALID DATA FLAG
                                                       ;EXPECTED DATA
001650 012777 000002 014242     MOV     #2,@DHSCR      ;SELECT LINE 2
001656 012777 033503 014240     MOV     #33503,@DHLPR  ;SELECT 8 BITS CHARATER
                                                       ;LENGTH, 9600 BAUD SPEED
                                                       ;FOR LINE 2
001664 012777 177777 014236  1$:MOV     #-1,@DHBC      ;TRANSMIT  1 CHARACTER
001672 012777 016220 014226     MOV     #TDATA,@DHBA   ;ADDRESS OF TRANSMIT DATA
001700 012777 000004 014224     MOV     #4,@DHBAR      ;START TRANSMITTER
001706 105777 014206         2$:TSTB    @DHSCR         ;WAIT FOR CHARACTER
001712 100375                   BPL     2$             ;TO BE RECEIVED
001714 017704 014202            MOV     @DHNRC,R4      ;GET RECEIVED CHARACTER
001720 020467 014274            CMP     R4,TDATA       ;COMPARE EXPECTED AND
001724 001401                   BEQ     3$             ;RECEIVED DATA
001726 104000                   HLT     0              ;DATA ERROR
001730 104410                3$:SCOPE1                 ;CHECK FOR LOOP WITH CURRENT DATA
001732 105267 014262            INCB    TDATA          ;UPDATE TRANSMIT DATA
001736 001352                   BNE     1$
001740 104400                4$:SCOPE                  ;CHECK FOR ITERATIONS, LOOP

                                ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 3.
                                ;CHARACTER LENGTH IS 8 BITS.
                                ;LINE SPEED IS 9600 BAUD.

001742 012767 000340 176026  T4:MOV     #340,PS        ;DISABLE ALL INTERRUPTS
001750 012767 000010 014210     MOV     #10,ICOUNT     ;SET UP FOR 10 ITERATIONS
001756 012767 002102 014176     MOV     #4$,ESCAPE     ;SET UP TO ESCAPE TO NEXT TEST
001764 012767 002026 014172     MOV     #1$,FREEZ1     ;SET UP TO LOOP WITH DATA
001772 012777 004000 014120     MOV     #BIT11,@DHSCR  ;MASTER CLEAR INTERFACE
002000 012703 000003            MOV     #3,R3          ;SET UP LINE NUMBER
002004 012767 101400 014206     MOV     #3*400+100000,TDATA
                                                       ;SET EXPECTED LINE NUMBER
                                                       ;AND VALID DATA FLAG
                                                       ;EXPECTED DATA
002012 012777 000003 014100     MOV     #3,@DHSCR      ;SELECT LINE 3
```

```
                                MOV     #33503,@DH_PR           ;SELECT 8 BITS CHARATER
                                                                ;LENGTH, 9600 BAUD SPEED
                                                                ;FOR LINE 3
002026  012777  177777  014074  1$:     MOV     #-1,@DHBC       ;TRANSMIT  1 CHARACTER
002034  012777  016220  014064          MOV     #TDATA,@DHBA    ;ADDRESS OF TRANSMIT DATA
002042  012777  000010  014062          MOV     #10,@DHBAR      ;START TRANSMITTER
002050  105777  014044          2$:     TSTB    @DHSCR          ;WAIT FOR CHARACTER
002054  100375                          BPL     2$              ;TO BE RECEIVED
002056  017704  014040                  MOV     @DHNRC,R4       ;GET RECEIVED CHARACTER
002062  020467  014132                  CMP     R4,TDATA        ;COMPARE EXPECTED AND
002066  001401                          BEQ     3$              ;RECEIVED DATA
002070  104000                          HLT     0               ;DATA ERROR
002072  104410                  3$:     SCOPE1                  ;CHECK FOR LOOP WITH CURRENT DATA
002074  105267  014120                  INCB    TDATA           ;UPDATE TRANSMIT DATA
002100  001352                          BNE     1$
002102  104400                  4$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP

                                ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 4.
                                ;CHARACTER LENGTH IS 8 BITS.
                                ;LINE SPEED IS 9600 BAUD.

002104  012767  000340  175664  T5:     MOV     #340,PS         ;DISABLE ALL INTERRUPTS
002112  012767  000010  014046          MOV     #10.,ICOUNT     ;SET UP FOR 10 ITERATIONS
002120  012767  002244  014034          MOV     #4$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
002126  012767  002170  014030          MOV     #1$,FREEZ1      ;SET UP TO LOOP WITH DATA
002134  012777  004000  013756          MOV     #BIT11,@DHSCR   ;MASTER CLEAR INTERFACE
002142  012703  000004                  MOV     #4,R3           ;SET UP LINE NUMBER
002146  012767  102000  014044          MOV     #4*400+100000,TDATA
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;EXPECTED DATA
002154  012777  000004  013736          MOV     #4,@DHSCR       ;SELECT LINE 4
002162  012777  033503  013734          MOV     #33503,@DHLPR   ;SELECT 8 BITS CHARATER
                                                                ;LENGTH, 9600 BAUD SPEED
                                                                ;FOR LINE 4
002170  012777  177777  013732  1$:     MOV     #-1,@DHBC       ;TRANSMIT  1 CHARACTER
002176  012777  016220  013722          MOV     #TDATA,@DHBA    ;ADDRESS OF TRANSMIT DATA
002204  012777  000020  013720          MOV     #20,@DHBAR      ;START TRANSMITTER
002212  105777  013702          2$:     TSTB    @DHSCR          ;WAIT FOR CHARACTER
002216  100375                          BPL     2$              ;TO BE RECEIVED
002220  017704  013676                  MOV     @DHNRC,R4       ;GET RECEIVED CHARACTER
002224  020467  013770                  CMP     R4,TDATA        ;COMPARE EXPECTED AND
002230  001401                          BEQ     3$              ;RECEIVED DATA
002232  104000                          HLT     0               ;DATA ERROR
002234  104410                  3$:     SCOPE1                  ;CHECK FOR LOOP WITH CURRENT DATA
002236  105267  013756                  INCB    TDATA           ;UPDATE TRANSMIT DATA
002242  001352                          BNE     1$
002244  104400                  4$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP

                                ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 5.
                                ;CHARACTER LENGTH IS 8 BITS.
                                ;LINE SPEED IS 9600 BAUD.

002246  012767  000340  175522  T6:     MOV     #340,PS         ;DISABLE ALL INTERRUPTS
002254  012767  000010  013704          MOV     #10.,ICOUNT     ;SET UP FOR 10 ITERATIONS
002262  012767  002402  013672          MOV     #4$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
```

```
002270  012767  002232  013666          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
002276  012777  000200  013614          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
002304  012703  000005                  MOV     #5,R3           ;SET UP LINE NUMBER
002310  012767  103405  013702          MOV     #5*400+100000,TDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
002316  012777  000005  013574          MOV     #5,@DHSCR               ;SELECT LINE 5
002324  012777  033503  013572          MOV     #33503,@DHLPR           ;SELECT 8 BITS CHARATER
                                                                        ;LENGTH, 9600 BAUD SPEED
                                                                        ;FOR LINE 5
002332  012777  177777  013570  1$:     MOV     #-1,@DHBC               ;TRANSMIT  1 CHARACTER
002340  012777  016220  013566          MOV     #TDATA,@DHBA            ;ADDRESS OF TRANSMIT DATA
002346  012777  000040  013556          MOV     #40,@DHBAR              ;START TRANSMITTER
002354  105777  013540          2$:     TSTB    @DHSCR                  ;WAIT FOR CHARACTER
002360  100375                  BPL     2$                              ;TO BE RECEIVED
002362  017704  013534                  MOV     @DHNRC,R4               ;GET RECEIVED CHARACTER
002366  020467  013626                  CMP     R4,TDATA                ;COMPARE EXPECTED AND
002372  001401                  BEQ     3$                              ;RECEIVED DATA
002374  104000                  HLT     0                               ;DATA ERROR
002376  104410          3$:     SCOPE1                                  ;CHECK FOR LOOP WITH CURRENT DATA
002400  062767  000002  013614          INCB    TDATA                   ;UPDATE TRANSMIT DATA
002406  001355                  BNE     1$
002406  104400          4$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP

                                ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 6.
                                ;CHARACTER LENGTH IS 8 BITS.
                                ;LINE SPEED IS 9600 BAUD.

002410  012767  000340  175360  7$:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
002416  012767  000010  013542          MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
002424  012767  002550  013530          MOV     #5$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
002432  012767  002474  013524          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
002440  012777  004000  013452          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
002446  012703  000006                  MOV     #6,R3           ;SET UP LINE NUMBER
002452  012767  103000  013540          MOV     #6*400+100000,TDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
002460  012777  000006  013432          MOV     #6,@DHSCR               ;SELECT LINE 6
002466  012777  033503  013430          MOV     #33503,@DHLPR           ;SELECT 8 BITS CHARATER
                                                                        ;LENGTH, 9600 BAUD SPEED
                                                                        ;FOR LINE 6
002474  012777  177777  013426  1$:     MOV     #-1,@DHBC               ;TRANSMIT  1 CHARACTER
002502  012777  016220  013416          MOV     #TDATA,@DHBA            ;ADDRESS OF TRANSMIT DATA
002510  012777  000100  013414          MOV     #100,@DHBAR             ;START TRANSMITTER
002516  105777  013376          2$:     TSTB    @DHSCR                  ;WAIT FOR CHARACTER
002522  100375                  BPL     2$                              ;TO BE RECEIVED
002524  017704  013372                  MOV     @DHNRC,R4               ;GET RECEIVED CHARACTER
002530  020467  013464                  CMP     R4,TDATA                ;COMPARE EXPECTED AND
002534  001401                  BEQ     3$                              ;RECEIVED DATA
002536  104000                  HLT     0                               ;DATA ERROR
002540  104410          3$:     SCOPE1                                  ;CHECK FOR LOOP WITH CURRENT DATA
002542  062767  000002  013452          INCB    TDATA                   ;UPDATE TRANSMIT DATA
002550  001355                  BNE     1$
002550  104400          4$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP
```

```
                                        ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 7.
                                        ;CHARACTER LENGTH IS 8 BITS.
                                        ;LINE SPEED IS 9600 BAUD.

002552  012767  000340  175216  T1C:  MOV   #340,PS                ;DISABLE ALL INTERRUPTS
002560  012767  000010  013400        MOV   #10.ICOUNT            ;SET UP FOR 10 ITERATIONS
002566  012767  002712  013366        MOV   #4$.ESCAPE            ;SET UP TO ESCAPE TO NEXT TEST
002574  012767  002636  013362        MOV   #1$,FREEZ1            ;SET UP TO LOOP WITH DATA
002602  012777  004000  013310        MOV   #BIT11,@DHSCR         ;MASTER CLEAR INTERFACE
002610  012703  000007                MOV   #7,R3           ;SET UP LINE NUMBER
002614  012767  103400  013376        MOV   #7*400+100000,TDATA
                                                              ;SET EXPECTED LINE NUMBER
                                                              ;AND VALID DATA FLAG
                                                              ;EXPECTED DATA
002622  012777  000007  013370        MOV   #7,@DHSCR             ;SELECT LINE 7
002630  012777  033503  013366        MOV   #33503,@DHLPR         ;SELECT 8 BITS CHARATER
                                                              ;LENGTH, 9600 BAUD SPEED
                                                              ;FOR LINE 7
002636  012777  177777  013364  1$:   MOV   #-1,@DHBC            ;TRANSMIT  1 CHARACTER
002644  012777  016220  013354        MOV   #TDATA,@DHBA          ;ADDRESS OF TRANSMIT DATA
002652  012777  000200  013352        MOV   #200,@DHBAR           ;START TRANSMITTER
002660  105777  013234        2$:     TSTB  @DHSCR                ;WAIT FOR CHARACTER
002664  100375                        BPL   2$                    ;TO BE RECEIVED
002666  017704  013230                MOV   @DHNRC,R4             ;GET RECEIVED CHARACTER
002672  020467  013322                CMP   R4,TDATA              ;COMPARE EXPECTED AND
002676  001401                        BEQ   3$                    ;RECEIVED DATA
002700  104000                        HLT   0                     ;DATA ERROR
002702  104410              3$:       SCOPE1                      ;CHECK FOR LOOP WITH CURRENT DATA
002704  005767  013310                INCB  TDATA                 ;UPDATE TRANSMIT DATA
002710  001302                        BNE   1$
002712  104403              4$:       SCOPE                       ;CHECK FOR ITERATIONS, LOOP

                                        ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 10.
                                        ;CHARACTER LENGTH IS 8 BITS.
                                        ;LINE SPEED IS 9600 BAUD.

002714  012767  000340  175054  T11:  MOV   #340,PS                ;DISABLE ALL INTERRUPTS
002722  012767  000010  013206        MOV   #10,ICOUNT            ;SET UP FOR 10 ITERATIONS
002730  012767  002764  013224        MOV   #4$.ESCAPE            ;SET UP TO ESCAPE TO NEXT TEST
002736  012767  003030  013220        MOV   #1$,FREEZ1            ;SET UP TO LOOP WITH DATA
002744  012777  004000  013146        MOV   #BIT11,@DHSCR         ;MASTER CLEAR INTERFACE
002752  012703  000010                MOV   #10,R3          ;SET UP LINE NUMBER
002756  012767  104000  013224        MOV   #10*400+100000,TDATA
                                                              ;SET EXPECTED LINE NUMBER
                                                              ;AND VALID DATA FLAG
                                                              ;EXPECTED DATA
002764  012777  000010  013126        MOV   #10,@DHSCR            ;SELECT LINE 10
002772  012777  033503  013124        MOV   #33503,@DHLPR         ;SELECT 8 BITS CHARATER
                                                              ;LENGTH, 9600 BAUD SPEED
                                                              ;FOR LINE 10
003000  012777  177777  013122  1$:   MOV   #-1,@DHBC            ;TRANSMIT  1 CHARACTER
003006  012777  016220  013112        MOV   #TDATA,@DHBA          ;ADDRESS OF TRANSMIT DATA
003014  012777  000400  013110        MOV   #400,@DHBAR           ;START TRANSMITTER
003022  105777  013072        2$:     TSTB  @DHSCR                ;WAIT FOR CHARACTER
003026  100375                        BPL   2$                    ;TO BE RECEIVED
```

```
[illegible]                                  ;GET RECEIVED CHARACTER
[illegible]                                  ;COMPARE EXPECTED AND
[illegible]                                  ;RECEIVED DATA
[illegible]                                  ;[illegible] ERROR
        3$:   [illegible]                    ;CHECK FOR LOOP ON CURRENT DATA
[illegible]                                  ;UPDATE TRANSMIT DATA
[illegible]
        4$:   [illegible]                    ;CHECK FOR ITERATIONS, LOOP

              ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 11.
              ;CHARACTER LENGTH IS [illegible].
              ;LINE SPEED IS 9600 BAUD.

        T11:  [illegible]   #340,PS          ;DISABLE ALL INTERRUPTS
[illegible]                                  ;SET UP FOR [illegible] ITERATIONS
[illegible]                                  ;SET UP TO ESCAPE TO NEXT TEST
[illegible]                                  ;SET UP TO [illegible]
[illegible]                                  ;MASTER CLEAR INTERFACE
[illegible]                   ;SET UP LINE NUMBER
[illegible]                                  ;SET EXPECTED LINE NUMBER
                                             ;AND VALID DATA FLAG
                                             ;EXPECTED DATA
[illegible]                                  ;[illegible]
[illegible]                                  ;[illegible] CHARACTER
                                             ;LENGTH, 9600 BAUD SPEED
                                             ;FOR LINE 11
        1$:   [illegible]                    ;[illegible] CHARACTER
[illegible]                                  ;ADDRESS OF TRANSMIT DATA
[illegible]                                  ;[illegible]
        2$:   [illegible]                    ;[illegible] FOR CHARACTER
[illegible]                                  ;TO BE RECEIVED
[illegible]                                  ;GET RECEIVED CHARACTER
[illegible]                                  ;COMPARE EXPECTED AND
[illegible]                                  ;RECEIVED DATA
[illegible]                                  ;[illegible]
        3$:   [illegible]                    ;CHECK FOR LOOP ON CURRENT DATA
[illegible]                                  ;UPDATE TRANSMIT DATA
[illegible]
        4$:   [illegible]                    ;CHECK FOR ITERATIONS, LOOP

              ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 12.
              ;CHARACTER LENGTH IS [illegible].
              ;LINE SPEED IS 9600 BAUD.

        T12:  [illegible]   #340,PS          ;DISABLE ALL INTERRUPTS
[illegible]                                  ;SET UP FOR [illegible] ITERATIONS
[illegible]                                  ;SET UP TO ESCAPE TO NEXT TEST
[illegible]                                  ;SET UP TO [illegible]
[illegible]                                  ;MASTER CLEAR INTERFACE
[illegible]                   ;SET UP LINE NUMBER
[illegible]                                  ;SET EXPECTED LINE NUMBER
                                             ;AND VALID DATA FLAG
                                             ;EXPECTED DATA
[illegible]                                  ;SELECT LINE 12
```

C03


```
003276 012777 033503 012620          MOV    #33503,@DHLPR          ;SELECT 8 BITS CHARATER
                                                                ;LENGTH, 9600 BAUD SPEED
                                                                ;FOR LINE 12
[illegible]  [illegible]  177777  012616  1$:  MOV   #-1,@DHBC       ;TRANSMIT 1 CHARACTER
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #TDATA,@DHBA  ;ADDRESS OF TRANSMIT DATA
[illegible]  [illegible]  [illegible]  012604  MOV   #2000,@DHBAR     ;START TRANSMITTER
[illegible]  [illegible]  012566     2$:  TSTB   @DHSCR                ;WAIT FOR CHARACTER
[illegible]  [illegible]             BPL    2$                          ;TO BE RECEIVED
[illegible]  [illegible]  012562     MOV    @DHNRC,R4                   ;GET RECEIVED CHARACTER
[illegible]  [illegible]  [illegible]  CMP  R4,TDATA                    ;COMPARE EXPECTED AND
[illegible]  [illegible]             BEQ    3$                          ;RECEIVED DATA
[illegible]  [illegible]             HLT    0                           ;DATA ERROR
[illegible]  [illegible]        3$:  SCOPE1                             ;CHECK FOR LOOP WITH CURRENT DATA
[illegible]  [illegible]  012542     INCB   TDATA                       ;UPDATE TRANSMIT DATA
[illegible]  [illegible]             BNE    1$
[illegible]  [illegible]        4$:  SCOPE                              ;CHECK FOR ITERATIONS, LOOP

                                     ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 13.
                                     ;CHARACTER LENGTH IS 8 BITS.
                                     ;LINE SPEED IS 9600 BAUD.

[illegible]  [illegible]  000340  [illegible]  T14:  MOV  #340,PS    ;DISABLE ALL INTERRUPTS
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #10,ICOUNT  ;SET UP FOR 10 ITERATIONS
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #4$,ESCAPE  ;SET UP TO ESCAPE TO NEXT TEST
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #1$,[illegible]  ;SET UP TO LOOP WITH DATA
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #[illegible],@DHSCR  ;MASTER CLEAR INTERFACE
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #[illegible],[illegible]  ;SET UP LINE NUMBER
[illegible]  [illegible]  [illegible]  012566  MOV  #13*400+100000,TDATA
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;IN RECEIVED DATA
[illegible]  [illegible]  000013  012460  MOV  #13,@DHSCR       ;SELECT LINE 13
[illegible]  [illegible]  033503  012456  MOV  #33503,@DHLPR    ;SELECT 8 BITS CHARATER
                                                                ;LENGTH, 9600 BAUD SPEED
                                                                ;FOR LINE 13
[illegible]  [illegible]  177777  012454  1$:  MOV  #-1,@DHBC    ;TRANSMIT 1 CHARACTER
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #TDATA,@DHBA  ;ADDRESS OF TRANSMIT DATA
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #4000,@DHBAR  ;START TRANSMITTER
[illegible]  [illegible]  012424     2$:  TSTB   @DHSCR                ;WAIT FOR CHARACTER
[illegible]  [illegible]             BPL    2$                          ;TO BE RECEIVED
[illegible]  [illegible]  [illegible]  MOV  @DHNRC,R4                   ;GET RECEIVED CHARACTER
[illegible]  [illegible]  [illegible]  CMP  R4,TDATA                    ;COMPARE EXPECTED AND
[illegible]  [illegible]             BEQ    3$                          ;RECEIVED DATA
[illegible]  [illegible]             HLT    0                           ;DATA ERROR
[illegible]  [illegible]        3$:  SCOPE1                             ;CHECK FOR LOOP WITH CURRENT DATA
[illegible]  [illegible]  012500     INCB   TDATA                       ;UPDATE TRANSMIT DATA
[illegible]  [illegible]             BNE    1$
[illegible]  [illegible]        4$:  SCOPE                              ;CHECK FOR ITERATIONS, LOOP

                                     ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 14.
                                     ;CHARACTER LENGTH IS 8 BITS.
                                     ;LINE SPEED IS 9600 BAUD.

003624 012767 000340 174244  T15:  MOV   #340,PS       ;DISABLE ALL INTERRUPTS
[illegible]  [illegible]  [illegible]  [illegible]  MOV  #10,ICOUNT  ;SET UP FOR 10 ITERATIONS
[illegible]  [illegible]  003664  [illegible]  MOV  #4$,ESCAPE  ;SET UP TO ESCAPE TO NEXT TEST
```

D03


```
003646 012767 003610 012410          MOV     #1$,FREEZ1                  ;SET UP TO LOOP WITH DATA
[illegible] [illegible] [illegible] 012336   MOV     #BIT11,@DHSCR       ;MASTER CLEAR INTERFACE
[illegible] [illegible] 000014       MOV     #14,R3              ;SET UP LINE NUMBER
[illegible] [illegible] [illegible] 01242[illegible]   MOV     #14+400+100000,TDATA
                                                                     ;SET EXPECTED LINE NUMBER
                                                                     ;AND VALID DATA FLAG
                                                                     ;EXPECTED DATA
003574 [illegible] 000014 012316     MOV     #14,@DHSCR                  ;SELECT LINE 14
003602 [illegible] 033503 012314     MOV     #33503,@DHLPR               ;SELECT 8 BITS CHARATER
                                                                     ;LENGTH, 9600 BAUD SPEED
                                                                     ;FOR LINE 14
003610 [illegible] 177777 012312 1$: MOV     #-1,@DHBC                   ;TRANSMIT 1 CHARACTER
[illegible] [illegible] 016220 [illegible]   MOV     #TDATA,@DHBA        ;ADDRESS OF TRANSMIT DATA
[illegible] [illegible] 010000 012300        MOV     #10000,@DHBAR       ;START TRANSMITTER
00363[illegible] 105777 012262   2$: TSTB    @DHSCR                      ;WAIT FOR CHARACTER
003636 100375                        BPL     2$                          ;TO BE RECEIVED
[illegible] [illegible] 012256       MOV     @DHNRC,R4                   ;GET RECEIVED CHARACTER
[illegible] [illegible] 012250       CMP     R4,TDATA                    ;COMPARE EXPECTED AND
[illegible] [illegible]              BEQ     3$                          ;RECEIVED DATA
[illegible] 104000                   HLT     0                           ;DATA ERROR
[illegible] [illegible]          3$: SCOPE1                              ;CHECK FOR LOOP WITH CURRENT DATA
003656 105267 012236                 INCB    TDATA                       ;UPDATE TRANSMIT DATA
003662 001352                        BNE     1$
003664 104400                    4$: SCOPE                               ;CHECK FOR ITERATIONS, LOOP

                                     ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 15.
                                     ;CHARACTER LENGTH IS 8 BITS.
                                     ;LINE SPEED IS 9600 BAUD.

003666 012767 000340 174102 T16:     MOV     #340,PS                     ;DISABLE ALL INTERRUPTS
[illegible] [illegible] 000010 012264        MOV     #10,ICOUNT          ;SET UP FOR 10 ITERATIONS
[illegible] [illegible] [illegible] 012252   MOV     #4$,ESCAPE          ;SET UP TO ESCAPE TO NEXT TEST
[illegible] [illegible] 003752 012246        MOV     #1$,FREEZ1          ;SET UP TO LOOP WITH DATA
[illegible] [illegible] 004000 012174        MOV     #BIT11,@DHSCR       ;MASTER CLEAR INTERFACE
[illegible] [illegible] 000015       MOV     #15,R3              ;SET UP LINE NUMBER
[illegible] [illegible] 105400 012262        MOV     #15+400+100000,TDATA
                                                                     ;SET EXPECTED LINE NUMBER
                                                                     ;AND VALID DATA FLAG
                                                                     ;EXPECTED DATA
003736 012777 000015 012154          MOV     #15,@DHSCR                  ;SELECT LINE 15
003744 012777 033503 012152          MOV     #33503,@DHLPR               ;SELECT 8 BITS CHARATER
                                                                     ;LENGTH, 9600 BAUD SPEED
                                                                     ;FOR LINE 15
003752 012777 177777 012150 1$:      MOV     #-1,@DHBC                   ;TRANSMIT 1 CHARACTER
[illegible] 012777 016220 [illegible]        MOV     #TDATA,@DHBA        ;ADDRESS OF TRANSMIT DATA
003766 012777 020000 012136          MOV     #20000,@DHBAR               ;START TRANSMITTER
003774 105777 012120         2$:     TSTB    @DHSCR                      ;WAIT FOR CHARACTER
004000 100375                        BPL     2$                          ;TO BE RECEIVED
004002 017704 012114                 MOV     @DHNRC,R4                   ;GET RECEIVED CHARACTER
004006 020467 012206                 CMP     R4,TDATA                    ;COMPARE EXPECTED AND
004012 001401                        BEQ     3$                          ;RECEIVED DATA
004014 104000                        HLT     0                           ;DATA ERROR
004016 104410                3$:     SCOPE1                              ;CHECK FOR LOOP WITH CURRENT DATA
004020 105267 012174                 INCB    TDATA                       ;UPDATE TRANSMIT DATA
004024 001352                        BNE     1$
004026 104400                4$:     SCOPE                               ;CHECK FOR ITERATIONS, LOOP
```

E03


```
                                        ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 16.
                                        ;CHARACTER LENGTH IS 8 BITS.
                                        ;LINE SPEED IS 9600 BAUD.

000000  012767  000340  173740  T17:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
000006  012767  000012  173736        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
000014  012767  000045  173736        MOV     #45.,ESCAPE             ;SET UP TO ESCAPE TO NEXT TEST
000022  012767  000001  173736        MOV     #1,FREE21               ;SET UP TO LOOP WITH DATA
000030  012767  000002  012102        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
000036  012767  000020  012102        MOV     #16.,R3                 ;SET UP LINE NUMBER
000044  012767  107400  012102        MOV     #16+400+100000,TDATA    ;SET EXPECTED LINE NUMBER
                                                                      ;AND VALID DATA FLAG
                                                                      ;EXPECTED DATA
000052  012767  000216  012102        MOV     #16.,@DHSCR             ;SELECT LINE 16
000060  012767  033503  012102        MOV     #33503,@DHLPR           ;SELECT 8 BITS CHARATER
                                                                      ;LENGTH, 9600 BAUD SPEED
                                                                      ;FOR LINE 16
000066  012737  177777  012106  1$:   MOV     #-1,@DHBC               ;TRANSMIT  1 CHARACTER
000074  012737  001000  012104        MOV     #TDATA,@DHBA            ;ADDRESS OF TRANSMIT DATA
000102  012737  140000  012100        MOV     #140000,@DHBAR          ;START TRANSMITTER
000110  105737  012102        2$:     TSTB    @DHSCR                  ;WAIT FOR CHARACTER
000114  100375                        BPL     2$                      ;TO BE RECEIVED
000116  016701  012076                MOV     @DHNRC,R1               ;GET RECEIVED CHARACTER
000122  026127  000000  000004        CMP     R1,TDATA                ;COMPARE EXPECTED AND
000130  001401                        BEQ     3$                      ;RECEIVED DATA
000132  104000                        EMT     0                       ;DATA ERROR
000134  005737  000000  000000  3$:   TST     ICOUNT                  ;CHECK FOR LOOP WITH CURRENT DATA
000142  005267  012056                INC     TDATA                   ;UPDATE TRANSMIT DATA
000146  001365                        BNE     1$
000150  005337  000000        4$:     DEC     ICOUNT                  ;CHECK FOR ITERATIONS, LOOP

                                        ;TRANSMIT ALL CHARACTERS ONE AT A TIME ON LINE 17.
                                        ;CHARACTER LENGTH IS 8 BITS.
                                        ;LINE SPEED IS 9600 BAUD.

000154  012767  000340  173576  TEC:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
000162  012767  000012  173572        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
000170  012767  000045  173572        MOV     #45.,ESCAPE             ;SET UP TO ESCAPE TO NEXT TEST
000176  012767  000001  173572        MOV     #1,FREE21               ;SET UP TO LOOP WITH DATA
000204  012767  000002  011676        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
000212  012703  000021  011676        MOV     #17.,R3                 ;SET UP LINE NUMBER
000216  012767  107400  011656        MOV     #17+400+100000,TDATA    ;SET EXPECTED LINE NUMBER
                                                                      ;AND VALID DATA FLAG
                                                                      ;EXPECTED DATA
000224  012767  000217  011656        MOV     #17.,@DHSCR             ;SELECT LINE 17
000232  012767  033503  011646        MOV     #33503,@DHLPR           ;SELECT 8 BITS CHARATER
                                                                      ;LENGTH, 9600 BAUD SPEED
                                                                      ;FOR LINE 17
000240  012737  177777  011644  1$:   MOV     #-1,@DHBC               ;TRANSMIT  1 CHARACTER
000246  012737  001000  011642        MOV     #TDATA,@DHBA            ;ADDRESS OF TRANSMIT DATA
000254  012737  140000  011636        MOV     #140000,@DHBAR          ;START TRANSMITTER
000262  105737  011636        2$:     TSTB    @DHSCR                  ;WAIT FOR CHARACTER
000266  100375                        BPL     2$                      ;TO BE RECEIVED
```

F03


```
                                                MOV     @DHNRC,R4               ;GET RECEIVED CHARACTER
                                                CMP     R4,TDATA                ;COMPARE EXPECTED AND
                                                BEQ     3$                      ;RECEIVED DATA
                                                HLT     0                       ;DATA ERROR
                                        3$:     SCOPE!                          ;CHECK FOR LOOP WITH CURRENT DATA
                                                INCB    TDATA                   ;UPDATE TRANSMIT DATA
                                                BNE     1$
                                        4$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                                ;SINGLE LINE DATA TEST
                                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 0
                                                ;CHARATER LENGTH IS 8 BITS
                                                ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                                ;TO 9600 BAUD.
                                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                ;AT EACH SPEED

                                        T21:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
                                                MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
                                                MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
                                                MOV     #1$,FREE21              ;SET UP TO LOOP WITH DATA
                                                MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
                                                MOV     #1,R2                   ;FIRST SPEED CODE
                                                MOV     #0,R5                   ;LINE 0 WILL BE TESTED
                                                MOV     #0*400+100000,RDATA
                                                                                ;SET EXPECTED LINE NUMBER
                                                                                ;AND VALID DATA FLAG
                                                                                ;EXPECTED DATA
                                                MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
                                                MOV     #2103,R1                ;FIRST SPEED 150 BAUD,
                                                                                ;8 BITS PER CHARACTER
                                        1$:     MOV     R5,@DHSCR               ;SELECT LINE 0
                                                MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                                ;CHARACTER LENGTH
                                                MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                                ;DATA BUFFER
                                                MOV     #-400,@DHSC             ;400 (OCTAL) BYTES
                                                                                ;TO BE TRANSMITTED
                                                MOV     #1,@DHBAR               ;START TRANSMITTER
                                        2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
                                                BPL     2$
                                                MOV     @DHNRC,R3               ;GET RECEIVED DATA
                                                CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
                                                BEQ     3$
                                                CLR     @DHBAR                  ;STOP TRANSMITTER
                                                HLT     1                       ;DATA ERROR
                                                SCOPE!                          ;CHECK FOR LOOP AT CURRENT SPEED
                                                MOV     #1,@DHBAR               ;RESTART TRANSMITTER
                                        3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
                                                BNE     2$
                                                ADD     #2100,R1                ;UPDATE LINE SPEED
                                                INC     R2                      ;UPDATE SPEED CODE
                                                DEC     R0
                                                BNE     1$
                                        4$:     SCOPE
```

```
                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 1
                                        ;CHARATER LENGTH IS 8 BITS
                                        ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                        ;TO 9600 BAUD.
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH SPEED
004700  012767  000340  173340  TEST:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
004706  012767  000001  011410          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
004714  012767  004744  011412          MOV     #44,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
004722  012767  004744  011336          MOV     #15,FREE21              ;SET UP TO LOOP WITH SCOPE
004730  012767  000001  011334          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
004736  012701  000000                  MOV     #0,R1                   ;FIRST SPEED CODE
004742  012702  000000                  MOV     #0,R2                   ;LINE 1 WILL BE TESTED
004746  010467  011414                  MOV     R4,1$+400+100000.PDA+R4
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
004752  012703  000015                  MOV     #15,R3                  ;EXPECTED DATA
004756  012705  000003                  MOV     #3,R5                   ;13 SPEEDS WILL BE TESTED
                                                                        ;FIRST SPEED =50 BAUD.
                                                                        ;8 BITS PER CHARACTER
004762  010567  011410          1$:     MOV     R5,@DHSCR               ;SELECT LINE 1
004766  010102  011410                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
004772  012777  016222  011372          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
005000  012777  177400  011366          MOV     #-400,@DHBC             ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
005006  012777  000003  011362          MOV     #3,@DHBAR               ;START TRANSMITTER
005014  105777  011340          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
005020  100375                  BPL     2$
005022  016703  011340                  MOV     @#DHNRC,R3              ;GET RECEIVED DATA
005026  020304                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
005030  001403                  BEQ     3$
005032  012777  000000  011336          MOV     #0,@DHBAR               ;STOP TRANSMITTER
                                        ;DATA ERROR
005040  000000                  SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
005042  012777  000003  011324          MOV     #3,@DHBAR               ;RESTART TRANSMITTER
005050  105367  011315          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
005054  001001                  BNE     2$
005056  062701  000100                  ADD     #2100,R1                ;UPDATE LINE SPEED
005062  005202                  INC     R2                              ;UPDATE SPEED CODE
005064  005303                  DEC     R3
005066  001332                  BNE     1$
005070  000400                  BR      4$
005072  000000          4$:     SCOPE

                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 3
                                        ;CHARATER LENGTH IS 8 BITS
                                        ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                        ;TO 9600 BAUD.
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH SPEED

004730  012767  000340  173340  TEST:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
```

H03


```
        004736  012767  000001  011222          MOV     #1,ICOUNT                       ;SET UP FOR 1 ITERATIONS
        004744  012767  005124  011210          MOV     #4$,ESCAPE                      ;SET UP TO ESCAPE TO NEXT TEST
        004752  012767  005014  011204          MOV     #1$,FREEZ1                      ;SET UP TO LOOP WITH DATA
        004760  012777  004000  011132          MOV     #BIT11,@DHSCR                   ;MASTER CLEAR INTERFACE
        004766  012702  000001                  MOV     #1,R2                           ;FIRST SPEED CODE
        004772  012705  000002                  MOV     #2,R5                   ;LINE 2 WILL BE TESTED
        004776  012767  101000  011216          MOV     #2*400+100000,RDATA
                                                                                        ;SET EXPECTED LINE NUMBER
                                                                                        ;AND VALID DATA FLAG
                                                                                        ;EXPECTED DATA
        005004  012700  000015                  MOV     #15,R0                          ;13 SPEEDS WILL BE TESTED
        005010  012701  002103                  MOV     #2103,R1                        ;FIRST SPEED =50 BAUD.
                                                                                        ;8 BITS PER CHARACTER
        005014  010577  011100          1$:     MOV     R5,@DHSCR                       ;SELECT LINE 2
        005020  010177  011100                  MOV     R1,@DHLPR                       ;SET LINE SPEED AND
                                                                                        ;CHARACTER LENGTH
        005024  012777  016226  011074          MOV     #TBUF,@DHBA                     ;ADDRESS OF TRANSMITTER
                                                                                        ;DATA BUFFER
        005032  012777  177400  011070          MOV     #-400,@DHBC                     ;400 (OCTAL) BYTES
                                                                                        ;WILL BE TRANSMITTED
        005040  012777  000004  011064          MOV     #4,@DHBAR                       ;START TRANSMITTER
        005046  105777  011046          2$:     TSTB    @DHSCR                          ;WAIT FOR DATA TO BE RECEIVED
        005052  100375                          BPL     2$
        005054  017703  011042                  MOV     @DHNRC,R3                       ;GET RECEIVED DATA
        005060  020367  011136                  CMP     R3,RDATA                        ;COMPER EXPECTED AND RECEIVED DATA
        005064  001407                          BEQ     3$
        005066  005077  011040                  CLR     @DHBAR                          ;STOP TRANSMITTER
        005072  104001                          HLT     1                               ;DATA ERROR
        005074  104410                          SCOPE1                                  ;CHECK FOR LOOP AT CURRENT SPEED
        005076  012777  000004  011026          MOV     #4,@DHBAR                       ;RESTART TRANSMITTER
        005104  105267  011112          3$:     INCB    RDATA                           ;UPDATA EXPECTED DATA
        005110  001356                          BNE     2$
        005112  062701  002100                  ADD     #2100,R1                        ;UPDATE LINE SPEED
        005116  005202                          INC     R2                              ;UPDATE SPEED CODE
        005120  005300                          DEC     R0
        005122  001334                          BNE     1$
        005124  104400                  4$:     SCOPE

                                                ;SINGLE LINE DATA TEST
                                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 3
                                                ;CHARATER LENGTH IS 8 BITS
                                                ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                                ;TO 9600 BAUD.
                                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                ;AT EACH SPEED

        005126  012767  000340  172642  T24:    MOV     #340,PS                         ;DISABLE ALL INTERRUPTS
        005134  012767  000001  011024          MOV     #1,ICOUNT                       ;SET UP FOR 1 ITERATIONS
        005142  012767  005322  011012          MOV     #4$,ESCAPE                      ;SET UP TO ESCAPE TO NEXT TEST
        005150  012767  005212  011006          MOV     #1$,FREEZ1                      ;SET UP TO LOOP WITH DATA
        005156  012777  004000  010734          MOV     #BIT11,@DHSCR                   ;MASTER CLEAR INTERFACE
        005164  012702  000001                  MOV     #1,R2                           ;FIRST SPEED CODE
        005170  012705  000003                  MOV     #3,R5                   ;LINE 3 WILL BE TESTED
        005174  012767  101400  011020          MOV     #3*400+100000,RDATA
                                                                                        ;SET EXPECTED LINE NUMBER
                                                                                        ;AND VALID DATA FLAG
```

```
                                                                        ;EXPECTED DATA
005202  012700  000015                MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
005206  012701  002103                MOV     #2103,R1                ;FIRST SPEED =50 BAUD.
                                                                        ;8 BITS PER CHARACTER
005212  010577  010702        1$:     MOV     R5,@DHSCR               ;SELECT LINE 3
005216  010177  010702                MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
005222  012777  016226  010676        MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
005230  012777  177400  010672        MOV     #-400,@DHBC             ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
005236  012777  000010  010666        MOV     #10,@DHBAR              ;START TRANSMITTER
005244  105777  010650        2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
005250  100376                BPL     2$
005252  017703  010644                MOV     @DHNRC,R3               ;GET RECEIVED DATA
005256  020367  010740                CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
005262  001403                BEQ     3$
005264  005077  010642                CLR     @DHBAR                  ;STOP TRANSMITTER
005270  104001                HLT     1                               ;DMA ERROR
005272  104410                SCOPE1                                  ;CHECK FOR LOOP AT CURRENT SPEED
005274  012777  000010  010630        MOV     #10,@DHBAR              ;RESTART TRANSMITTER
005302  105267  010714        3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
005306  001356                BNE     2$
005310  062701  002100                ADD     #2100,R1                ;UPDATE LINE SPEED
005314  005202                INC     R2                              ;UPDATE SPEED CODE
005316  005300                DEC     R0
005320  001334                BNE     1$
005322  104400        4$:     SCOPE

                                                                        ;SINGLE LINE DATA TEST
                                                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 4
                                                                        ;CHARATER LENGTH IS 8 BITS
                                                                        ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                                                        ;TO 9600 BAUD.
                                                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                                        ;AT EACH SPEED

005324  012767  000340  172444  T25:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
005332  012767  000001  010626        MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
005340  012767  005520  010614        MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
005346  012767  005410  010610        MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
005354  012777  004000  010536        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
005362  012702  000001                MOV     #1,R2                   ;FIRST SPEED CODE
005366  012705  000004                MOV     #4,R5                   ;LINE 4 WILL BE TESTED
005372  012767  102000  010622        MOV     #4*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
005400  012700  000015                MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
005404  012701  002103                MOV     #2103,R1                ;FIRST SPEED =50 BAUD.
                                                                        ;8 BITS PER CHARACTER
005410  010577  010504        1$:     MOV     R5,@DHSCR               ;SELECT LINE 4
005414  010177  010504                MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
005420  012777  016226  010500        MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
```

```
 1656  005426  012777  177400  010474          MOV     #-400,@DHBC             ;400 (OCTAL) BYTES
                                                                                ;WILL BE TRANSMITTED
 1658  005434  012777  000020  010470          MOV     #20,@DHBAR              ;START TRANSMITTER
 1659  005442  105777  010452          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
 1660  005446  100375                          BPL     2$
 1661  005450  017703  010446                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
 1662  005454  020367  010542                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
 1663  005460  001407                          BEQ     3$
 1664  005462  005077  010444                  CLR     @DHBAR                  ;STOP TRANSMITTER
 1665  005466  104001                          HLT     1                       ;DATA ERROR
 1666  005470  104410                          SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
 1667  005472  012777  000020  010432          MOV     #20,@DHBAR              ;RESTART TRANSMITTER
 1668  005500  105267  010516          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
 1669  005504  001356                          BNE     2$
 1670  005506  062701  002100                  ADD     #2100,R1                ;UPDATE LINE SPEED
 1671  005512  005202                          INC     R2                      ;UPDATE SPEED CODE
 1672  005514  005300                          DEC     R0
 1673  005516  001334                          BNE     1$
 1674  005520  104400                  4$:     SCOPE
 1675
 1676                                          ;SINGLE LINE DATA TEST
 1677                                          ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 5
 1678                                          ;CHARATER LENGTH IS 8 BITS
 1679                                          ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
 1680                                          ;TO 9600 BAUD.
 1681                                          ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
 1682                                          ;AT EACH SPEED
 1683
 1684  005522  012767  000340  172246  T26:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
 1685  005530  012767  000001  010430          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
 1686  005536  012767  005716  010416          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
 1687  005544  012767  005606  010412          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
 1688  005552  012777  004000  010340          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
 1689  005560  012702  000001                  MOV     #1,R2                   ;FIRST SPEED CODE
 1690  005564  012705  000005                  MOV     #5,R5                   ;LINE 5 WILL BE TESTED
 1691  005570  012767  102400  010424          MOV     #5*400+100000,RDATA
 1692                                                                          ;SET EXPECTED LINE NUMBER
 1693                                                                          ;AND VALID DATA FLAG
 1694                                                                          ;EXPECTED DATA
 1695  005576  012700  000015                  MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
 1696  005602  012701  002103                  MOV     #2103,R1                ;FIRST SPEED =50 BAUD.
 1697                                                                          ;8 BITS PER CHARACTER
 1698  005606  010577  010306          1$:     MOV     R5,@DHSCR               ;SELECT LINE 5
 1699  005612  010177  010306                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
 1700                                                                          ;CHARACTER LENGTH
 1701  005616  012777  016226  010302          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
 1702                                                                          ;DATA BUFFER
 1703  005624  012777  177400  010276          MOV     #-400,@DHBC             ;400 (OCTAL) BYTES
 1704                                                                          ;WILL BE TRANSMITTED
 1705  005632  012777  000040  010272          MOV     #40,@DHBAR              ;START TRANSMITTER
 1706  005640  105777  010254          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
 1707  005644  100375                          BPL     2$
 1708  005646  017703  010250                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
 1709  005652  020367  010344                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
 1710  005656  001407                          BEQ     3$
 1711  005660  005077  010246                  CLR     @DHBAR                  ;STOP TRANSMITTER
```

```
                                HLT     1                       ;DATA ERROR
                                SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
                                MOV     #40,@DHBAR              ;RESTART TRANSMITTER
                        3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
                                BNE     2$
                                ADD     #2100,R1                ;UPDATE LINE SPEED
                                INC     R2                      ;UPDATE SPEED CODE
                                DEC     R0
                                BNE     1$
                        4$:     SCOPE

                                ;SINGLE LINE DATA TEST
                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 6
                                ;CHARATER LENGTH IS 8 BITS
                                ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                ;TO 9600 BAUD.
                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                ;AT EACH SPEED

005730  012767  000340  172050  T27:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
005736  012767  000001  010232        MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
005744  012767  006114  010220        MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
005752  012767  006004  010214        MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
005760  012777  004000  010142        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
005766  012702  000001                MOV     #1,R2                   ;FIRST SPEED CODE
005772  012705  000006                MOV     #6,R5           ;LINE 6 WILL BE TESTED
005776  012767  103000  010226        MOV     #6*400+100000,RDATA
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;EXPECTED DATA
006004  012700  000015                MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
006010  012701  002103                MOV     #2103,R1                ;FIRST SPEED =50 BAUD,
                                                                ;8 BITS PER CHARACTER
006014  010577  010110        1$:     MOV     R5,@DHSCR               ;SELECT LINE 6
006020  010177  010110                MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                ;CHARACTER LENGTH
006024  012777  016226  010104        MOV     #T6JF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                ;DATA BUFFER
006032  012777  177400  010100        MOV     #-400,@DHBC             ;400 (OCTAL) BYTES
                                                                ;WILL BE TRANSMITTED
006040  012777  000100  010074        MOV     #100,@DHBAR             ;START TRANSMITTER
006046  105777  010056        2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
006052  100375                        BPL     2$
006054  017703  010052                MOV     @DHNRC,R3               ;GET RECEIVED DATA
006060  020367  010146                CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
006064  001407                        BEQ     3$
006066  005077  010050                CLR     @DHBAR                  ;STOP TRANSMITTER
006072  104001                        HLT     1                       ;DATA ERROR
006074  104410                        SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
006076  012777  000100  010036        MOV     #100,@DHBAR             ;RESTART TRANSMITTER
006104  105267  010122        3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
006110  001356                        BNE     2$
006112  062701  002100                ADD     #2100,R1                ;UPDATE LINE SPEED
006116  005202                        INC     R2                      ;UPDATE SPEED CODE
006120  005300                        DEC     R0
006122  001334                        BNE     1$
```

```
 1768  006114  104400                  4$:     SCOPE
 1769
 1770                                          ;SINGLE LINE DATA TEST
 1771                                          ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 7
 1772                                          ;CHARATER LENGTH IS 8 BITS
 1773                                          ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
 1774                                          ;TO 9600 BAUD.
 1775                                          ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
 1776                                          ;AT EACH SPEED
 1777
 1778  006116  012767  000340  171652  T30:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
 1779  006124  012767  000001  010034          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
 1780  006132  012767  006312  010022          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
 1781  006140  012767  006202  010016          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
 1782  006146  012777  004000  007744          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
 1783  006154  012702  000001                  MOV     #1,R2                   ;FIRST SPEED CODE
 1784  006160  012705  000007                  MOV     #7,R5           ;LINE 7 WILL BE TESTED
 1785  006164  012767  103400  010030          MOV     #7*400+100000,RDATA
 1786                                                                  ;SET EXPECTED LINE NUMBER
 1787                                                                  ;AND VALID DATA FLAG
 1788                                                                  ;EXPECTED DATA
 1789  006172  012700  000015                  MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
 1790  006176  012701  002103                  MOV     #2103,R1                ;FIRST SPEED =50 BAUD,
 1791                                                                  ;8 BITS PER CHARACTER
 1792  006202  010577  007712          1$:     MOV     R5,@DHSCR               ;SELECT LINE 7
 1793  006206  010177  007712                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
 1794                                                                  ;CHARACTER LENGTH
 1795  006212  012777  016226  007706          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
 1796                                                                  ;DATA BUFFER
 1797  006220  012777  177400  007702          MOV     #-400,@DHBC             ;400 (OCTAL) BYTES
 1798                                                                  ;WILL BE TRANSMITTED
 1799  006226  012777  000200  007676          MOV     #200,@DHBAR             ;START TRANSMITTER
 1800  006234  105777  007660          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
 1801  006240  100375                          BPL     2$
 1802  006242  017703  007654                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
 1803  006246  020367  007750                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
 1804  006252  001407                          BEQ     3$
 1805  006254  005077  007652                  CLR     @DHBAR                  ;STOP TRANSMITTER
 1806  006260  104001                          HLT     1                       ;DATA ERROR
 1807  006262  104410                          SCOPE!                          ;CHECK FOR LOOP AT CURRENT SPEED
 1808  006264  012777  000200  007640          MOV     #200,@DHBAR             ;RESTART TRANSMITTER
 1809  006272  105267  007724          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
 1810  006276  001356                          BNE     2$
 1811  006300  062701  002100                  ADD     #2100,R1                ;UPDATE LINE SPEED
 1812  006304  005202                          INC     R2                      ;UPDATE SPEED CODE
 1813  006306  005300                          DEC     R0
 1814  006310  001334                          BNE     1$
 1815  006312  104400                  4$:     SCOPE
 1816
 1817                                          ;SINGLE LINE DATA TEST
 1818                                          ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 10
 1819                                          ;CHARATER LENGTH IS 8 BITS
 1820                                          ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
 1821                                          ;TO 9600 BAUD.
 1822                                          ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
 1823                                          ;AT EACH SPEED
```

```
                                
006314  012767  000340  171454  T31:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
006322  012767  000001  007636          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
006330  012767  006510  007624          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
006336  012767  006400  007620          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
006344  012777  004000  007546          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
006352  012702  000001                  MOV     #1,R2                   ;FIRST SPEED CODE
006356  012705  000013                  MOV     #10,R5          ;LINE 10 WILL BE TESTED
006362  012767  104000  007632          MOV     #10*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
006370  012700  000015                  MOV     #15,R0                  ;13 SPEEDS WILL BE TESTED
006374  012701  002103                  MOV     #2103,R1                ;FIRST SPEED =50 BAUD,
                                                                        ;8 BITS PER CHARACTER
006400  010577  007514          1$:     MOV     R5,@DHSCR               ;SELECT LINE 10
006404  010177  007514                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
006410  012777  016226  007510          MOV     #TBUF,@DH3A             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
006416  012777  177400  007504          MOV     #-400,@DH3C             ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
006424  012777  000400  007500          MOV     #400,@DHBAR             ;START TRANSMITTER
006432  105777  007462          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
006436  100375                  BPL     2$
006440  017703  007456                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
006444  020367  007552                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
006450  001407                  BEQ     3$
006452  005077  007454                  CLR     @DHBAR                  ;STOP TRANSMITTER
006456  104001                  HLT     1                       ;DATA ERROR
006460  104410                  SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
006462  012777  000400  007442          MOV     #400,@DHBAR             ;RESTART TRANSMITTER
006470  105267  007526          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
006474  001356                  BNE     2$
006476  062701  002100                  ADD     #2100,R1                ;UPDATE LINE SPEED
006502  005202                  INC     R2                      ;UPDATE SPEED CODE
006504  005300                  DEC     R0
006506  001334                  BNE     1$
006510  104400          4$:     SCOPE

                                ;SINGLE LINE DATA TEST
                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 11
                                ;CHARATER LENGTH IS 8 BITS
                                ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                ;TO 9600 BAUD.
                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                ;AT EACH SPEED

006512  012767  000340  171256  T32:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
006520  012767  000001  007440          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
006526  012767  006706  007426          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
006534  012767  006576  007422          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
006542  012777  004000  007350          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
006550  012702  000001                  MOV     #1,R2                   ;FIRST SPEED CODE
006554  012705  000011                  MOV     #11,R5          ;LINE 11 WILL BE TESTED
006560  012767  104400  007434          MOV     #11*400+100000,RDATA
```

```
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;EXPECTED DATA
006566  012700  000015          MOV     #15,R0                ;13 SPEEDS WILL BE TESTED
006572  012701  002103          MOV     #2103,R1              ;FIRST SPEED =50 BAUD,
                                                                ;8 BITS PER CHARACTER
006576  010577  007316    1$:   MOV     R5,@DHSCR             ;SELECT LINE 1;
006602  010177  007316          MOV     R1,@DHLPR             ;SET LINE SPEED AND
                                                                ;CHARACTER LENGTH
006606  012777  016226  007312  MOV     #TBUF,@DHBA           ;ADDRESS OF TRANSMITTER
                                                                ;DATA BUFFER
006614  012777  177400  007306  MOV     #-400,@DHBC           ;400 (OCTAL) BYTES
                                                                ;WILL BE TRANSMITTED
006622  012777  001000  007302  MOV     #1000,@DHBAR          ;START TRANSMITTER
006630  105777  007264    2$:   TSTB    @DHSCR                ;WAIT FOR DATA TO BE RECEIVED
006634  100375          BPL     2$
006636  017703  007260          MOV     @DHNRC,R3             ;GET RECEIVED DATA
006642  020367  007354          CMP     R3,RDATA+2            ;COMPER EXPECTED AND RECEIVED DATA
006646  001407          BEQ     3$
006650  005077  007256          CLR     @DHBAR                ;STOP TRANSMITTER
006654  104001          HLT     1                             ;DATA ERROR
006656  104410          SCOPE1                                ;CHECK FOR LOOP AT CURRENT SPEED
006660  012777  001000  007244  MOV     #1000,@DHBAR          ;RESTART TRANSMITTER
006666  105067  007330    3$:   INCB    RDATA                 ;UPDATA EXPECTED DATA
006672  001356          BNE     2$
006674  062701  002100          ADD     #2100,R1              ;UPDATE LINE SPEED
006700  005202          INC     R2                            ;UPDATE SPEED CODE
006702  005300          DEC     R0
006704  001334          BNE     1$
006706  104400    4$:   SCOPE

                        ;SINGLE LINE DATA TEST
                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 12
                        ;CHARATER LENGTH IS 8 BITS
                        ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                        ;TO 9600 BAUD.
                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                        ;AT EACH SPEED

006710  012767  000340  171060  T33:  MOV     #340,PS               ;DISABLE ALL INTERRUPTS
006716  012767  000001  007242        MOV     #1,ICOUNT             ;SET UP FOR 1 ITERATIONS
006724  012767  007104  007230        MOV     #4$,ESCAPE            ;SET UP TO ESCAPE TO NEXT TEST
006732  012767  006774  007224        MOV     #1$,FREEZ1            ;SET UP TO LOOP WITH DATA
006740  012777  004000  007152        MOV     #BIT11,@DHSCR         ;MASTER CLEAR INTERFACE
006746  012702  000001                MOV     #1,R2                 ;FIRST SPEED CODE
006752  012705  000012                MOV     #12,R5          ;LINE 12 WILL BE TESTED
006756  012767  105000  007236        MOV     #12*400+100000,RDATA
                                                                ;SET EXPECTED LINE NUMBER
                                                                ;AND VALID DATA FLAG
                                                                ;EXPECTED DATA
006764  012700  000015                MOV     #15,R0                ;13 SPEEDS WILL BE TESTED
006770  012701  002103                MOV     #2103,R1              ;FIRST SPEED =50 BAUD.
                                                                ;8 BITS PER CHARACTER
006774  010577  007120    1$:   MOV     R5,@DHSCR             ;SELECT LINE 12
007000  010177  007120          MOV     R1,@DHLPR             ;SET LINE SPEED AND
                                                                ;CHARACTER LENGTH
```

```
                                                        ;STOP TRANSMITTER
                                                        ;DATA ERROR
                                                        ;CHECK FOR LOOP AT CURRENT SPEED
                                                        ;RESTART TRANSMITTER
                                                        ;UPDATA EXPECTED DATA
                                                        ;UPDATE LINE SPEED
                                                        ;UPDATE SPEED CODE


                                                        ;LINE DATA TEST
                                                        ;  A BLOCK OF ASCII TOTAL CHARACTERS ON LINE 14
                                                        ;  EACH LINE WILL START AT 60 BAUD AND BE INCREMENTED
                                                        ;  TO THE HIGHEST SPEED.
                                                        ;  60 ASCII CHARACTERS WILL BE TRANSMITTED
                                                        ;  EACH SPEED
                                                        ;CLEAR ALL INTERRUPTS
                                                        ;SET UP FOR 1 ERRORS
                                                        ;SET UP TO ESCAPE TO NEXT TEST
                                                        ;  IF LOOP AT THIS SPEED
                                                        ;MASTER CLEAR INTERFACE
                                                        ;  ALL OF THESE LINES
                                                        ;  WILL BE TESTED
                                                        ;GET EXPECTED LINE NUMBER
                                                        ;RESET VALID DATA FLAG
                                                        ;CLEAR RECEIVED DATA
                                                        ;  THE FOLLOWING LINES WILL BE TESTED
                                                        ;  AT THE SPEED SPECIFIED.
                                                        ;  9 BITS PER CHARACTER
                                                        ;SET LINE 14
                                                        ;SET LINE SPEED AND
                                                        ;  CHARACTER LENGTH
                                                        ;ADDRESS OF TRANSMITTER
                                                        ;DATA BUFFER
                                                        ;60 TOTAL BYTES
                                                        ;  TO BE TRANSMITTED
                                                        ;START TRANSMITTER
                                                        ;WAIT FOR DATA TO BE RECEIVED

                                                        ;GET RECEIVED DATA
                                                        ;COMPER EXPECTED AND RECEIVED DATA

                                                        ;STOP TRANSMITTER
                                                        ;DATA ERROR
                                                        ;CHECK FOR LOOP AT CURRENT SPEED
                                                        ;RESTART TRANSMITTER
                                                        ;UPDATA EXPECTED DATA

                                                        ;UPDATE LINE SPEED
                                                        ;UPDATE SPEED CODE
```

D04


```
 [illegible]  [illegible]                    DEC     R0
 [illegible]  [illegible]                    BNE     1$
 [illegible]  104400               4$:       SCOPE

                                             ;SINGLE LINE DATA TEST
                                             ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 15
                                             ;CHARATER LENGTH IS 8 BITS
                                             ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                             ;TO 9600 BAUD.
                                             ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                             ;AT EACH SPEED

 [illegible]  012767  000340  177776  T36:   MOV     #340,PS                        ;DISABLE ALL INTERRUPTS
 [illegible]  [illegible]                    MOV     #1,ICOUNT                      ;SET UP FOR 1 ITERATIONS
 [illegible]  [illegible]                    MOV     #4$,ESCAPE                     ;SET UP TO ESCAPE TO NEXT TEST
 [illegible]  [illegible]                    MOV     #1$,FREEZ:                     ;SET UP TO LOOP WITH DATA
 [illegible]  [illegible]         006360     MOV     #BIT11,@DHSCR                  ;MASTER CLEAR INTERFACE
 [illegible]  [illegible]                    MOV     #1,R3                          ;FIRST SPEED CODE
 [illegible]  [illegible]  000015            MOV     #15,R5          ;LINE 15 WILL BE TESTED
 007550  012767  105400  006444              MOV     #15*400+100000,RDATA
                                                                            ;SET EXPECTED LINE NUMBER
                                                                            ;AND VALID DATA FLAG
                                                                            ;EXPECTED DATA
 007556  012700  000015                      MOV     #15,R0                         ;13 SPEEDS WILL BE TESTED
 [illegible]  012701  002103                 MOV     #2103,R1                       ;FIRST SPEED =50 BAUD.
                                                                            ;8 BITS PER CHARACTER
 007566  010577  006326            1$:       MOV     R5,@DHSCR                      ;SELECT LINE 15
 [illegible]  010177  006326                 MOV     R1,@DHLPR                      ;SET LINE SPEED AND
                                                                            ;CHARACTER LENGTH
 007576  012777  016226  006322              MOV     #TBUF,@DHBA                    ;ADDRESS OF TRANSMITTER
                                                                            ;DATA BUFFER
 007604  012777  177400  006316              MOV     #-400,@DHBC                    ;400 (OCTAL) BYTES
                                                                            ;WILL BE TRANSMITTED
 007612  012777  020000  006312              MOV     #20000,@DHBAR                  ;START TRANSMITTER
 [illegible]  105777  006274       2$:       TSTB    @DHSCR                         ;WAIT FOR DATA TO BE RECEIVED
 [illegible]  100375                         BPL     2$
 [illegible]  017703  006270                 MOV     @DHNRC,R3                      ;GET RECEIVED DATA
 [illegible]  020367  006364                 CMP     R3,RDATA                       ;COMPER EXPECTED AND RECEIVED DATA
 007636  [illegible]                         BEQ     3$
 007640  [illegible]  006266                 CLR     @DHBAR                         ;STOP TRANSMITTER
 007644  [illegible]                         HLT     !                              ;DATA ERROR
 007646  104410                              SCOPE1                                 ;CHECK FOR LOOP AT CURRENT SPEED
 [illegible]  012777  020000  006254         MOV     #20000,@DHBAR                  ;RESTART TRANSMITTER
 [illegible]  105267  006240       3$:       INCB    RDATA                          ;UPDATA EXPECTED DATA
 007662  001356                              BNE     2$
 007664  062701  002100                      ADD     #2100,R1                       ;UPDATE LINE SPEED
 007670  [illegible]                         INC     R3                             ;UPDATE SPEED CODE
 007672  [illegible]                         DEC     R0
 007674  [illegible]                         BNE     1$
 007676  104400                    4$:       SCOPE

                                             ;SINGLE LINE DATA TEST
                                             ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 15
                                             ;CHARATER LENGTH IS 8 BITS
                                             ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                             ;TO 9600 BAUD.
```

E04


```
                                            ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                            ;AT EACH SPEED

[illegible]  012767  000340  [illegible]  T37:   MOV     #340,PS                     ;DISABLE ALL INTERRUPTS
[illegible]  012767  [illegible]  006252          MOV     #1,TACNT                    ;SET UP FOR 1 ITERATIONS
[illegible]  012767  010074  006240          MOV     #4$,ESCAPE                  ;SET UP TO ESCAPE TO NEXT TEST
[illegible]  012767  007764  006234          MOV     #1$,FREEZI                  ;SET UP TO LOOP WITH DATA
[illegible]  012767  004000  006162          MOV     #BIT11,DDHSCR               ;MASTER CLEAR INTERFACE
[illegible]  012702  000001                  MOV     #1,R2                       ;FIRST SPEED CODE
[illegible]  012705  000016                  MOV     #16,R5          ;LINE 16 WILL BE TESTED
[illegible]  012767  107000  006246          MOV     #16*400+100000,RDATA
                                                                                 ;SET EXPECTED LINE NUMBER
                                                                                 ;AND VALID DATA FLAG
                                                                                 ;EXPECTED DATA
[illegible]  012700  000015                  MOV     #15,R0                      ;13 SPEEDS WILL BE TESTED
[illegible]  012701  002103                  MOV     #2103,R1                    ;FIRST SPEED =50 BAUD,
                                                                                 ;8 BITS PER CHARACTER
[illegible]  010577  006132          1$:    MOV     R5,@DHSCR                   ;SELECT LINE 16
[illegible]  010177  006130                  MOV     R1,@DHLPR                   ;SET LINE SPEED AND
                                                                                 ;CHARACTER LENGTH
007774  012777  016226  006124          MOV     #TBUF,@DHBA                 ;ADDRESS OF TRANSMITTER
                                                                                 ;DATA BUFFER
010002  012777  177400  006120          MOV     #-400,@DHBC                 ;400 (OCTAL) BYTES
                                                                                 ;WILL BE TRANSMITTED
010010  012777  040000  006114          MOV     #40000,@DHBAR               ;START TRANSMITTER
010016  105777  006076          2$:    TSTB    @DHSCR                      ;WAIT FOR DATA TO BE RECEIVED
[illegible]  100375                          BPL     2$
[illegible]  017703  006072                  MOV     @DHNRC,R3                   ;GET RECEIVED DATA
[illegible]  020367  006166                  CMP     R3,RDATA                    ;COMPER EXPECTED AND RECEIVED DATA
010034  001407                          BEQ     3$
[illegible]  005077  006070                  CLR     @DHBAR                      ;STOP TRANSMITTER
[illegible]  104001                          ERROR   1                           ;DATA ERROR
[illegible]  104410                          SCOPEI                              ;CHECK FOR LOOP AT CURRENT SPEED
010046  012777  040000  006056          MOV     #40000,@DHBAR               ;RESTART TRANSMITTER
010054  105267  006142          3$:    INCB    RDATA                       ;UPDATA EXPECTED DATA
010060  001356                          BNE     2$
[illegible]  [illegible]  002100                  ADD     #2100,R1                    ;UPDATE LINE SPEED
[illegible]  005202                          INC     R2                          ;UPDATE SPEED CODE
010070  005300                          DEC     R0
010072  001334                          BNE     1$
010074  104400                  4$:    SCOPE

                                            ;SINGLE LINE DATA TEST
                                            ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 17
                                            ;CHARATER LENGTH IS 8 BITS
                                            ;LINE SPEED WILL START AT 50 BAUD AND BE INCREMENTED
                                            ;TO 9600 BAUD.
                                            ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                            ;AT EACH SPEED

010076  012767  000340  167672  T40:   MOV     #340,PS                     ;DISABLE ALL INTERRUPTS
010104  012767  000001  006054          MOV     #1,TACNT                    ;SET UP FOR 1 ITERATIONS
010112  012767  010272  006042          MOV     #4$,ESCAPE                  ;SET UP TO ESCAPE TO NEXT TEST
010120  012767  010162  006036          MOV     #1$,FREEZI                  ;SET UP TO LOOP WITH DATA
010126  012777  004000  005764          MOV     #BIT11,@DHSCR               ;MASTER CLEAR INTERFACE
010134  012702  000001                  MOV     #1,R2                       ;FIRST SPEED CODE
```

```
                                                MOV     #17,R5          ;LINE 17 WILL BE TESTED
                                                MOV     #17*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
                                                MOV     #15,R0          ;13 SPEEDS WILL BE TESTED
                                                MOV     #2103,R1        ;FIRST SPEED =50 BAUD.
                                                                        ;8 BITS PER CHARACTER
                                        15:     MOV     R5,@DHSCR       ;SELECT LINE 17
                                                MOV     R1,@DHLPR       ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
                                                MOV     #TBUF,@DHBA     ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
                                                MOV     #-400,@DHBC     ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
                                                MOV     #100003,@DHBAR  ;START TRANSMITTER
                                        25:     TSTB    @DHSCR          ;WAIT FOR DATA TO BE RECEIVED
                                                BPL     2$
                                                MOV     @DHNRC,R3       ;GET RECEIVED DATA
                                                CMP     R3,RDATA        ;COMPER EXPECTED AND RECEIVED DATA
                                                BEQ     3$
                                                CLR     @DHBAR          ;STOP TRANSMITTER
                                                HLT     1               ;DATA ERROR
                                                SCOPE1                  ;CHECK FOR LOOP AT CURRENT SPEED
                                                MOV     #100000,@DHBAR  ;RESTART TRANSMITTER
                                        35:     INCB    RDATA           ;UPDATA EXPECTED DATA
                                                BNE     2$
                                                ADD     #2100,R1        ;UPDATE LINE SPEED
                                                INC     R2              ;UPDATE SPEED CODE
                                                DEC     R0
                                                BNE     1$
                                        4$:     SCOPE

                                                ;SINGLE LINE DATA TEST
                                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 0
                                                ;LINE SPEED IS 9600 BAUD
                                                ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                ;TO 8 BITS
                                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                ;AT EACH CHARACTER LENGTH

010274  012767  000340  167474  741:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
010302  012767  000001  005655          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
010310  012767  010512  005644          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
010316  012767  010364  005640          MOV     #1$,FREEZI              ;SET UP TO LOOP WITH DATA
010324  012777  004000  005566          MOV     #BIT12,@DHSCR           ;MASTER CLEAR INTERFACE
010332  005004                          CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS)
010334  012705  000000                  MOV     #0,R5           ;LINE 0 WILL BE TESTED
010340  012767  100000  005654          MOV     #17*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
010346  012700  000004                  MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
010352  012701  033500                  MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                        ;LINE SPEED =9600 BAUD
```

```
                                                        ;40 CHARACTERS AT 5 BITS
                                                        ;SELECT LINE 0
                                                        ;SET LINE SPEED AND
                                                        ;CHARACTER LENGTH
                                                        ;ADDRESS OF TRANSMITTER
                                                        ;DATA BUFFER
                                                        ;400 (OCTAL) BYTES
                                                        ;WILL BE TRANSMITTED
                                                        ;START TRANSMITTER
                                                        ;WAIT FOR DATA TO BE RECEIVED
                                                        ;GET RECEIVED DATA
                                                        ;COMPER EXPECTED AND RECEIVED DATA
                                                        ;STOP TRANSMITTER
                                                        ;DATA ERROR
                                                        ;CHECK FOR LOOP AT CURRENT SPEED
                                                        ;RESTART TRANSMITTER
                                                        ;UPDATA EXPECTED DATA
                                                        ;INITIALIZE EXPECTED
                                                        ;RECEIVED DATA
                                                        ;UPDATA CHARACTER LENGTH
                                                        ;SINGLE LINE DATA TEST
                                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 1
                                                        ;LINE SPEED IS 9600 BAUD
                                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                        ;TO 8 BITS
                                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                        ;AT EACH CHARACTER LENGTH
                                                        ;DISABLE ALL INTERRUPTS
                                                        ;SET UP FOR 1 ITERATIONS
                                                        ;SET UP TO ESCAPE TO NEXT TEST
                                                        ;SET UP TO LOOP WITH DATA
                                                        ;MASTER CLEAR INTERFACE
                                                        ;FIRST CHARACTER LENGTH CODE (5 BITS
                                                        ;LINE 1 WILL BE TESTED
                                                        ;SET EXPECTED LINE NUMBER
                                                        ;AND VALID DATA FLAG
                                                        ;EXPECTED DATA
                                                        ;4CHARACTER LENGTHS
                                                        ;WILL BE TESTED
                                                        ;FIRST CHARACTER LENGTH =5 BITS..
                                                        ;LINE SPEED =9600 BAUD
                                                        ;40 CHARACTERS AT 5 BITS
```

```
                                                1$:     MOV     R5,2DHSCR               ;SELECT LINE 1
                                                        MOV     BYTCNT,R2
                                                        MOV     #3,R3
                                                        MOV     R1,2DHLPR               ;SET LINE SPEED AND
                                                                                        ;CHARACTER LENGTH
C10622  012777  016226  005276                          MOV     @TBUF,2DHSA             ;ADDRESS OF TRANSMITTER
                                                                                        ;DATA BUFFER
C10630  016777  005370  005272                          MOV     BYTCNT,2DHBC            ;400 (OCTAL) BYTES
                                                                                        ;WILL BE TRANSMITTED
C10636  012737  000022  005266                          MOV     #22,2DHBAR              ;START TRANSMITTER
                                                2$:     TSTB    2DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
                                                        BPL     2$
                                                        MOVB    2DHNRC,R3               ;GET RECEIVED DATA
                                                        CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
                                                        BEQ     3$
                                                        MOVB    R3,2DHBAR               ;STOP TRANSMITTER
                                                        MOV     R3,-(SP)                ;DATA ERROR
                                                        MOV     R1,-(SP)                ;CHECK FOR LOOP AT CURRENT SPEED
                                                        SCOPE!                          ;RESTART TRANSMITTER
                                                        MOV     #22,2DHBAR              ;UPDATA EXPECTED DATA
                                                3$:     INC     RDATA
                                                        BPOS    4$
                                                        BNE     5$
                                                4$:     CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                                        ;RECEIVED DATA
                                                5$:     INC     R1                      ;UPDATA CHARACTER LENGTH
                                                        ASL     R2
                                                        BCC     6$
                                                        INC     BYTCNT
                                                6$:     BNE     1$
                                                        SCOPE

                                                ;SINGLE LINE DATA TEST
                                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 2
                                                ;LINE SPEED IS 9600 BAUD
                                                ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                ;TO 8 BITS
                                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                ;AT EACH CHARACTER LENGTH

C10734  012767  000340  167034          T43:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
C10742  012767  000001  005216                  MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
C10750  012767  011152  005204                  MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
C10756  012767  011024  005200                  MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
C10764  012777  004000  005126                  MOV     #BIT11,2DHSCR           ;MASTER CLEAR INTERFACE
C10772  005004                                  CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS
C10774  012705  000002                          MOV     #2,R5           ;LINE 2 WILL BE TESTED
C11000  012767  101000  005214                  MOV     #2*400+100000,RDATA
                                                                                ;SET EXPECTED LINE NUMBER
                                                                                ;AND VALID DATA FLAG
                                                                                ;EXPECTED DATA
C11006  012700  000004                          MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                                ;WILL BE TESTED
C11012  012701  033500                          MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                                ;LINE SPEED =9600 BAUD
C11016  012767  177740  005200                  MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
C11024  010577  005070                  1$:     MOV     R5,2DHSCR               ;SELECT LINE 2
```

```
                                                MOV     BYTCNT,R2
                                                NEG     R2
011036  010177  005062                          MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                                ;CHARACTER LENGTH
011042  012777  016226  005056                  MOV     #T3UF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                                ;DATA BUFFER
011050  016777  005150  005052                  MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                                ;WILL BE TRANSMITTED
011056  012777  000004  005046                  MOV     #4,@DHBAR               ;START TRANSMITTER
011064  105777  005030          2$:             TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
011070  100375                                  BPL     2$
011072  017703  005024                          MOV     @DHNRC,R3               ;GET RECEIVED DATA
011076  020367  005120                          CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
011102  001407                                  BEQ     3$
011104  005077  005022                          CLR     @DHBAR                  ;STOP TRANSMITTER
011110  104002                                  HLT     2                       ;DATA ERROR
011112  104410                                  SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
011114  012777  000004  005010                  MOV     #4,@DHBAR               ;RESTART TRANSMITTER
011122  105267  005074          3$:             INCB    RDATA                   ;UPDATA EXPECTED DATA
011126  005302                                  DEC     R2
011130  001355                                  BNE     2$
011132  105067  005064                          CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                                ;RECEIVED DATA
011136  005201                                  INC     R1                      ;UPDATA CHARACTER LENGTH
011140  005204                                  INC     R4
011142  006367  005056                          ASL     BYTCNT
011146  005300                                  DEC     R0
011150  001326                                  BNE     1$
011152  104403                          4$:     SCOPE

                                                ;SINGLE LINE DATA TEST
                                                ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 3
                                                ;LINE SPEED IS 9600 BAUD
                                                ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                ;TO 8 BITS
                                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                ;AT EACH CHARACTER LENGTH

011154  012767  000340  166614  T44:             MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
011162  012767  000001  004776                  MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
011170  012767  011372  004764                  MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
011176  012767  011244  004760                  MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
011204  012777  004000  004706                  MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
011212  005004                                  CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS)
011214  012705  000003                          MOV     #3,R5           ;LINE 3 WILL BE TESTED
011220  012767  101400  004774                  MOV     #3*400+100000,RDATA
                                                                                ;SET EXPECTED LINE NUMBER
                                                                                ;AND VALID DATA FLAG
                                                                                ;EXPECTED DATA
011226  012700  000004                          MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                                ;WILL BE TESTED
011232  012701  033500                          MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                                ;LINE SPEED =9600 BAUD
011236  012767  177740  004760                  MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
011244  010577  004650          1$:             MOV     R5,@DHSCR               ;SELECT LINE 3
011250  016702  004750                          MOV     BYTCNT,R2
```

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011254  005402                          NEG     R2
011256  010177  004642                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
011262  012777  016226  004636          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
011270  016777  004730  004632          MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
011276  012777  000010  004626          MOV     #10,@DHBAR              ;START TRANSMITTER
011304  105777  004610          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
011310  100375                          BPL     2$
011312  017703  004604                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
011316  020367  004700                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
011322  001407                          BEQ     3$
011324  005077  004602                  CLR     @DHBAR                  ;STOP TRANSMITTER
011330  104002                          HLT     2                       ;DATA ERROR
011332  104410                          SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
011334  012777  000010  004570          MOV     #10,@DHBAR              ;RESTART TRANSMITTER
011342  105267  004654          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
011346  005302                          DEC     R2
011350  001355                          BNE     2$
011352  105067  004644                  CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                        ;RECEIVED DATA
011356  005201                          INC     R1                      ;UPDATA CHARACTER LENGTH
011360  005204                          INC     R4
011362  006367  004636                  ASL     BYTCNT
011366  005300                          DEC     R0
011370  001325                          BNE     1$
011372  104400                  4$:     SCOPE

                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 4
                                        ;LINE SPEED IS 9600 BAUD
                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                        ;TO 8 BITS
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH CHARACTER LENGTH

011374  012767  000340  166374  T45:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
011402  012767  000001  004556          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
011410  012767  011612  004544          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
011416  012767  011464  004540          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
011424  012777  004000  004466          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
011432  005004                          CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS)
011434  012705  000004                  MOV     #4,R5           ;LINE 4 WILL BE TESTED
011440  012767  102000  004554          MOV     #4*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
011446  012700  000004                  MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
011452  012701  033500                  MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                        ;LINE SPEED =9600 BAUD
011456  012767  177740  004540          MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
011464  010577  004430          1$:     MOV     R5,@DHSCR               ;SELECT LINE 4
011470  016702  004530                  MOV     BYTCNT,R2
011474  005402                          NEG     R2
```

```
                                                MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                                ;CHARACTER LENGTH
011502  012777  016226  004416                 MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                                ;DATA BUFFER
011510  016777  004510  004412                 MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                                ;WILL BE TRANSMITTED
011516  012777  000020  004406                 MOV     #20,@DHBAR              ;START TRANSMITTER
011524  105777  004370          2$:            TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
011530  100375                                 BPL     2$
011532  017703  004364                         MOV     @DHNRC,R3               ;GET RECEIVED DATA
011536  020367  004460                         CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
011542  001407                                 BEQ     3$
011544  005077  004362                         CLR     @DHBAR                  ;STOP TRANSMITTER
011550  104002                                 HLT     2                       ;DATA ERROR
011552  104410                                 SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
011554  012777  000020  004350                 MOV     #20,@DHBAR              ;RESTART TRANSMITTER
011562  105267  004434          3$:            INCB    RDATA                   ;UPDATA EXPECTED DATA
011566  005302                                 DEC     R2
011570  001355                                 BNE     2$
011572  105067  004424                         CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                                ;RECEIVED DATA
011576  005201                                 INC     R1                      ;UPDATA CHARACTER LENGTH
011600  005204                                 INC     R4
011602  006367  004416                         ASL     BYTCNT
011606  005300                                 DEC     R0
011610  001325                                 BNE     1$
011612  104400          4$:                    SCOPE

                                               ;SINGLE LINE DATA TEST
                                               ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 5
                                               ;LINE SPEED IS 9600 BAUD
                                               ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                               ;TO 8 BITS
                                               ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                               ;AT EACH CHARACTER LENGTH

011614  012767  000340  166154  T46:            MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
011622  012767  000001  004336                 MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
011630  012767  012032  004324                 MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
011636  012767  011704  004320                 MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
011644  012777  004000  004246                 MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
011652  005004                                 CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS)
011654  012705  000005                         MOV     #5,R5           ;LINE 5 WILL BE TESTED
011660  012767  102400  004334                 MOV     #5*400+100000,RDATA
                                                                                ;SET EXPECTED LINE NUMBER
                                                                                ;AND VALID DATA FLAG
                                                                                ;EXPECTED DATA
011666  012700  000004                         MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                                ;WILL BE TESTED
011672  012701  033500                         MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                                ;LINE SPEED =9600 BAUD
011676  012767  177740  004320                 MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
011704  010577  004210          1$:            MOV     R5,@DHSCR               ;SELECT LINE 5
011710  016702  004310                         MOV     BYTCNT,R2
011714  005402                                 NEG     R2
011716  010177  004202                         MOV     R1,@DHLPR               ;SET LINE SPEED AND
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                                                                        ;CHARACTER LENGTH
011722  012777  016226  004176          MOV     #TBUF,@DHBA           ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
011730  016777  004270  004172          MOV     BYTCNT,@DHBC          ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
011736  012777  000040  004166          MOV     #40,@DHBAR            ;START TRANSMITTER
011744  105777  004150          2$:     TSTB    @DHSCR                ;WAIT FOR DATA TO BE RECEIVED
011750  100375                          BPL     2$
011752  017703  004144                  MOV     @DHNRC,R3             ;GET RECEIVED DATA
011756  020367  004240                  CMP     R3,RDATA              ;COMPER EXPECTED AND RECEIVED DATA
011762  001407                          BEQ     3$
011764  005077  004142                  CLR     @DHBAR                ;STOP TRANSMITTER
011770  104002                          HLT     2                     ;DATA ERROR
011772  104410                          SCOPE1                        ;CHECK FOR LOOP AT CURRENT SPEED
011774  012777  000040  004130          MOV     #40,@DHBAR            ;RESTART TRANSMITTER
012002  105267  004214          3$:     INCB    RDATA                 ;UPDATA EXPECTED DATA
012006  005302                          DEC     R2
012010  001355                          BNE     2$
012012  105067  004204                  CLRB    RDATA                 ;INITIALIZE EXPECTED
                                                                        ;RECEIVED DATA
012016  005201                          INC     R1                    ;UPDATA CHARACTER LENGTH
012020  005204                          INC     R4
012022  006367  004176                  ASL     BYTCNT
012026  005300                          DEC     R0
012030  001325                          BNE     1$
012032  104400                  4$:     SCOPE

                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 6
                                        ;LINE SPEED IS 9600 BAUD
                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                        ;TO 8 BITS
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH CHARACTER LENGTH

012034  012767  000340  165734  T47:    MOV     #340,PS               ;DISABLE ALL INTERRUPTS
012042  012767  000001  004116          MOV     #1,ICOUNT             ;SET UP FOR 1 ITERATIONS
012050  012767  012252  004104          MOV     #4$,ESCAPE            ;SET UP TO ESCAPE TO NEXT TEST
012056  012767  012124  004100          MOV     #1$,FREEZ1            ;SET UP TO LOOP WITH DATA
012064  012777  004000  004026          MOV     #BIT11,@DHSCR         ;MASTER CLEAR INTERFACE
012072  005004                          CLR     R4                    ;FIRST CHARACTER LENGTH CODE (5 BITS)
012074  012705  000006                  MOV     #6,R5           ;LINE 6 WILL BE TESTED
012100  012767  103000  004114          MOV     #6*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
012106  012700  000004                  MOV     #4,R0                 ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
012112  012701  033500                  MOV     #33500,R1             ;FIRST CHARACTER LENGTH =5 BITS..
                                                                        ;LINE SPEED =9600 BAUD
012116  012767  177740  004100          MOV     #-40,BYTCNT           ;40 CHARACTERS AT 5 BITS
012124  010577  003770          1$:     MOV     R5,@DHSCR             ;SELECT LINE 6
012130  016702  004070                  MOV     BYTCNT,R2
012134  005402                          NEG     R2
012136  010177  003762                  MOV     R1,@DHLPR             ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
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012142  012777  016226  003756          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
012150  016777  004000  003752          MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
012156  012777  000100  003746          MOV     #100,@DHBAR             ;START TRANSMITTER
012164  105777  003730          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
012170  100375                          BPL     2$
012172  017703  003724                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
012176  020367  004020                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
012202  001407                          BEQ     3$
012204  005077  003722                  CLR     @DHBAR                  ;STOP TRANSMITTER
012210  104002                          HLT     2                       ;DATA ERROR
012212  104410                          SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
012214  012777  000100  003710          MOV     #100,@DHBAR             ;RESTART TRANSMITTER
012220  105267  003774          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
012224  005302                          DEC     R2
012226  001355                          BNE     2$
012230  105067  003764                  CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                        ;RECEIVED DATA
012234  005201                          INC     R1                      ;UPDATA CHARACTER LENGTH
012240  005204                          INC     R4
012242  006367  003756                  ASL     BYTCNT
012246  005300                          DEC     R0
012250  001325                          BNE     1$
012252  104400                  4$:     SCOPE

                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 7
                                        ;LINE SPEED IS 9600 BAUD
                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                        ;TO 8 BITS
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH CHARACTER LENGTH

012254  012767  000340  165514  T5D:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
012262  012767  000001  003676          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
012270  012767  012472  003664          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
012276  012767  012344  003650          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
012304  012777  004000  003606          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
012312  005004                          CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS)
012314  012705  000007                  MOV     #7,R5           ;LINE 7 WILL BE TESTED
012320  012767  103400  003674          MOV     #7*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
012326  012700  000004                  MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
012332  012701  033500                  MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                        ;LINE SPEED =9600 BAUD
012336  012767  177740  003660          MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
012344  010577  003550          1$:     MOV     R5,@DHSCR               ;SELECT LINE 7
012350  016702  003650                  MOV     BYTCNT,R2
012354  005402                          NEG     R2
012356  010177  003542                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
012362  012777  016226  003536          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
```

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 2608                                                                   ;DATA BUFFER
 2609  012370  016777  003630  003532          MOV     BYTCNT,@DHBC     ;400 (OCTAL) BYTES
 2610                                                                   ;WILL BE TRANSMITTED
 2611  012376  012777  000200  003526          MOV     #200,@DHBAR      ;START TRANSMITTER
 2612  012404  105777  003510          2$:     TSTB    @DHSCR           ;WAIT FOR DATA TO BE RECEIVED
 2613  012410  100375                          BPL     2$
 2614  012412  017703  003504                  MOV     @DHNRC,R3        ;GET RECEIVED DATA
 2615  012416  020367  003600                  CMP     R3,RDATA         ;COMPER EXPECTED AND RECEIVED DATA
 2616  012422  001407                          BEQ     3$
 2617  012424  005077  003502                  CLR     @DHBAR           ;STOP TRANSMITTER
 2618  012430  104002                          HLT     2                ;DATA ERROR
 2619  012432  104410                          SCOPE1                   ;CHECK FOR LOOP AT CURRENT SPEED
 2620  012434  012777  000200  003470          MOV     #200,@DHBAR      ;RESTART TRANSMITTER
 2621  012442  105267  003554          3$:     INCB    RDATA            ;UPDATA EXPECTED DATA
 2622  012446  005302                          DEC     R2
 2623  012450  001355                          BNE     2$
 2624  012452  105067  003544                  CLRB    RDATA            ;INITIALIZE EXPECTED
 2625                                                                   ;RECEIVED DATA
 2626  012456  005201                          INC     R1               ;UPDATA CHARACTER LENGTH
 2627  012460  005204                          INC     R4
 2628  012462  006367  003536                  ASL     BYTCNT
 2629  012466  005300                          DEC     R0
 2630  012470  001325                          BNE     1$
 2631  012472  104400          4$:             SCOPE
 2632
 2633                                          ;SINGLE LINE DATA TEST
 2634                                          ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 1C
 2635                                          ;LINE SPEED IS 9600 BAUD
 2636                                          ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
 2637                                          ;TO 8 BITS
 2638                                          ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
 2639                                          ;AT EACH CHARACTER LENGTH
 2640
 2641  012474  012767  000340  165374  T51:    MOV     #340,PS          ;DISABLE ALL INTERRUPTS
 2642  012502  012767  000001  003456          MOV     #1,ICOUNT        ;SET UP FOR 1 ITERATIONS
 2643  012510  012767  012712  003444          MOV     #4$,ESCAPE       ;SET UP TO ESCAPE TO NEXT TEST
 2644  012516  012767  012564  003440          MOV     #1$,FREEZ1       ;SET UP TO LOOP WITH DATA
 2645  012524  012777  004000  003366          MOV     #BIT11,@DHSCR    ;MASTER CLEAR INTERFACE
 2646  012532  005004                          CLR     R4               ;FIRST CHARACTER LENGTH CODE (5 BITS
 2647  012534  012705  000010                  MOV     #10,R5           ;LINE 1C WILL BE TESTED
 2648  012540  012767  104000  003454          MOV     #1C*400+100000,RDATA
 2649                                                                   ;SET EXPECTED LINE NUMBER
 2650                                                                   ;AND VALID DATA FLAG
 2651                                                                   ;EXPECTED DATA
 2652  012546  012700  000004                  MOV     #4,R0            ;4CHARACTER LENGTHS
 2653                                                                   ;WILL BE TESTED
 2654  012552  012701  033500                  MOV     #33500,R1        ;FIRST CHARACTER LENGTH =5 BITS..
 2655                                                                   ;LINE SPEED =9600 BAUD
 2656  012556  012767  177740  003440          MOV     #-40,BYTCNT      ;40 CHARACTERS AT 5 BITS
 2657  012564  010577  003330          1$:     MOV     R5,@DHSCR        ;SELECT LINE 1C
 2658  012570  016702  003430                  MOV     BYTCNT,R2
 2659  012574  005402                          NEG     R2
 2660  012576  010177  003322                  MOV     R1,@DHLPR        ;SET LINE SPEED AND
 2661                                                                   ;CHARACTER LENGTH
 2662  012602  012777  016226  003316          MOV     #TBUF,@DHBA      ;ADDRESS OF TRANSMITTER
 2663                                                                   ;DATA BUFFER
```

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        012610  016777  003410  003312          MOV     BYTCNT,DCHBC    ;400 DATA BYTES
                                                                        ;TO BE TRANSMITTED
        [illegible] [illegible] 000400  003306  MOV     #400,DCHBAR     ;START TRANSMITTER
                                                2$:     TSTB    DCHSCR  ;WAIT FOR DATA TO BE RECEIVED
                                                        BPL     2$
                                003264                  MOV     DCHRC,R3        ;GET RECEIVED DATA
                                003260                  CMP     R3,RDATA        ;COMPARE EXPECTED AND RECEIVED DATA
                                                        BEQ     3$
                                003262                  CLR     DCHBAR          ;STOP TRANSMITTER
                                                        ERROR                   ;DATA ERROR
                                                        SCOPE1                  ;LOOP FOR ERROR AT CURRENT SPEED
                                000400  003250          MOV     #400,DCHBAR     ;RESTART TRANSMITTER
                                003234          3$:     INC     RDATA           ;UPDATE EXPECTED DATA
                                                        CMPB    [illegible]
                                                        BNE     2$
                                003224                  CLRB    RDATA           ;INITIALIZE EXPECTED
                                                                                ;RECEIVED DATA
                                                        ADD     #[illegible],R4 ;UPDATE CHARACTER LENGTH
                                                        [illegible] R4
                                003316                  [illegible] BYTCNT
                                                        [illegible] R1
                                                        [illegible] 1$
                                                4$:     SCOPE

                                                ;SINGLE LINE DATA TEST
                                                ;TRANSMIT A BLOCK OF 400 OCTAL CHARACTERS ON LINE 11
                                                ;LINE SPEED IS 9600 BAUD
                                                ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                ;TO 8 BITS
                                                ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                ;AT EACH CHARACTER LENGTH

        012[illegible] 012767  000340  165[illegible] TS2:  MOV  #340,PS        ;DISABLE ALL INTERRUPTS
        [illegible]                                     MOV     #1,ICOUNT       ;SET UP FOR 1 ITERATIONS
        [illegible]                                     MOV     #4$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
        [illegible]                                     MOV     #1$,FREEZ1      ;SET UP TO LOOP WITH DATA
        [illegible]             004000  003146          MOV     #BIT11,DCHSCR   ;MASTER CLEAR INTERFACE
        [illegible]                                     CLR     R4              ;FIRST CHARACTER LENGTH CODE 5 BITS
        [illegible]             000011                  MOV     #11,R5  ;LINE 11 WILL BE TESTED
        012760  012767  104400  003234                  MOV     #11*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
        012766  012700  000004                          MOV     #4,R0           ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
        012772  012701  033500                          MOV     #33500,R1       ;FIRST CHARACTER LENGTH =5 BITS..
                                                                        ;LINE SPEED =9600 BAUD
        012776  012767  177740  003220                  MOV     #-40,BYTCNT     ;40 CHARACTERS AT 5 BITS
        [illegible] 010577 [illegible]          1$:     MOV     R5,DCHSCR       ;SELECT LINE 11
        [illegible] 016702  003210                      MOV     BYTCNT,R2
        [illegible]                                     NEG     R2
        013016  010177  003132                          MOV     R1,DCHLPR       ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
        013022  012777  016226  003076                  MOV     #TBUF,DCHBA     ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
        013030  016777  003170  003072                  MOV     BYTCNT,DCHBC    ;400 OCTAL BYTES
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                                                        ;WILL BE TRANSMITTED
[illegible] [illegible] 001000 003066         MOV     #1000,DCHBAR      ;START TRANSMITTER
[illegible] [illegible] 003050         2$:    TSTB    DCHSCR            ;WAIT FOR DATA TO BE RECEIVED
[illegible] [illegible]                       BPL     2$
[illegible] [illegible] 003044                MOV     DCHNRC,R3         ;GET RECEIVED DATA
[illegible] [illegible] 003140                CMP     R3,RDATA          ;COMPER EXPECTED AND RECEIVED DATA
[illegible] [illegible]                       BEQ     3$
[illegible] [illegible] 003042                CLR     DCHBAR            ;STOP TRANSMITTER
[illegible] [illegible]                       HLT     2                 ;DATA ERROR
[illegible] [illegible]                       SCOPE1                    ;CHECK FOR LOOP AT CURRENT SPEED
[illegible] [illegible] 001000 003030         MOV     #1000,DCHBAR      ;RESTART TRANSMITTER
[illegible] [illegible] 003114         3$:    INCB    RDATA             ;UPDATA EXPECTED DATA
[illegible] [illegible]                       DEC     R2
[illegible] [illegible]                       BNE     2$
[illegible] [illegible] 003104                CLRB    RDATA             ;INITIALIZE EXPECTED
                                                        ;RECEIVED DATA
[illegible] [illegible]                       INC     R1                ;UPDATA CHARACTER LENGTH
[illegible] [illegible]                       INC     R4
[illegible] [illegible] 003076                MOV     BYTCNT
[illegible] [illegible]                       DEC     R0
[illegible] [illegible]                       BNE     1$
                                       4$:    SCOPE

                                              ;SINGLE LINE DATA TEST
                                              ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 12
                                              ;LINE SPEED IS 9600 BAUD
                                              ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                              ;TO 8 BITS
                                              ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                              ;AT EACH CHARACTER LENGTH

[illegible] [illegible] [illegible] [illegible] TS3: MOV #340,PS         ;DISABLE ALL INTERRUPTS
[illegible] [illegible] [illegible] [illegible]      MOV #1,[illegible] ;SET UP FOR 1 ITERATIONS
[illegible] [illegible] [illegible] [illegible]      MOV #4$,ESCAPE     ;SET UP TO ESCAPE TO NEXT TEST
[illegible] [illegible] [illegible] [illegible]      MOV #1$,FREEZ1     ;SET UP TO LOOP WITH DATA
[illegible] [illegible] [illegible] [illegible]      MOV #[illegible],DCHSCR ;MASTER CLEAR INTERFACE
[illegible] [illegible]                              CLR R4             ;FIRST CHARACTER LENGTH CODE 5 BITS
[illegible] [illegible] 000012                       MOV #12,R5         ;LINE 12 WILL BE TESTED
[illegible] [illegible] [illegible] 000014           MOV #12+400+100000,RDATA
                                                        ;SET EXPECTED LINE NUMBER
                                                        ;AND VALID DATA FLAG
                                                        ;EXPECTED DATA
013206  012700  000004                MOV     #4,R0             ;4CHARACTER LENGTHS
                                                        ;WILL BE TESTED
013212  012701  033500                MOV     #33500,R1         ;FIRST CHARACTER LENGTH =5 BITS..
                                                        ;LINE SPEED =9600 BAUD
[illegible] 012767  177740  003000    MOV     #-40,BYTCNT       ;40 CHARACTERS AT 5 BITS
[illegible] 010577 [illegible] 1$:    MOV     R5,DCHSCR         ;SELECT LINE 12
[illegible] [illegible] 002770        MOV     BYTCNT,R2
[illegible] [illegible]               NEG     R2
013236  [illegible]  002662           MOV     R1,DCHLPR         ;SET LINE SPEED AND
                                                        ;CHARACTER LENGTH
013242  012777  016226  002656        MOV     #TBUF,DCHBA       ;ADDRESS OF TRANSMITTER
                                                        ;DATA BUFFER
013250  016777  002750  002652        MOV     BYTCNT,DCHBC      ;400 (OCTAL) BYTES
                                                        ;WILL BE TRANSMITTED
```

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                002000  002646          MOV     #2000,@DHBAR            ;START TRANSMITTER
                002630          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
                                        BPL     2$
                002624                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
                002720                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
                                        BEQ     3$
                002622                  CLR     @DHBAR                  ;STOP TRANSMITTER
                                        HLT     2                       ;DATA ERROR
                                        SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
                002000  002610          MOV     #2000,@DHBAR            ;RESTART TRANSMITTER
                002574          3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
                                        DEC     R2
                                        BNE     2$
                002664                  CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                        ;RECEIVED DATA
                                        INC     R1                      ;UPDATA CHARACTER LENGTH
                                        INC     R4
                002656                  ASL     BYTCNT
                                        DEC     R0
                                        BNE     1$
                                4$:     SCOPE

                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 13
                                        ;LINE SPEED IS 9600 BAUD
                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                        ;TO 8 BITS
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH CHARACTER LENGTH

                000340  164414  TS4:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
                                        MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
                013572                  MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
                013444                  MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
                004000  002506          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
                                        CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS
                000013                  MOV     #13,R5          ;LINE 13 WILL BE TESTED
                105400  002574          MOV     #13*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
013426  012700  000004                  MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
013432  012701  033500                  MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS,,
                                                                        ;LINE SPEED =9600 BAUD
013436  012767  177740  002560          MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
        010577  002450          1$:     MOV     R5,@DHSCR               ;SELECT LINE 13
        016702  002550                  MOV     BYTCNT,R2
                                        NEG     R2
013456  010177  002442                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
013462  012777  016226  002436          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
013470  016777  002530  002432          MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
013476  012777  004000  002426          MOV     #4000,@DHBAR            ;START TRANSMITTER
```

```
013504  105777  002410          2$:     TSTB    @DHSCR              ;WAIT FOR DATA TO BE RECEIVED
013510  100375                          BPL     2$
013512  [illegible]  002404             MOV     @DHNRC,R3           ;GET RECEIVED DATA
013516  [illegible]  002500             CMP     R3,RDATA            ;COMPER EXPECTED AND RECEIVED DATA
013522  001407                          BEQ     3$
013524  005037  002402                  CLR     @DHBAR              ;STOP TRANSMITTER
[illegible]                             HLT     2                   ;DATA ERROR
[illegible]                             SCOPE1                      ;CHECK FOR LOOP AT CURRENT SPEED
013534  [illegible]  004000  002370     MOV     #4000,@DHBAR        ;RESTART TRANSMITTER
[illegible]  [illegible]  002454  3$:   INCB    RDATA               ;UPDATA EXPECTED DATA
[illegible]                             DEC     R2
[illegible]                             BNE     2$
[illegible]  105067  002444             CLRB    RDATA               ;INITIALIZE EXPECTED
                                                                    ;RECEIVED DATA
[illegible]  [illegible]                INC     R1                  ;UPDATA CHARACTER LENGTH
[illegible]  [illegible]                INC     R4
[illegible]  [illegible]  002436        [illegible]  BITCNT
[illegible]                             [illegible]  R3
[illegible]                             BNE     1$
                                -$:     SCOPE

                                        ;SINGLE LINE DATA TEST
                                        ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 14
                                        ;LINE SPEED IS 9600 BAUD
                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                        ;TO 8 BITS
                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                        ;AT EACH CHARACTER LENGTH

[illegible]  [illegible]  000340  [illegible]  TE5:  MOV  #340,PS       ;DISABLE ALL INTERRUPTS
[illegible]  [illegible]  [illegible]  [illegible]   MOV  #1,ICOUNT    ;SET UP FOR 1 ITERATIONS
[illegible]  [illegible]  [illegible]  [illegible]   MOV  #6$,ESCAPE   ;SET UP TO ESCAPE TO NEXT TEST
[illegible]  [illegible]  [illegible]  [illegible]   MOV  #1$,FREET    ;SET UP TO LOOP WITH DATA
[illegible]  [illegible]  [illegible]  [illegible]   MOV  #BIT11,@DHSCR  ;MASTER CLEAR INTERFACE
[illegible]  [illegible]                             CLR  R4           ;FIRST CHARACTER LENGTH CODE (5 BITS)
[illegible]  [illegible]  000016                     MOV  #14,R5       ;LINE 14 WILL BE TESTED
[illegible]  [illegible]  [illegible]  00235-        MOV  #14*400+100000,RDATA
                                                                    ;SET EXPECTED LINE NUMBER
                                                                    ;AND VALID DATA FLAG
                                                                    ;EXPECTED DATA
013646  012700  000004                  MOV     #4,R0               ;4CHARACTER LENGTHS
                                                                    ;WILL BE TESTED
013652  012701  033500                  MOV     #33500,R1           ;FIRST CHARACTER LENGTH = BITS..
                                                                    ;LINE SPEED =9600 BAUD
013656  012767  177740  0023-0          MOV     #-40,BYTCNT         ;40 CHARACTERS AT 5 BITS
[illegible]  [illegible]  [illegible]  1$:  MOV  R5,@DHSCR          ;SELECT LINE 14
[illegible]  [illegible]  002330        MOV     BYTCNT,R2
013674  [illegible]                     NEG     R2
013676  [illegible]  002222             MOV     R1,@DHLPR           ;SET LINE SPEED AND
                                                                    ;CHARACTER LENGTH
013702  012777  016226  002216          MOV     #TBUF,@DHBA         ;ADDRESS OF TRANSMITTER
                                                                    ;DATA BUFFER
013710  016777  002310  002212          MOV     BYTCNT,@DHBC        ;400 (OCTAL) BYTES
                                                                    ;WILL BE TRANSMITTED
013716  012777  010000  002206          MOV     #10000,@DHBAR       ;START TRANSMITTER
013724  105777  002170          2$:     TSTB    @DHSCR              ;WAIT FOR DATA TO BE RECEIVED
```

```
                                                    2$
                                                    3DHNRC,R3               ;GET RECEIVED DATA
                                                    R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
                                                    3$
                                                    3DHBAR                  ;STOP TRANSMITTER
                                                    2                       ;DATA ERROR
                                                    SCOPE1                  ;CHECK FOR LOOP AT CURRENT SPEED
                                                    MOV     #10000,3DHBAR   ;RESTART TRANSMITTER
                                            3$:     INCB    RDATA           ;UPDATA EXPECTED DATA
                                                    DEC     R2
                                                    BNE     2$
                                                    CLRB    RDATA           ;INITIALIZE EXPECTED
                                                                            ;RECEIVED DATA
                                                    INC     R1              ;UPDATA CHARACTER LENGTH
                                                    INC     R4
                                                    ASL     BYTCNT
                                                    DEC     R0
                                                    BNE     1$
                                            4$:     SCOPE

                                                    ;SINGLE LINE DATA TEST
                                                    ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 15
                                                    ;LINE SPEED IS 9600 BAUD
                                                    ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                    ;TO 8 BITS
                                                    ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                    ;AT EACH CHARACTER LENGTH

                                            TST6:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
                                                    MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
                                                    MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
                                                    MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
                                                    MOV     #BIT11,3DHSCR           ;MASTER CLEAR INTERFACE
                                                    CLR     R4                      ;FIRST CHARACTER LENGTH CODE  5 BITS
                                                    MOV     #15,R5          ;LINE 15 WILL BE TESTED
                                                    MOV     #15*400+100000,RDATA
                                                                            ;SET EXPECTED LINE NUMBER
                                                                            ;AND VALID DATA FLAG
                                                                            ;EXPECTED DATA
                                                    MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                            ;WILL BE TESTED
                                                    MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                            ;LINE SPEED =9600 BAUD
                                                    MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
                                            1$:     MOV     R5,3DHSCR               ;SELECT LINE 15
                                                    MOV     BYTCNT,R2
                                                    NEG     R2
                                                    MOV     R1,3DH_FR               ;SET LINE SPEED AND
                                                                            ;CHARACTER LENGTH
                                                    MOV     #TBUF,3DHBA             ;ADDRESS OF TRANSMITTER
                                                                            ;DATA BUFFER
                                                    MOV     BYTCNT,3DHBC            ;400 (OCTAL) BYTES
                                                                            ;WILL BE TRANSMITTED
                                                    MOV     #20000,3DHBAR           ;START TRANSMITTER
                                            2$:     TSTB    3DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
                                                    BPL     2$
```

```
014152  012703  001744                MOV     @DHNRC,R3               ;GET RECEIVED DATA
014156  020365  000040                CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
014162  001405                        BEQ     3$
014164  005063  001742                CLR     @DHBAR                  ;STOP TRANSMITTER
014170  104002                        HLT     2                       ;DATA ERROR
014172  104412                SCOPE:                                  ;CHECK FOR LOOP AT CURRENT SPEED
014174  012763  020000  001730        MOV     #20000,@DHBAR           ;RESTART TRANSMITTER
014202  105263  000014          3$:   INCB    RDATA                   ;UPDATA EXPECTED DATA
014206  005302                        DEC     R2
014210  001375                        BNE     2$
014212  105067  002004                CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                      ;RECEIVED DATA
014216  005201                        INC     R1                      ;UPDATA CHARACTER LENGTH
014220  005204                        INC     R4
014222  006367  001776                ASL     BYTCNT
014226  005301                        DEC     R1
014230  001365                        BNE     1$
014232  104412                  4$:   SCOPE

                                      ;SINGLE LINE DATA TEST
                                      ;TRANSMIT A BLOCK OF 400 (OCTAL) CHARACTERS ON LINE 16
                                      ;LINE SPEED IS 9600 BAUD
                                      ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                      ;TO 8 BITS
                                      ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                      ;AT EACH CHARACTER LENGTH

014234  012767  000340  163534  157:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
014242  012767  000001  001716        MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
014250  012767  014452  001704        MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
014256  012767  014324  001700        MOV     #1$,FREEZ               ;SET UP TO LOOP WITH DATA
014264  012777  004000  001666        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
014270  005004                        CLR     R4                      ;FIRST CHARACTER LENGTH CODE IS 5 BITS
014272  012705  000016                MOV     #16,R5          ;LINE 16 WILL BE TESTED
014276  012767  107000  001714        MOV     #16*400+100000,RDATA
                                                                      ;SET EXPECTED LINE NUMBER
                                                                      ;AND VALID DATA FLAG
                                                                      ;EXPECTED DATA
014304  012702  000004                MOV     #4,R2                   ;4CHARACTER LENGTHS
                                                                      ;WILL BE TESTED
014310  012701  033500                MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                      ;LINE SPEED =9600 BAUD
014314  012767  177740  001700        MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
014322  010577  001570          1$:   MOV     R5,@DHSCR               ;SELECT LINE 16
014326  016702  001670                MOV     BYTCNT,R2
014332  005402                        NEG     R2
014334  010177  001562                MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                      ;CHARACTER LENGTH
014340  012777  016226  001556        MOV     #TBUF,@DHSA             ;ADDRESS OF TRANSMITTER
                                                                      ;DATA BUFFER
014346  016777  001650  001552        MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                      ;WILL BE TRANSMITTED
014354  012777  040000  001546        MOV     #40000,@DHBAR           ;START TRANSMITTER
014362  105777  001530          2$:   TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
014366  100375                        BPL     2$
014370  013703  001524                MOV     @DHNRC,R3               ;GET RECEIVED DATA
```

```
                                                        CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
                                                        BEQ     3$
                                                        CLR     @DHBAR                  ;STOP TRANSMITTER
                                                        HLT     2                       ;DATA ERROR
                                                        SCOPE1                          ;CHECK FOR LOOP AT CURRENT SPEED
                                                        MOV     #40000,@DHBAR           ;RESTART TRANSMITTER
                                                3$:     INCB    RDATA                   ;UPDATA EXPECTED DATA
                                                        DEC     R2
                                                        BNE     2$
                                                        CLRB    RDATA                   ;INITIALIZE EXPECTED
                                                                                        ;RECEIVED DATA
                                                        INC     R1                      ;UPDATA CHARACTER LENGTH
                                                        INC     R4
                                                        ASL     BYTCNT
                                                        DEC     R0
                                                        BNE     1$
                                                4$:     SCOPE

                                                        ;SINGLE LINE DATA TEST
                                                        ;TRANSMIT A BLOCK OF 400 (OCTAL  CHARACTERS ON LINE 17
                                                        ;LINE SPEED IS 9600 BAUD
                                                        ;CHARACTER LENGTH WILL START AT 5 BITS AND BE INCREMENTED
                                                        ;TO 8 BITS
                                                        ;A BLOCK OF 400 CHARACTERS WILL BE TRANSMITTED
                                                        ;AT EACH CHARACTER LENGTH

014400  012767  000340  163314  T60:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
014406  012767  000001  001476          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
014414  012767  014670  001464          MOV     #4$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
014422  012767  014544  001460          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
014430  012777  004000  001406          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
014436  005004                          CLR     R4                      ;FIRST CHARACTER LENGTH CODE (5 BITS)
014440  012705  000017                  MOV     #17,R5          ;LINE 17 WILL BE TESTED
014444  012767  107400  001474          MOV     #17*400+100000,RDATA
                                                                        ;SET EXPECTED LINE NUMBER
                                                                        ;AND VALID DATA FLAG
                                                                        ;EXPECTED DATA
014452  012700  000004                  MOV     #4,R0                   ;4CHARACTER LENGTHS
                                                                        ;WILL BE TESTED
014456  012701  033500                  MOV     #33500,R1               ;FIRST CHARACTER LENGTH =5 BITS..
                                                                        ;LINE SPEED =9600 BAUD
014464  012767  177740  001460          MOV     #-40,BYTCNT             ;40 CHARACTERS AT 5 BITS
014472  010577  001350          1$:     MOV     R5,@DHSCR               ;SELECT LINE 17
014476  016702  001450                  MOV     BYTCNT,R2
014502  005402                          NEG     R2
014504  010177  001342                  MOV     R1,@DHLPR               ;SET LINE SPEED AND
                                                                        ;CHARACTER LENGTH
014510  012777  016226  001336          MOV     #TBUF,@DHBA             ;ADDRESS OF TRANSMITTER
                                                                        ;DATA BUFFER
014516  016777  001430  001332          MOV     BYTCNT,@DHBC            ;400 (OCTAL) BYTES
                                                                        ;WILL BE TRANSMITTED
014524  012777  100000  001326          MOV     #100000,@DHBAR          ;START TRANSMITTER
014532  105777  001310          2$:     TSTB    @DHSCR                  ;WAIT FOR DATA TO BE RECEIVED
014536  100375                          BPL     2$
014540  017703  001304                  MOV     @DHNRC,R3               ;GET RECEIVED DATA
014544  020367  001400                  CMP     R3,RDATA                ;COMPER EXPECTED AND RECEIVED DATA
```

```
014622 001407                      BEQ    3$
014624 005037 001302               CLR    @DHBAR           ;STOP TRANSMITTER
014630 104002                      HLT    2                ;DATA ERROR
014632 104410                      SCOPE1                  ;CHECK FOR LOOP AT CURRENT SPEED
014634 012737 100000 001270        MOV    #100000,@DHBAR   ;RESTART TRANSMITTER
014642 105267 001354        3$:    INCB   RDATA            ;UPDATA EXPECTED DATA
014646 005302                      DEC    R2
014650 001355                      BNE    2$
014652 105067 001344               CLRB   RDATA            ;INITIALIZE EXPECTED
                                                           ;RECEIVED DATA
014656 005201                      INC    R1               ;UPDATA CHARACTER LENGTH
014660 005204                      INC    R4
014662 006367 001336               ASL    BYTCNT
014666 005300                      DEC    R0
014670 001326                      BNE    1$
014672 104400               4$:    SCOPE
```

```
                                                ;END OF PASS
                                                ;TYPE NAME OF TEST
                                                ;UPDATE PASS COUNT
                                                ;CHECK FOR EXIT TO ACT-11
                                                ;RESTART TEST

014674  104401                        EOP:    TYPE                            ;TYPE NAME OF TEST
014676  017205                                MEPASS
014700  005067  001312                        CLR     LAST                    ;CLEAR LAST ERROR PC
014704  005067  001242                        CLR     ERRFLG                  ;CLEAR ERROR FLAG
014710  005267  001240                        INC     PASCNT                  ;UPDATE PASS COUNT
014714  016767  001234  162646                MOV     PASCNT,LIGHTS           ;DISPLAY PASS COUNT
014722  013701  000042                        MOV     @#42,R1                 ;CHECK FOR ACT-11 OR DDP
014726  001405                                BEQ     RESTRT                  ;IF NOT, CONTINUE TESTING
014730  000005                                RESET
014732  004711                        LOGICAL:        JSR     PC,(R1)
014734  000240                                NOP
014736  000240                                NOP
014740  000240                                NOP
014742  000167  164234                RESTRT: JMP     BEGIN

                                                ;CHECK FOR LOOP ON CURRENT TEST
                                                ;CHECK FOR ITERATION SUPPRESSION

014746  032767  002000  162614        SCOPER: BIT     #SW10,SWR
014754  001030                                BNE     4$
014756  032767  040000  162604        1$:     BIT     #SW14,SWR
014764  001021                                BNE     3$
014766  032767  004000  162574                BIT     #SW11,SWR
014774  001006                                BNE     2$
014776  005267  001166                        INC     LPCNT
015002  026767  001162  001156                CMP     LPCNT,ICOUNT
015010  001007                                BNE     3$
015012  005067  001152                2$:     CLR     LPCNT
015016  005067  001130                        CLR     ERRFLG
015022  011667  001132                        MOV     (SP),RETURN
015026  000002                                RTI
015030  016716  001124                3$:     MOV     RETURN,(SP)
015034  000002                                RTI
015036  005767  001110                4$:     TST     ERRFLG
015042  001745                                BEQ     1$
015044  000762                                BR      2$

                                                ;CHECK FOR FREEZE ON CURRENT DATA

015046  032767  001000  162514        SCOPIR: BIT     #SW09,SWR
015054  001402                                BEQ     1$
015056  016716  001102                        MOV     FREEZ1,(SP)
015062  000002                        1$:     RTI
```

```
3123
3124                                            ;ERROR HANDLER
3125
3126  015064  032767  020000  162476  ERRORS: BIT     #SW13,SWR
3127  015072  001051                          BNE     HALTS
3128  015074  021667  001116                  CMP     (SP),LAST
3129  015100  001404                          BEQ     1$
3130  015102  011667  001110                  MOV     (SP),LAST
3131  015106  005067  001040                  CLR     ERRFLG
3132  015112  104406                  1$:     SAVOSP
3133  015114  011605                          MOV     (SP),R5
3134  015116  162705  000002                  SUB     #2,R5
3135  015122  011504                          MOV     (R5),R4
3136  015124  006304                          ASL     R4
3137  015126  006304                          ASL     R4
3138  015130  042704  177001                  BIC     #177001,R4
3139  015134  062704  017314                  ADD     #ERRTAB,R4
3140  015140  012467  000034                  MOV     (R4)+,ERRMSG
3141  015144  011467  000042                  MOV     (R4),DATA2P
3142  015150  005767  000776                  TST     ERRFLG
3143  015154  001403                          BEQ     TYPMSG
3144  015156  005767  000030                  TST     DATABP
3145  015162  001007                          BNE     TYPDAT
3146  015164  104402                  TYPMSG: OCTASC
3147  015166  015260                          ERTABO
3148  015170  012767  000001  000754          MOV     #1,ERRFLG
3149  015176  104401                          TYPE
3150  015200  000000                  ERRMSG: 0
3151  015202  005767  000004          TYPDAT: TST     DATABP
3152  015206  001402                          BEQ     RESREG
3153  015210  104402                          OCTASC
3154  015212  000000                  DATABP: 0
3155  015214  104407                  RESREG: RESO5
3156  015216  005767  162346          HALTS:  TST     SWR
3157  015222  100005                          BPL     EXITER
3158  015224  010046                          PUSHRO
3159  015226  016600  000002                  MOV     2(SP),RO
3160  015232  000000                          HALT
3161  015234  012600                          POPRO
3162  015236  005267  000714          EXITER: INC     ERRCNT
3163  015242  032767  002000  162320          BIT     #SW10,SWR
3164  015250  001402                          BEQ     1$
3165  015252  016716  000704                  MOV     ESCAPE,(SP)
3166  015256  000002                  1$:     RTI
3167  015260  000001                  ERTABO: 1
3168  015262     006     002                  .BYTE   6,2
3169  015264  016210                          SAVPC
```

```
3170                                                    ;TRAP DISPATCH SERVICE
3171                                                    ;ARGUMENT OF TRAP IS EXTRACTED
3172                                                    ;AND USED AS OFFSET TO OBTAIN POINTER
3173                                                    ;TO SELECTED SUBROUTINE
3174
3175  015266  011646                        TRPSRV:   MOV     (SP),-(SP)          ;GET PC OF RETURN
3176  015270  162716  000002                         SUB     #2,(SP)             ;=PC OF TRAP
3177  015274  017616  000000                         MOV     @(SP),(SP)          ;GET TRP
3178  015300  006316                        TRPOK:    ASL     (SP)                ;MULTIPLY TRAP ARG BY 2
3179  015302  042716  177001                         BIC     #177001,(SP)        ;CLEAR UNWANTED BITS
3180  015306  062716  017234                         ADD     #TRPTAB,(SP)        ;POINTER TO SUBROUTINE ADDRESS
3181  015312  017616  000000                         MOV     @(SP),(SP)          ;SUBROUTINE ADDRESS
3182  015316  000136                               JMP     @(SP)+              ;GO TO SUBROUTINE
3183
3184
3185                                                    ;SAVE PC OF TEST THAT FAILED AND R0-R5
3186  015320  016667  000004  000562  SVOSP:   MOV     4(SP),SAVPC
3187
3188                                                    ;SAVE R0-R5
3189
3190  017626  010567  000652          SVOS:    MOV     R5,SAVR5
3191  015332  010467  000644                   MOV     R4,SAVR4
3192  015336  010367  000636                   MOV     R3,SAVR3
3193  015342  010267  000630                   MOV     R2,SAVR2
3194  015346  010167  000622                   MOV     R1,SAVR1
3195  015352  010067  000614                   MOV     R0,SAVR0
3196  015356  000002                         RTI
3197                                                    ;RESTORE R0-R5
3198
3199  015360  016700  000606          RSOS:    MOV     SAVR0,R0
3200  015364  016701  000604                   MOV     SAVR1,R1
3201  015370  016702  000602                   MOV     SAVR2,R2
3202  015374  016703  000600                   MOV     SAVR3,R3
3203  015400  016704  000576                   MOV     SAVR4,R4
3204  015404  016705  000574                   MOV     SAVR5,R5
3205  015410  000002                         RTI
```

```
                                                ;TELETYPE OUTPUT ROUTINE
015412  017605  000000          TYPER:  MOV     @(SP),R5
015416  062716  000002                  ADD     #2,(SP)
015422  105777  000466          1$:     TSTB    @TPCSR
015426  100375                          BPL     1$
015430  105715                          TSTB    (R5)
015432  001001                          BNE     2$
015434  000002                          RTI
015436  112577  000454          2$:     MOVB    (R5)+,@TPDBR
015442  000767                          BR      1$

                                                ;ASCII STRING INPUT ROUTINE

015444  017667  000000  000006  INSTRG: MOV     @(SP),MSG
015452  062716  000002                  ADD     #2,(SP)
015456  104401                  INSTR1: TYPE
015460  000000                  MSG:    0
015462  012704  017256                  MOV     #INBUF,R4
015466  012703  000007                  MOV     #7,R3
015472  105777  000412          1$:     TSTB    @TKCSR
015476  100375                          BPL     1$
015500  117714  000406                  MOVB    @TKDBR,(R4)
015504  142714  000200                  BICB    #200,(R4)
015510  122427  000015                  CMPB    (R4)+,#15
015514  001413                          BEQ     INSTR2
015516  117777  000370  000372          MOVB    @TKDBR,@TPDBR
015524  105777  000364          2$:     TSTB    @TPCSR
015530  100375                          BPL     2$
015532  005303                          DEC     R3
015534  001356                          BNE     1$
015536  104401  INSTRE: TYPE
015540  017111                          MOM
015542  000745                          BR      INSTR1
015544  000002  INSTRE: RTI
```

```
                                        ;CONVERT ASCII STRING TO OCTAL
015546  011605          PARAMS: MOV     (SP),R5
015550  012567  000146          MOV     (R5)+,LOLIM
015554  012567  000144          MOV     (R5)+,HILIM
015560  012567  000142          MOV     (R5)+,DEVADR
015564  112567  000140          MOVB    (R5)+,LOBITS
015570  112567  000135          MOVB    (R5)+,ADRCNT
015574  010516                  MOV     R5,(SP)
015576  005005          PARAM1: CLR     R5
016000  012704  017256          MOV     #INBUF,R4
016004  122714  000015          CMPB    #15,(R4)
016010  001420                  BEQ     PARERR
016012  121427  000060  1$:     CMPB    (R4),#60
016016  002415                  BLT     PARERR
016020  121427  000067          CMPB    (R4),#67
016024  003012                  BGT     PARERR
016026  142714  000060          BICB    #60,(R4)
016032  152405                  BISB    (R4)+,R5
016034  122714  000015          CMPB    #15,(R4)
016040  001406                  BEQ     LIMITS
016042  006305                  ASL     R5
016044  006305                  ASL     R5
016046  006305                  ASL     R5
016050  000763                  BR      1$
016052  104404          PARERR: INSTER
016054  000750                  BR      PARAM1

                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS

016056  020567  000042  LIMITS: CMP     R5,HILIM
016062  101373                  BHI     PARERR
016064  020567  000032          CMP     R5,LOLIM
016070  103770                  BLO     PARERR
016072  136705  000032          BITB    LOBITS,R5
016076  001365                  BNE     PARERR

                                        ;STORE NUMBER AT SPECIFIED ADDRESS

016100  016704  000022          MOV     DEVADR,R4
016104  010524          1$:     MOV     R5,(R4)+
016106  062705  000002          ADD     #2,R5
016112  105367  000013          DECB    ADRCNT
016116  001372                  BNE     1$
016120  000002                  RTI
016122  000000          LOLIM:  0
016124  000000          HILIM:  0
016126  000000          DEVADR: 0
016130  000000          LOBITS: 0
                        ADRCNT=LOBITS+1
```

```
                                        ;INDIRECT POINTERS
                                        ;PROGRAM VARIABLES
                                                ;ERROR F
                                                ;ERROR COUNT
                                                ;ERROR EXPECTED
                                                ;RETURN ADDRESS FOR TEST LOOPING
                                                ;ADDRESS FOR ERROR ERROR
                                                ;LOOPING RETURN ADDRESS
                                                ;NUMBER OF ERRORS FOR THIS TEST IN ADDRESS
                                                ;NUMBER OF ERRORS THIS TEST
```

FOIA/PA

G06

```
3600  [illegible]  [illegible]          .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .BYTE   XDATA
[illegible]                             .EVEN
                                        ;ENTER HERE ON POWER FAILURE

[illegible]                     PFAIL:  MOV     R0,-(SP)        ;SAVE R0-R5 ON PROCESSOR STACK
[illegible]                             MOV     R1,-(SP)
[illegible]                             MOV     R2,-(SP)
[illegible]                             MOV     R3,-(SP)
[illegible]                             MOV     R4,-(SP)
[illegible]                             MOV     R5,-(SP)
[illegible]                             MOV     24,-(SP)
[illegible]                             MOV     SP,SAVSP        ;SAVE STACK POINTER
[illegible]                             MOV     #RESTART,24     ;SET UP FOR POWER UP TRAP
[illegible]                             HALT                    ;HALT ON POWER DOWN NORMAL
[illegible]                             BR      .

                                        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

[illegible]                     RESTAR: MOV     SAVSP,SP        ;RESTORE STACK POINTER
[illegible]                             MOV     (SP)+,R5        ;RESTORE R0-R5
[illegible]                             MOV     (SP)+,R4
[illegible]                             MOV     (SP)+,R3
[illegible]                             MOV     (SP)+,R2
```

```
                                                MOV     (SP)+,R1
                                                MOV     (SP)+,R0
016700  016601                                  MOV     #PFAIL,24               ;SET UP FOR POWER FAILURE
016704  012767  016626  161112                  MOV     #340,PS
016712  012767  000340  161105                  MOV     #STACK,SP
016720  012706  001000                          CLR     TEMP
016724  005067  000340                          INC     TEMP
016730  005267  000334                          BNE     .-4
016734  001375                                  CDTASC
016736  104402                                  PFTAB
016740  016762                                  TYPE
016742  104401                                  MPFAIL
016744  017120                                  CLR     ERRFLG
016746  005067  177300                          CLR     LAST
016752  005067  177245                          JMP     @RETURN
016756  000177  177176
016762  000001                          PFTAB:  1
016764  000006  000003                         6,3
016770  000207                                  RETURN
016772  005015  042012  030510  MTITLE: .ASCIZ  <15><12><12>/DH11 SINGLE LINE DATA TEST /<15><12
017000  020061  044523  043516
017006  042514  046040  047111
017014  020105  040504  040524
017022  052040  051505  020124
017030  005015      000
017033      015  053012  041505  MVECTO: .ASCIZ  <15><12>/VECTOR ADDRESS-/
017040  047524  020122  042101
017046  051104  051505  026523
017054      000
017055      015  041412  047117  MREGAD: .ASCIZ  <15><12>/CONTROL REGISTER ADDRESS-/
017062  051124  046111  051040
017070  043505  051511  042524
017076  020122  042101  051104
017104  051505  026523      000
017111      040  037440      000  MSM:    .ASCIZ  / ?/
017115      015  000012           MCRLF:  .ASCIZ  <15><12>
017120  020040  047520  042527  MPFAIL: .ASCIZ  /  POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS
017126  020122  040506  046111
017134  051125  026105  050040
017142  047522  051107  046501
017150  051040  051505  040524
017156  052122  040440  020124
017164  042524  052123  044440
017172  020116  051120  043517
017200  042522  051523      000
017205      015  042012  042132  MEPASS: .ASCIZ  <15><12>/DZDHF/
017212  043110      000
017215      015  051012      000  MR:     .ASCIZ  <15><12>/R/
017221      015  052012  051505  MTSTPC: .ASCIZ  <15><12>/TEST PC-/
017228  020124  041520  000055
                                                .EVEN

                                                ;TABLE OF POINTERS FOR TRAP DECODING

017234  014746                          TRPTAB: SCOPER
017236  015412                                  TYPER
017240  015732                                  DCTASM
```

J06


```
                                INSTRG
                                INSTRE
                                PARAMS
                                SVOSP
                                RSOS
                                SCOPIR

                                ;BUFFERS FOR INPUT-OUTPUT

017256  000000          INBUF:  0
        017270                  .=.+10
017270  000000          TEMP:   0
        017302                  .=.+10
017302  000000          MDATA:  0
        017314                  .=.+10

                                ;TABLE OF POINTERS TO ERROR MESSAGES AND DATA

017314                  ERRTAB:
017314  017330                  EM1
017316  017514                  DT1
017320  017371                  EM2
017322  017532                  DT2
017324  017442                  EM3
017326  017554                  DT3
017330  040504  040524  042440  EM1:    .ASCIZ  /DATA ERROR/<15><12>/EXP     REC     LINE/
017336  051122  051117  005015
017344  054105  020120  020040
017352  020040  042522  020103
017360  020040  020040  044514
017366  042516     000
017371     104  052101  020101  EM2:    .ASCIZ  /DATA ERROR/<15><12>/EXP     REC     SPEED   LINE/
017376  051105  047522  006522
017404  042412  050130  020040
017412  020040  051040  041505
017420  020040  020040  051440
017426  042520  042105  020040
017434  046040  047111  000105
017442  040504  040524  042440  EM3:    .ASCIZ  /DATA ERROR/<15><12>/EXP     REC     LENGTH  LINE/
017450  051122  051117  005015
017456  054105  020120  020040
017464  020040  042522  020103
017472  020040  020040  042514
017500  043516  044124  020040
017506  044514  042516     000
017514                  .EVEN
017514  000003          DT1:    3
017516     006  002             .BYTE   6,2
017520  016220                  TDATA
017522     006  002             .BYTE   6,2
017524  016202                  SAVR4
017526     002  000             .BYTE   2,0
017530  016200                  SAVR3
017532  000004          DT2:    4
017534     006  002             .BYTE   6,2
017536  016222                  RDATA
```

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```
 3220  017540      006      002          .BYTE   6,2
 3221  017542  016200                    SAVR3
 3222  017544      002      005          .BYTE   2,5
 3223  017546  016176                    SAVR2
 3224  017550      002      000          .BYTE   2,0
 3225  017552  016204                    SAVR5
 3226  017554  000004                DT3:    4
 3227  017556      006      002          .BYTE   6,2
 3230  017560  016222                    RDATA
 3231  017562      006      002          .BYTE   6,2
 3232  017564  016200                    SAVR3
 3233  017566      002      006          .BYTE   2,6
 3234  017570  016202                    SAVR4
 3235  017572      002      000          .BYTE   2,0
 3236  017574  016204                    SAVR5
 3237  017576  000000                ENDCOD: 0
 3240                                    .END
```

```
ADRCNT= 015731          3250*  3285*  3292#
BEGIN   001202           874    903    909#  3093
SINWRD  016106          3303*  3304   3334#
SITX  = 000000           928#   960#   992#  1024#  1056#  1088#  1120#  1152#  1184#  1216#  1248#  1280#  1312#
                        1344#  1376#  1408#  1440#  1487#  1534#  1581#  1628#  1675#  1722#  1759#  1816#  1863#
                        1910#  1957#  2004#  2051#  2098#  2145#  2192#  2247#  2302#  2357#  2412#  2467#  2522#
                        2577#  2632#  2687#  2742#  2797#  2852#  2907#  2962#  3017#  3072#
BIT00 = 000001           560#
BIT01 = 000002           559#
BIT02 = 000004           558#
BIT03 = 000010           557#
BIT04 = 000020           556#
BIT05 = 000040           555#
BIT06 = 000100           554#
BIT07 = 000200           553#
BIT08 = 000400           552#
BIT09 = 001000           551#
BIT10 = 002000           550#
BIT11 = 004000           549#    937    969   1031   1033   1065   1097   1129   1161   1193   1225   1257   1289
                        1321   1353   1385   1417   1453   1503   1547   1594   1641   1688   1735   1782   1829
                        1876   1923   1970   2017   2064   2111   2158   2205   2260   2315   2370   2425   2480
                        2535   2590   2645   2700   2755   2810   2865   2920   2975   3030
BIT12 = 010000           548#
BIT13 = 020000           547#
BIT14 = 040000           546#
BIT15 = 100000           545#
BYTCNT  016224          2216*  2218   2224   2243*  2271*  2273   2279   2298*  2326*  2328   2334   2353*  2381*
                        2383   2389   2409*  2436*  2438   2444   2463*  2491*  2493   2493   2519*  2546*  2548
                        2554   2573*  2601*  2603   2609   2629*  2656*  2658   2664   2693*  2711*  2713   2719
                        2736*  2766*  2768   2774   2793*  2821*  2823   2829   2848*  2876*  2878   2884   2903*
                        2931*  2933   2939   2958*  2986*  2988   2994   3013*  3041*  3043   3049   3068*  3377#
CHRCNT  016104          3301*  3305   3318*  3332#  3333
CHRABF  016112          3141*  3144   3151   3154#
CHWRDF  016126          3248*  3282   3290#
CHBA    016136           948*   980*  1012*  1044*  1076*  1139*  1140*  1172*  1204*  1236*  1268*  1300*  1332*
                        1364*  1396*  1428*  1466*  1513*  1560*  1607*  1654*  1701*  1748*  1795*  1842*  1889*
                        1936*  1983*  2030*  2077*  2124*  2171*  2222*  2277*  2332*  2387*  2442*  2497*  2552*
                        2607*  2662*  2717*  2772*  2827*  2882*  2937*  2992*  3047*  3344#
CHBAF   016132           949*   981*  1013*  1045*  1077*  1109*  1141*  1173*  1205*  1237*  1269*  1301*  1333*
                        1365*  1397*  1429*  1470*  1476*  1479*  1517*  1523*  1526*  1564*  1570*  1573*  1611*
                        1617*  1620*  1658*  1664*  1667*  1705*  1711*  1714*  1752*  1758*  1761*  1799*  1805*
                        1808*  1846*  1852*  1855*  1893*  1899*  1902*  1940*  1946*  1949*  1987*  1993*  1995*
                        2034*  2040*  2043*  2081*  2087*  2090*  2129*  2134*  2137*  2175*  2181*  2184*  2226*
                        2232*  2235*  2291*  2287*  2290*  2336*  2342*  2345*  2391*  2397*  2400*  2446*  2452*
                        2455*  2501*  2507*  2510*  2556*  2562*  2565*  2611*  2617*  2620*  2666*  2672*  2675*
                        2721*  2727*  2730*  2776*  2782*  2785*  2831*  2837*  2840*  2896*  2892*  2935*  2941*
                        2947*  2950*  2996*  3002*  3005*  3051*  3057*  3060*  3346#
CHBC    016130           947*   979*  1011*  1043*  1075*  1107*  1139*  1171*  1203*  1235*  1267*  1299*  1331*
                        1363*  1395*  1427*  1468*  1515*  1562*  1609*  1656*  1703*  1750*  1797*  1844*  1891*
                        1938*  1985*  2032*  2079*  2126*  2173*  2224*  2279*  2334*  2389*  2444*  2499*  2554*
                        2609*  2664*  2719*  2774*  2829*  2884*  2939*  2994*  3049*  3345#
CHBCF   016134          3347#
CHLEN   016124           944*   976*  1008*  1040*  1072*  1104*  1136*  1169*  1200*  1232*  1264*  1296*  1328*
                        1360*  1392*  1424*  1464*  1511*  1558*  1605*  1652*  1699*  1746*  1793*  1840*  1887*
                        1934*  1981*  2028*  2075*  2122*  2169*  2220*  2275*  2330*  2385*  2440*  2495*  2550*
                        2605*  2660*  2715*  2770*  2825*  2880*  2935*  2990*  3045*  3343#
```

```
D-NRC   016122   952    984   1016   1048   1080   1112   1144   1176   1208   1240   1272   1304   1336
                1366   1400   1432   1473   1520   1567   1614   1661   1708   1755   1802   1849   1896
                1943   1990   2037   2084   2131   2179   2229   2284   2339   2394   2449   2504   2559
                2614   2669   2724   2779   2834   2889   2944   2999   3054   3242#
D-RLVL  016144  3261#
D-RVEC  016142   889   3350#
D-SCAN  016130   897    937*   943*   950    969*   975*   982   1001*  1007*  1014   1033*  1039*  1046
                1065*  1071*  1078   1097*  1103*  1110   1129*  1135*  1142   1161*  1167*  1174   1193*
                1199*  1206   1225*  1231*  1238   1257*  1263*  1270   1289*  1295*  1302   1321*  1327*
                1334   1353*  1359*  1366   1385*  1391*  1398   1417*  1423*  1430   1453*  1463*  1471
                1500*  1510*  1518   1547*  1557*  1565   1594*  1604*  1612   1641*  1651*  1659   1688*
                1698*  1706   1735*  1745*  1753   1782*  1792*  1800   1829*  1839*  1847   1876*  1886*
                1894   1923*  1933*  1941   1970*  1980*  1989   2017*  2027*  2035   2064*  2074*  2082
                2111*  2121*  2129   2158*  2168*  2176   2205*  2217*  2227   2260*  2272*  2282   2310*
                2327*  2337   2370*  2382*  2392   2425*  2437*  2447   2480*  2492*  2502   2535*  2547*
                2557   2590*  2602*  2612   2645*  2657*  2667   2700*  2712*  2722   2755*  2767*  2777
                2810*  2822*  2832   2865*  2877*  2887   2920*  2932*  2942   2975*  2987*  2997   3030*
                3042*  3052   3341#
D-SCLR  016140   900*   901*  3349#
D-SSCR  016136   900   3348#
D-VLVL  016150  3353#
D-VVEC  016146  3352#
DT1     017514  3734   3760#
DT2     017532  3736   3787#
DT3     017554  3738   3776#
EM1     017330  3733   3739#
EM2     017371  3735   3745#
EM3     017442  3737   3752#
ENDCOD  017576   532   3785#
EOP     014674  3080#
ERRCNT  016156   865*  3162*  3358#
ERRFLG  016152   866*   867*  3083*  3108*  3113   3131*  3142   3148*  3356#  3670*
ERRMSG  015200  3140*  3150#
ERRORS  015064   825   3126#
ERRTAB  017314  3139   3732#
ERTABC  015260  3147   3167#
ESCAPE  016162   935*   967*   999*  1031*  1063*  1095*  1127*  1159*  1191*  1223*  1255*  1287*  1319*
                1351*  1383*  1415*  1451*  1498*  1545*  1592*  1639*  1686*  1733*  1780*  1827*  1874*
                1921*  1968*  2015*  2062*  2109*  2156*  2203*  2250*  2313*  2360*  2423*  2470*  2533*
                2588*  2642*  2698*  2753*  2809*  2863*  2918*  2973*  3029*  3165   3360#
EXITER  015236  3157   3162#
FREEZI  016164   936*   968*  1000*  1032*  1064*  1096*  1128*  1160*  1192*  1224*  1256*  1288*  1320*
                1352*  1384*  1416*  1452*  1499*  1546*  1593*  1640*  1687*  1734*  1781*  1828*  1875*
                1922*  1969*  2016*  2063*  2110*  2157*  2204*  2259*  2314*  2369*  2424*  2479*  2534*
                2569*  2644*  2699*  2754*  2809*  2864*  2919*  2974*  3029*  3121   3351#
HALTS   015216  3127   3156#
HILIM   015724  3247*  3273   3289#
ICOUNT  016166   934*   966*   998*  1030*  1062*  1094*  1126*  1158*  1190*  1222*  1254*  1286*  1318*
                1350*  1382*  1414*  1450*  1497*  1544*  1591*  1638*  1685*  1732*  1779*  1826*  1873*
                1920*  1967*  2014*  2061*  2108*  2155*  2202*  2257*  2312*  2367*  2422*  2477*  2532*
                2587*  2642*  2697*  2752*  2807*  2862*  2917*  2972*  3027*  3105   3362#
INBUF   017256  3225   3253   3723#
INIFLG  016212   869    902    904*  3372#
INSTER= 000004   842#  3268
INSTR= 004403   841#   884    892    913
INSTRE  015536  3228#  3715
```

N06

```
[illegible]    MACY11 27.732   22-MAR-76  10:44  PAGE 90
[illegible].PFC      CROSS REFERENCE TABLE -- USER SY[illegible]

INSTRG  015444        3221#   3714
INSTR[illegible]  0[illegible]5456        3223#   3240
INSTR2  0[illegible]5644        3232    3241#
LAST    016216        3082*   3129    3130*           3671*
LIGHTS= 1[illegible]7570        [illegible]#    3095*
[illegible]      0[illegible]5666        3263    3273#
LINE  = 000020         928#    960#    992#   [illegible]     756#   1088#   1120#   1152#   1184#   1216#   1248#   1280#   1312#
                      1344#   1376#   1408#   [illegible]     [illegible]37#   1534#   1581#   1628#   1675#   1722#   1769#   1816#   1863#
                      1910#   1957*   2004#   2051#   [illegible]98#   2145#   2192#   2247#   2302#   2357#   2412#   2467#   2522#
                      2577#   2632#   2687#   2742#   2797#   2852#   2907#   2962#   3017#   3072#
[illegible]  0157[illegible]0        3249*   3277    3291#   3292
[illegible]  0[illegible]        848     3089#
[illegible]  0[illegible]        3246*   3275    3288#
[illegible]  0[illegible]        3104*   3105    3107*   3363#
[illegible]  0[illegible]        3297    3692#
[illegible]  0[illegible]        33[illegible]6    3[illegible]    3727#
[illegible]  0[illegible]        3081    3702#
[illegible]FAIL  0[illegible]        3669    3693#
[illegible]  0[illegible]        3239    3691#
[illegible]  0[illegible]         926    3704#
[illegible]REGAD  0[illegible]         993    3696#
[illegible]  0[illegible]5460        3221*   3224#
[illegible]  0167[illegible]         968    3676#
[illegible]  0[illegible]         914    3705#
[illegible]  0[illegible]033         895    3682#
[illegible]  =  0[illegible]           1#
[illegible]TAB[illegible]= [illegible]4400         840#   3146    3153    3666
[illegible]TABN  0[illegible]57[illegible]0        3296#   3713
PARAM[illegible] = [illegible]44[illegible]0         843#    996     894     915
PARAMS  0[illegible]5546        3245#   3716
PARAM[illegible]  0[illegible]5576        3252#   3269
PARERR  0[illegible]5652        3255    3257    3259    3268#   3274    3276    3278
PASCNT  016154         864*   3084*   3085    3357#
PC    =%000007         525#   3099*
PFAIL   016526         823     962    3639#   3660
PFTAB   016762        3667    3673#
POPRO = 012600         539#   3161
POP1SP= 005726         537#
POP2SP= 022626         541#
PS    = 177776         531#    860*    909*    933*    965*    997*   1029*   1061*   1093*   1125*   1157*   1189*   1221*
                      1253*   1285*   1317*   1349*   1391*   1413*   1449*   1496*   1543*   1590*   1637*   1684*   1731*
                      1778*   1825*   1872*   1919*   1966*   2013*   2060*   2107*   2154*   2201*   2256*   2311*   2366*
                      2421*   2476*   2531*   2596*   2641*   2696*   2751*   2806*   2861*   2916*   2971*   3026*   3061*
PUSHRC= 010046         538#   3158
PUSH1S= 005746         536#
PUSH2S= 024646         540#
RDATA   016222        1456*   1474    1480*   1503*   1521    1527*   1550*   1568    1574*   1597*   1615    1621*   1644*
                      1662    1668*   1691*   1709    1715*   1739*   1756    1762*   1785*   1803    1809*   1832*   1850
                      1856*   1879*   1897    1903*   1926*   1944    1950*   1973*   1991    1997*   2020*   2038    2044*
                      2067*   2085    2091*   2114*   2132    2138*   2161*   2179    2185*   2208*   2230    2236*   2239*
                      2263*   2285    2291*   2294*   2318*   2340    2346*   2349*   2373*   2395    2401*   2404*   2429*
                      2450    2456*   2459*   2483*   2505    2511*   2514*   2539*   2560    2566*   2569*   2592*   2615
                      2621*   2624*   2649*   2670    2676*   2679*   2703*   2725    2731*   2734*   2758*   2780    2786*
                      2789*   2813*   2835    2841*   2844*   2862*   2890    2896*   2899*   2923*   2945    2951*   2954*
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RESREG  015214        3152    3155#
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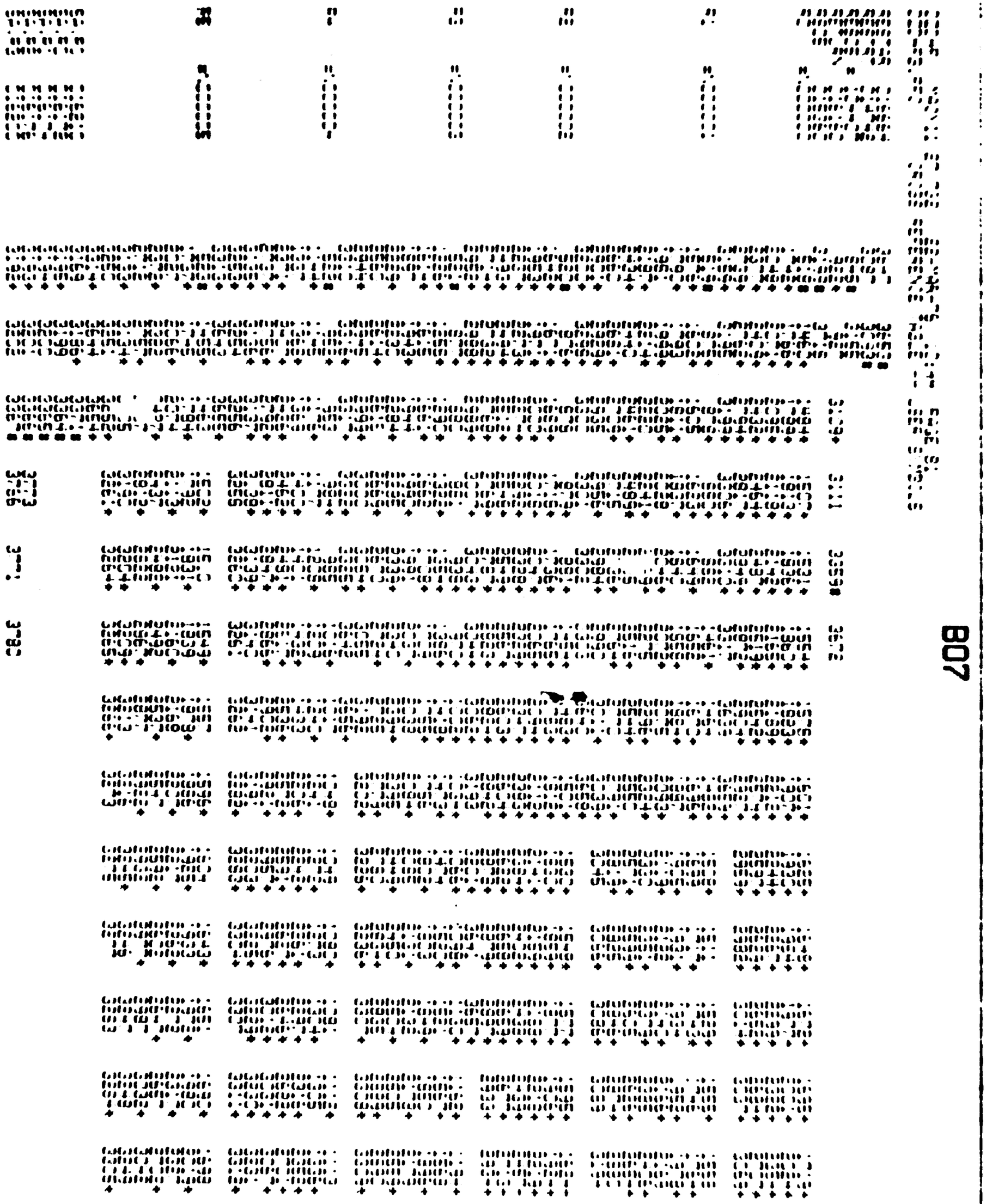

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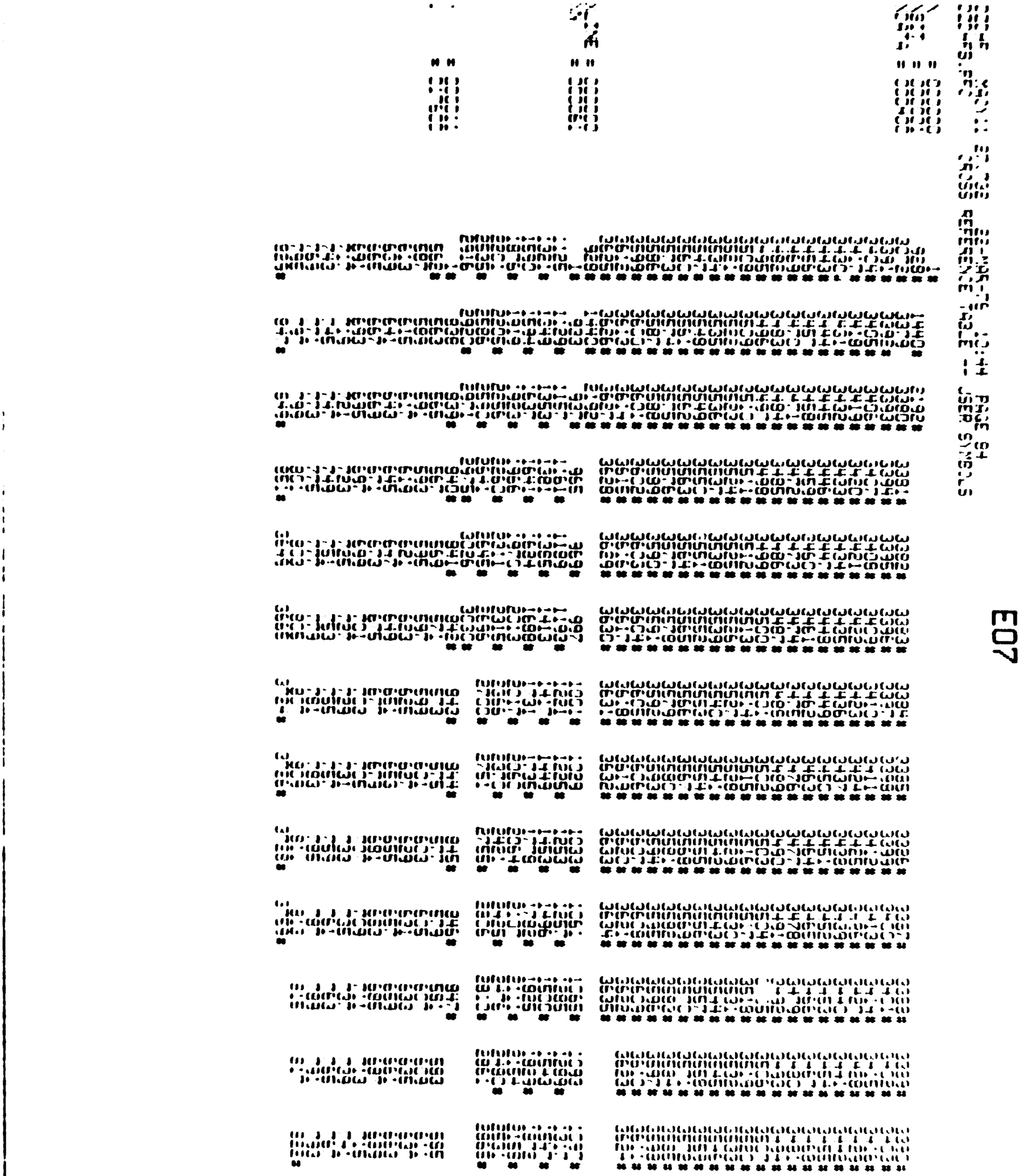
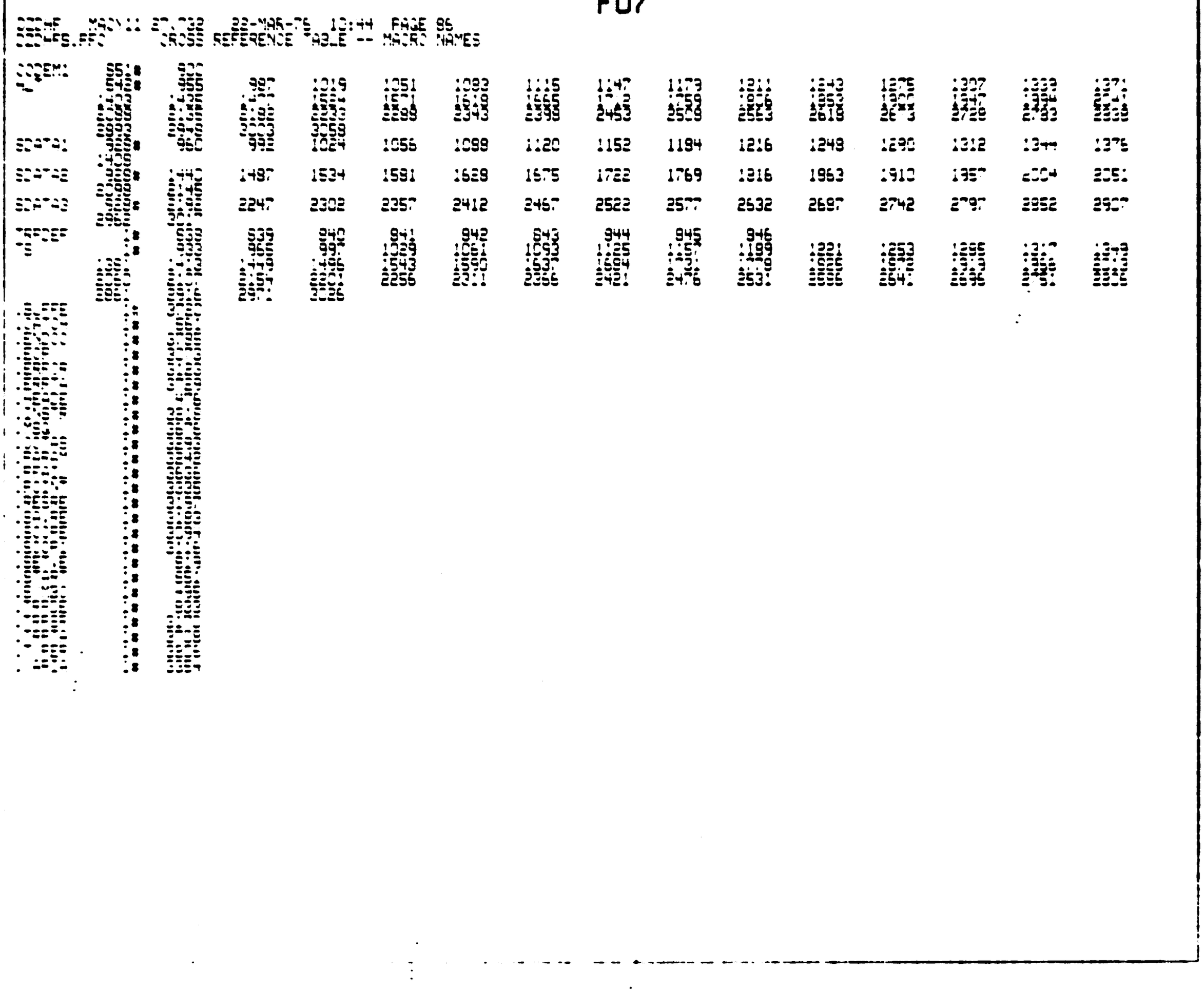
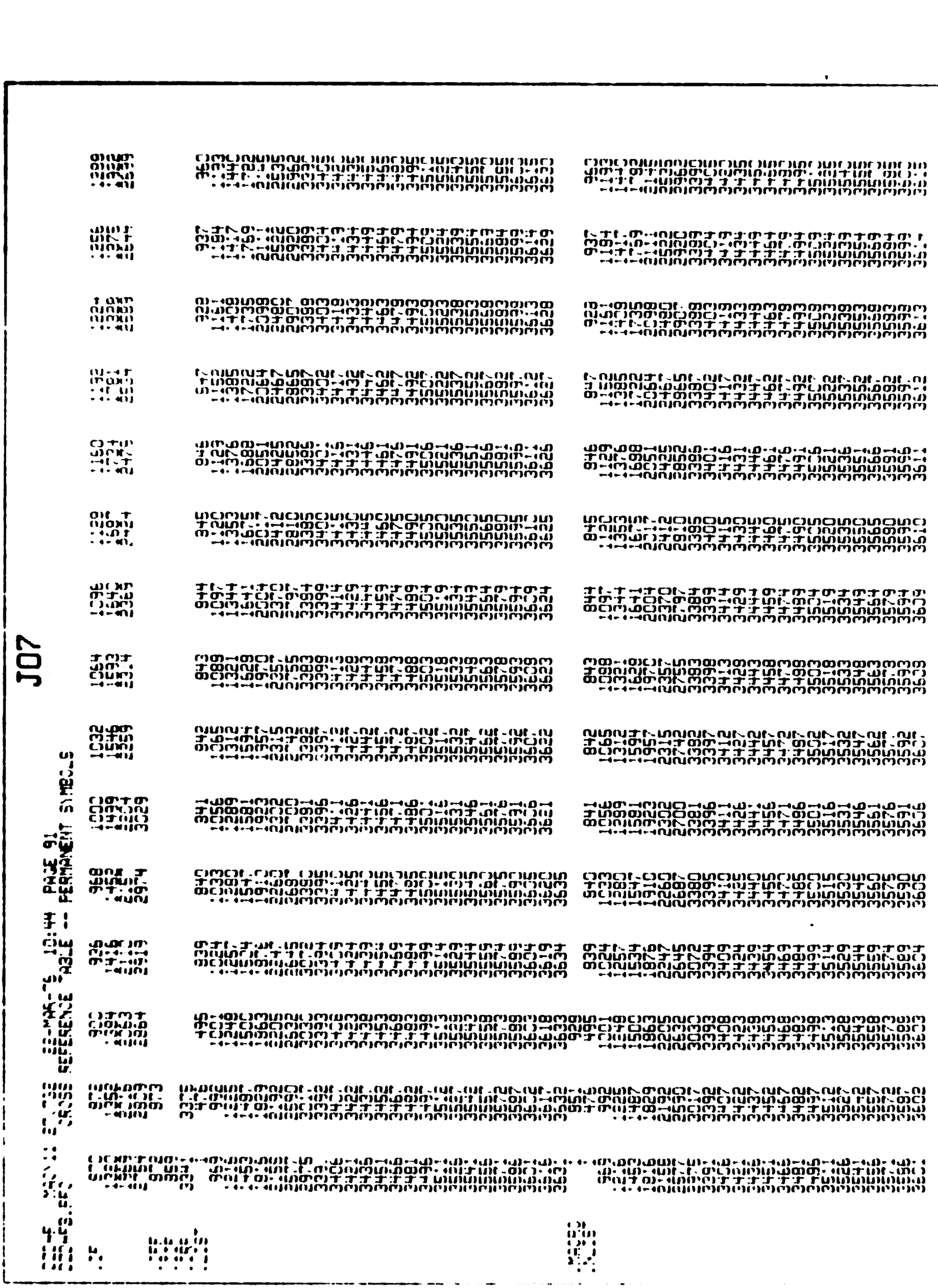
926 3080 3149 3223 3239 3296 3326 3669

3331



F07





K07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          3631    3632    3633    3634    3635
.PAGE     514     561     819     851     3123    3170    3206    3242    3293    3335    3378
.REM        1
.REPT     563     928     1440    2192    3378
.TITLE    495


 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

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L07

Spooler runtime 14 Seconds, 422 KCS, 379 disk reads, 3 disk writes, 88 pages