DV11

FREE RUNNING ROM TESTS 2

MD-11-DZDVD-B

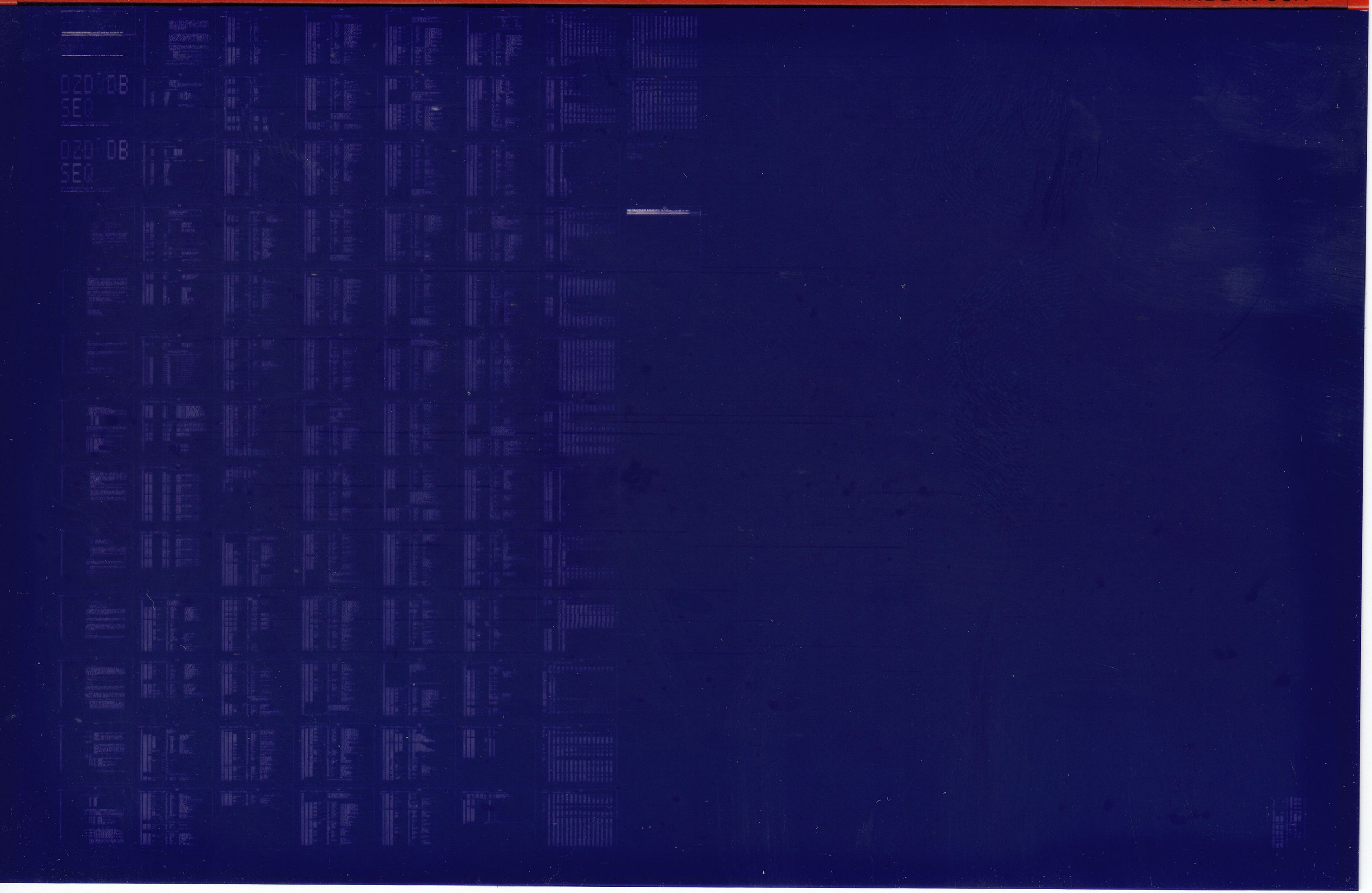
EP-DZDVD-B-DL-A

FICHE 1 OF 1

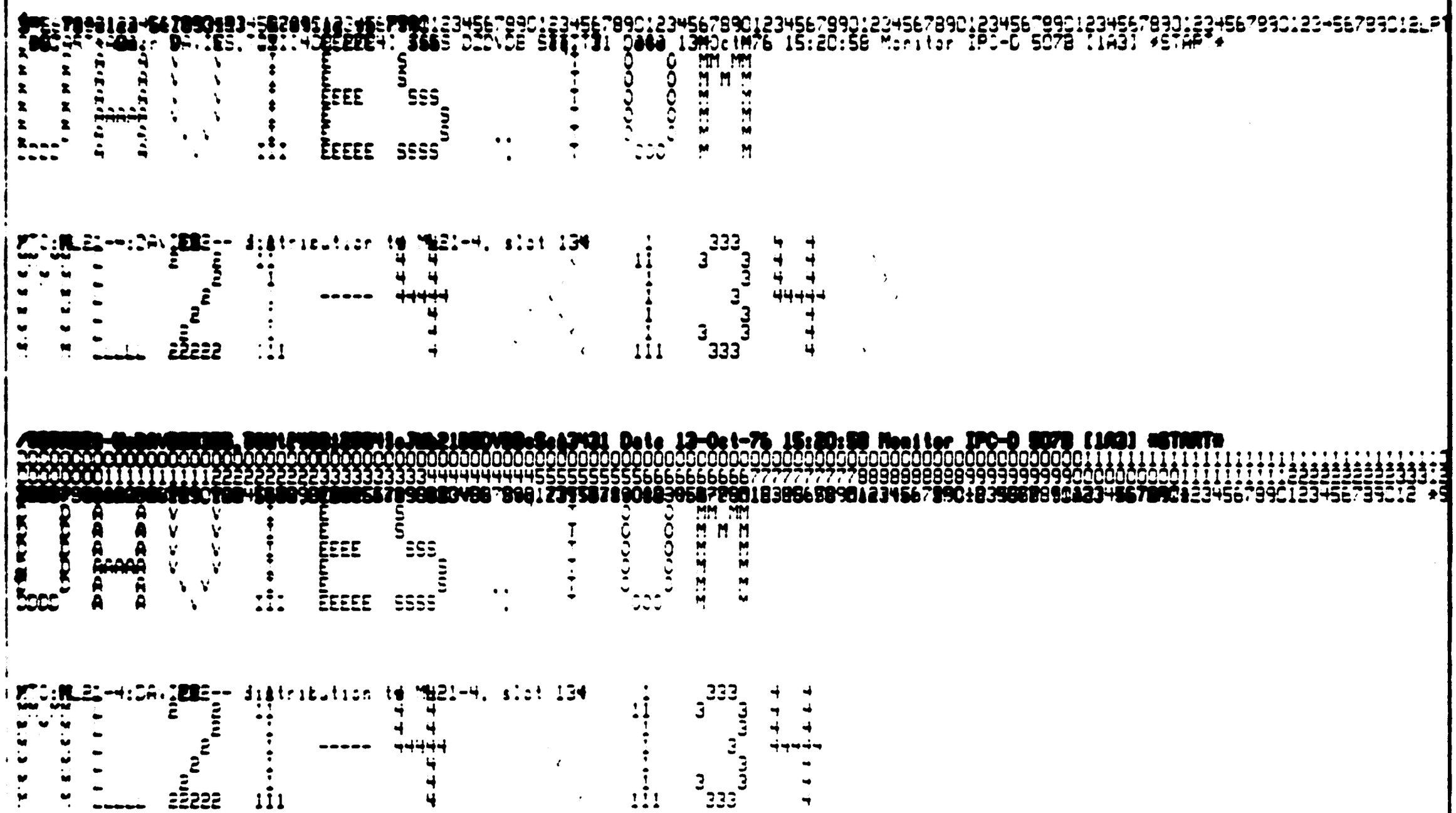
NOV 1976

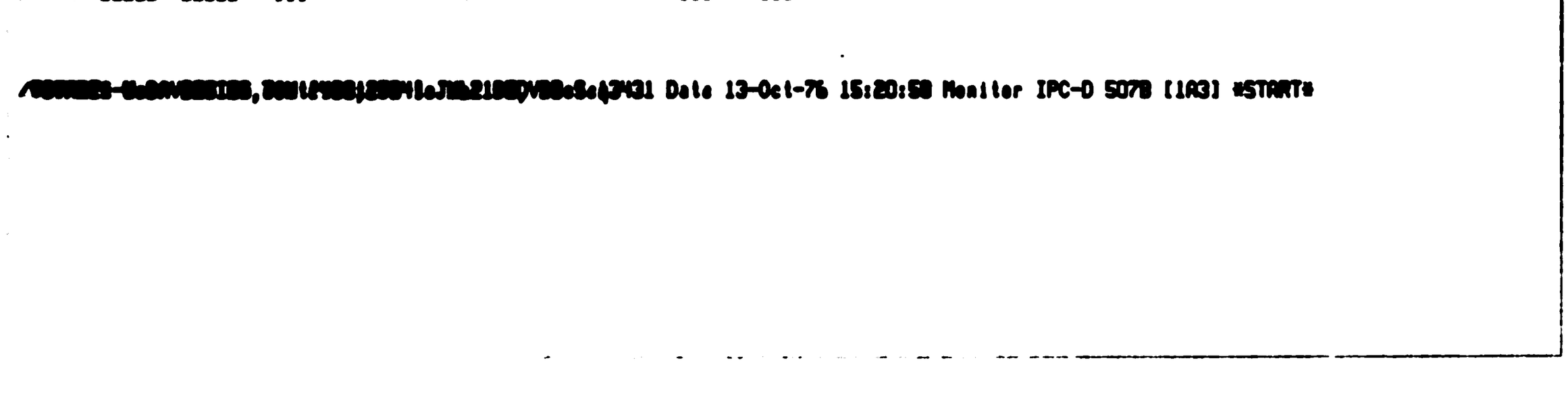
digital

MADE IN USA



B01





C01

DZDVDB

SEQ

```
LPTSPL Version 6(100344)  Running on MTA1
 *START* User DAVIES,TOM [400,2704] Job  DZDVDB Seq. 31 Date 13-Oct-76 15:20:58 Monitor IPC-C 5C7B [1A3] *START*
Request created: 13-Oct-76  14:51:19     /TO:ML21-4:DAVIES -- distribution to ML21-4, slot 134

[illegible] 15:21:02
File will be RENAMED to <057> protection
```

D01

DZDVDB

SEQ

```
LPTSPL Version 6(100344)  Running on MTA1
 *START* User DAVIES,TOM [400,2704] Job  DZDVDB Seq. 31 Date 13-Oct-76 15:20:58 Monitor IPC-D 507B [1A3] *START*
Request created: 13-Oct-76  14:51:19     /TO:ML21-4:DAVIES -- distribution to ML21-4, slot 134

File [illegible] 15:21:02
File will be RENAMED to  057  protection
```

.REM $

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDVD-B-D

PRODUCT NAME: "FREE RUNNING" ROM TESTS PART 2

DATE RELEASED: 21-APRIL-1976

MAINTAINER: DIAGNOSTICS

AUTHOR: JOHN EGOLF

1. ABSTRACT

THE FUNCTION OF THE DV11 DIAGNOSTICS ARE TO VERIFY THAT THE OPTION OPERATES ACCORDING TO SPECIFICATIONS. THE DIAGNOSTICS VERFIY THAT THERE ARE NO MALFUNCTIONS AND THE ALL OPERATIONS OF THE DV11 ARE CORRECT IN ITS ENVIRONMENT.
PARAMETERS MAY BE SET TO ALERT DIAGNOSTICS AS TO THE DV11 CONFIGURATION BY USING THE "TRIAL" PROGRAM (DZDVE SA:213). ALL QUESTIONS SHOULD BE ANSWERED AND THEN EACH DIAGNOSTIC WILL "OVERLAY" THESE PARAMETERS WHICH ARE STORED IN THE "STATUS TABLE" (SEE SECTION 9.4A). THE ALTERNATIVE TO "TRIAL" PROGRAM IS "AUTO SIZING" (SEE SECTION 9.5).

DZDVD LIKE DZDVC ALLOWS THE MICRO PROCESSOR TO "FREE RUN". BECAUSE OF THE LENGTH OF THE "FREE RUNNING" TEST; THIS TEST IS TO CATCH THE OVERFLOW FROM DZDVC.

CURRENTLY THERE ARE SIX OFF LINE DIAGNOSTICS THAT ARE TO BE RUN IN SEQUENCE TO INSURE THAT IF AN ERROR SHOULD OCCUR IT WILL BE DETECTED AT AN EARLY STAGE AND INSURING THAT DIAGNOSIS OF ERROR WILL BE IMMEDIATE TO PROBLEM
NOTE: ADDITIONAL DIAGNOSTICS MAY BE ADDED IN THE FUTURE.

THE SIX DIAGNOSTICS ARE:
1. DZDVA [REV] BASIS R/W TEST AND ROM INSTRUCTION EXERCISER.
2. DZDVB [REV] STATIC LINE CARD TESTS.
3. DZDVC [REV] 'FREE RUNNING' ROM TESTS PART 1.
4. DZDVD [REV] 'FREE RUNNING' ROM TESTS PART 2.
5. DZDVE [REV] MODEM CONTROL AND CABLE TESTS PLUS MANUAL PARAMETER INPUT. ("TRIAL PROGRAM")
6. ASYNCHRONOUS LINE CARD TESTS.

2. REQUIREMENTS

2.1 EQUIPMENT

ANY PDP11 FAMILY CPU (WITH MINIMUM 9K MEMORY)
ASR 33 (OR EQUILIVALENT)
DV11-AA MUX CNTRL UNIT
AT LEAST ONE OF THE FOLLOWING
DV11-BA 8 LINE SYNC MODULES
DV11-BB 8 LINE ASYNC MODULES
DV11-BC 4 SYNC LINES, 4 ASYNC LINES

2.2 STORAGE

PROGRAM WILL USE ALL 8K OF MEMORY EXCEPT WHERE ABL AND BOOTSTRAP LOADER RESIDE. LOCATION 1500 THRU 1736 ARE ESPECIALLY TO BE NOTED AND TO BE UNTOUCHED BY OPERATOR AFTER DV11 TRIAL PROGRAM HAS BEEN EXECUTED; OR AFTER THE 'AUTO SIZING' HAS BEEN DONE.

3. LOADING PROCEEDURE

3.1 METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND ARE LOADED USING THE ABSOLUTE LOADER. NOTE: IF THE DIAGNOSTICS ARE ON A MEDIA SUCH AS DISK ,MAGTAPE,DECTAPE, OR CASSETTE; FOLLOW INSTRUCTIONS FOR THE MONITOR WHICH HAS BEEN PROVIDED ON THAT SPECIFIC MEDIA.

ABSOLUTE LOADER STARTING ADDRESS #500

MEMORY * SIZE

4K	17
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

3.1.1 PLACE ADDRESS OF ABS LOADER INTO SWITCH REGISTER.
(ALSO PLACE 'HALT' SW UP)

3.1.2 DEPRESS 'LOAD ADDRESS' KEY ON CONSOLE AND RELEASE.

3.1.3 DEPRESS 'START KEY' ON CONSOLE AND RELEASE (PROGRAM SHOULD NOW BE LOADING INTO CPU)

4. STARTING PROCEEDURE

A. SET SWITCH REGISTER TO 000200
B. DEPRESS 'LOAD ADDRESS' KEY AND RELEASE
C. SET SWR TO ZERO FOR 'AUTO SIZING' OR LEAVE
LEAVE SWR BIT 7=1 TO USE EXISTING PARAMETERS SET UP BY DV11 TRIAL PROGRAM OR A PREVIOUSLY RUN DV11 DIAGNOSTIC THAT USED THE 'AUTO SIZING'.(SECTION 7.2 AND 8.4,8.5 MAY BE HELPFUL.
D. DEPRESS 'START KEY' AND RELEASE THE PROGRAM WILL TYPE MAINDEC NAME AND PROGRAM NAME (IF THIS WAS THE FIRST START UP OF THE PROGRAM) AND ALSO THE FOLLOWING:

'MAP OF DV11 STATUS'

1500	175000
1502	000300
1504	000226
1506	000062
1510	000226
1512	000062
1514	000226
1516	000062
1520	000226
1522	000062

THE ABOVE IS ONLY AN EXAMPLE! THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD. 1500 IN THE PROGRAM. THE STATUS TABLE MUST BE VERIFIED BY THE USER IF AUTO SIZING IS DONE. FOR INFORMATION OF STATUS TABLE SEE SECTION 8.4 FOR HELP.

THE PROGRAM WILL TYPE 'R' AND PROCEED TO RUN THE DIAGNOSTIC

4.1 CONTROL SWITCH SETTINGS

NOTE: IF THERE IS NO REAL SWR (177570); SWR MAY BE MODIFIED AT LOC:176 OR BY HITTING CONTROL "G" (^G) ON CONSOLE TERMINAL.

SW 15	SET:	HALT ON ERROR
SW 14	SET:	LOOP ON CURRENT TEST
SW 13	SET:	INHIBIT ERROR PRINT OUT
SW 12	SET:	INHIBIT **ALL** TYPE OUT/BELL ON ERROR.
SW 11	SET:	INHIBIT ITERATIONS. (QUICK PASS)
SW 10	SET:	ESCAPE TO NEXT TEST
SW 09	SET:	LOOP WITH CURRENT DATA
SW 08	SET:	CATCH ERROR AND LOOP ON IT
SW 07	SET:	USE PREVIOUS STATUS TABLE. CLR-DO AUTO SIZE.
SW 06	SET:	RESERVED
SW 05	SET:	RESERVED
SW 04	SET:	RESERVED
SW 03	SET:	RESERVED
SW 02	SET:	LOCK ON SELECTED TEST
SW 01	SET:	RESTART PROGRAM AT SELECTED TEST
SW 00	SET:	RESELECT DV11'S DESIRED ACTIVE.

4.1.2 SWITCH REGISTER RESTRICTIONS

SW 00 RESELECT DV11'S DESIRED ACTIVE. PLEASE NOTE THAT A MESSAGE IS TYPED OUT FOR SETTING THE SWITCH REGISTER EQUAL TO DV11'S ACTIVE. THIS MEANS IF THE SYSTEM HAS FOUR DV11S; BITS 00,01,02,03 WILL BE SET IN LOC 'DVACTV' FROM THE SWITCH REGISTER. USING THIS SWITCH(SW00) ALTERS THAT LOCATION;THEREFORE IF FOUR DV11S ARE IN THE SYSTEM ***DO NOT*** SET SWITCHS GREATER THAN SW 03 IN THE UP POSITION. THIS WOULD BE A FATAL ERROR. DO NOT SELECT MORE ACTIVE DV11S THAN HAS BEEN GIVEN INFORMATION ABOUT IN TRIAL PROGRAM.

METHOD: A: LOAD ADDRESS 200
B: START WITH SW 00=1
C: PROGRAM WILL TYPE MESSAGE
D: SET THE BINARY NUMBER OF DV11S DESIRED ACTIVE EXAMPLE: 1=1 DV11; 3=2 DV11; 7=3 DV11; 17=4 DV11 37=5 DV11 ETC. PRESS CONTINUE.
E: NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05)
F: SET WITH ANY OTHER SWITCH SETTINGS DESIRED. PRESS CONTINUE.

SW 01 RESTART PROGRAM AT SELECTED TEST IT IS STRONGLY SUGGESTED THAT AT LEAST ONE PASS HASS BEEN MADE BEFORE TRYING TO SELECT A TEST THAT IS NOT IN THE ORDER OF SEQUENCE THE REASON BEING IS THAT THE PROGRAM HAS TO CLEAR AREAS AND SET UP PARAMETERS. ALSO WHEN A TEST IS SELECTED ALWAYS START AT THE VERY BEGINNING OF THAT TEST.

SW 09 LOOP ON CURRENT DATA: THIS SWITCH WILL ONLY WORK IF CALL 'SCOPI' IS IN THAT TEST. THE REASON BEING THAT MOST TESTS DEAL WITH BLOCKS OF DIFFERENT DATA TO BE SENT OR RECEIVED ALL AT ONCE THUS IN BLOCK DATA; ONE PATTERN CANN'T BE SINGLED OUT.

4.1.3 SWITCH REGISTER PRIORITYS

ERROR SWITCHES

1. SW 12 DELETE PRINT OUT/BELL ON ERROR.
2. SW 13 DELETE ERROR PRINTOUT.
3. SW 15 HALT ON THE ERROR.
4. SW 08 GOTO BEGINNING OF THE TEST(ON ERROR).
5. SW 10 GOTO NEXT TEST(ON ERROR).

SCOPE SWITCHES

1. SW 09 (IF ENABLED BY 'SCOP1') ON AN ERROR; IF AN '*' IS PRINTED IN FRONT OF THE TEST NO. (EX. *TEST NO. 10) SW09 IS INCORPORATED IN THAT TEST AND THEREFORE SW09 IS *USUALLY* THE BEST SWITCH FOR THE SCOPE LOOP (SW14=0, SW10=0, SW09=1, SW08=0). IF SW09 IS NOT ENABELED; AND THERE IS A *HARD* ERROR (CONSTANT); SW08 IS BEST.
   (SW14=1,0, SW10=0, SW09=0, SW08=1). FOR INTERMITTENT ERRORS; SW14=1 WILL LOOP ON TEST REGUARDLESS OF ERROR OR NOT ERROR.
   (SW14=1, SW10=0, SW09=0, SW08=1.0)
2. SW 14
3. SW 11

4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200 THERE ARE NO OTHER STARTING ADDRESSES FOR THE DV11 DIAGNOSTICS PREVIOUSLY MENTIONED EXCEPT FOR DZDVE WHICH IS: 000200 FOR THE MODEM CONTROL AND CABLE TESTS AND 000210 FOR THE MANUAL PARAMETER INPUT PROGRAM.

NOTE: IF ADDRESS 000042 IS NON-ZERO THE PROGRAM ASSUMES IT IS UNDER ACT11 OR XXDP CONTROL AND WILL ACT ACCORDINGLY AFTER *ALL* AVAILABLE DV11'S ARE TESTED THE PROGRAM WILL RETURN TO 'XXDP' OR 'ACT-11'.

5. OPERATING PROCEDURE

WHEN PROGRAM IS INITIALLY STARTED MESSAGES AS DESCRIBED IN SECTION FOUR WILL BE PRINTED.

AND PROGRAM WILL BEGIN RUNNING THE DIAGNOSTIC

5.2 PROGRAM AND OR OPERATOR ACTION

THE TYPICAL APPROACH SHOULD BE

1. HALT ON ERROR (VIA SW 15=1) WHEN EVER AN ERROR OCCURS.
2. CLEAR SW 15.
3. SET SW 14: (LOOP ON THIS TEST)
4. SET SW 13: (INHIBIT ERROR PRINT OUT)

THE TEST NUMBER AND PC WILL BE TYPED OUT AND POSSIBILY AN ERROR MESSAGE (THIS DEPENDS ON THE TEST) TO GIVE THE OPERATOR AN IDEA AS TO THE SOURCE OF THE PROBLEM. IF IT IS NECESSARY TO KNOW MORE INFORMATION CONCERNING THE ERROR REPORT: LOOK IN THE LISTING FOR THAT TEST NUMBER WHICH WAS TYPED OUT AND THEN NOTE THE PC OF THE ERROR REPORT THIS WAY THE EXACT FUNCTIONING OF THE TEST CAN BE INTERPEDITED.

6. ERRORS

AS DESCRIBED PREVIOUSLY THERE WILL ALWAYS BE A TEST NUMBER AND PC TYPED OUT AT THE TIME OF AN ERROR (PROVIDING SW 13=0 AND SW 12=0). IN MOST CASES ADDITIONAL INFORMATION WILL BE SUPPLIED TO THE THE ERROR MESSAGE WHICH IS TO GIVE THE OPERATOR AN INDICATION OF THE ERROR.

6.2 ERROR RECOVERY

IF FOR SOME REASON THE DV11 SHOULD 'HANG THE BUS' (GAIN CONTROL OF BUS SO THAT CONSOLE MANUAL FUNCTIONS ARE INHIBITED) AN INIT OR POWER DOWN/UP IS NECESSARY FOR OPERATOR TO REGAIN CONTROL OF CPU. IF THIS SHOULD HAPPEN; LOOK IN LOCATION 'TSTNO' (ADDRESS 1224)FOR THE NUMBER OF THE TEST THAT WAS RUNNING AT THE TIME OF THE CATASTROPHIC ERROR. IN THIS WAY THE OPERATOR WILL HAVE AN IDEA AS TO WHAT THE DV11 WAS DOING AT THE TIME OF THE ERROR.

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4. (PLEASE)
STATUS TABLE SHOULD BE VERIFIED REGUARDLESS OF HOW PROGRAM WAS STARTED. ALSO IT IS IMPORTANT TO USE THIS LISTING ALONG WITH THE INFORMATION PRINTED ON THE TTY TO COMPLETLY ISOLATE PROBLEMS.

7.2 OPERATING RESTRICTIONS

DV11 TRIAL PROGRAM MUST BE RUN PRIOR TO THE FIRST AND ONLY THE FIRST RUNNING OF ANY DV11 DIAGNOSTIC IF "AUTO SIZING" IS NOT USED.
NOTE: IF NO PROGRAM OTHER THAN A DV11 DIAGNOSTIC WAS LOADED AFTER DV11 TRIAL OR IF CORE MEMORY HAS NOT BEEN CHANGED;OR IF THERE IS NO DV11 CONFIGURATION CHANGES; THE DV11 TRIAL PROGRAM NEED NEVER BE RUN AGAIN. HOWEVER IF ANY OF THE ABOVE HAVE BEEN VIOLATED THE DV11 TRIAL PROGRAM MUS" BE RUN AGAIN BEFORE RUNNING THE DIAGNOSTICS NOTE: AN ALTERNATIVE TO THE ABOVE IS ATTEMPTING THE 'AUTO SIZING' WHEN PROGRAM IS INITIALLY STARTED WITH SW07=0.

7.3 HARDWARE CONFIGURATION RESTRICTIONS (SYNC LINE CARDS ONLY)

1. HARDWARE MUST BE SET TO FULL DUPLEX
2. PARITY OFF.
3. ALL LINES OF A PARTICULAR LINE CARD MUST BE CONFIGURED THE SAME.

8. MISCELLANEOUS

8.1 EXECUTION TIME

ALL DV11 DEVICE DIAGNOSTICS WILL GIVE AN 'END PASS' MESSAGE (PROVIDING NO ERRORS AND SW12=0) WITHIN 4 MINS. THIS IS ASSUMING SW11=1 (DELETE ITERATIONS) IS SET TO GIVE THE FASTEST POSSIBLE EXECUTION. THE ACTLAL EXECUTION TIME DEPENDS GREATLY ON THE PDP11 CPU CONFIGURATION.

8.2 PASS COMPLETE

NOTE: *EVERY* TIME THE PROGRAM IS STARTED; THE TESTS WILL RUN AS IF SW11 (DELETE ITERATIONS) WAS UP (=1). THIS IS TO 'VERIFY NO *HARD* ERRORS' AS SCON AS POSSIBLE. THEREFORE THE FIRST PASS -EACH TIME PROGRAM IS STARTED- WILL BE A 'QUICK PASS' UNTILL ALL DV11'S IN SYSTEM ARE TESTED. WHEN THE DIAGNOSTIC HAS COMPLETED A PASS THE FOLLOWING IS AN EXAMPLE OF THE PRINT OUT TO BE EXPECTED.

END PASS DZDVD-B CSR: 175000 VEC: 300 PASSES: 000001 ERRORS: 000000

NOTE: THE NUMBERS FOR CSR AND VEC ARE NOT NECESSARILY THE VALUES FOR THE DEVICE. THEY ARE ONLY FOR THIS EXAMPLE.
NOTE: DZDVE (MODEM AND CABLE TEST) END PASS MESSAGE IS A LARGE "END" TYPED OUT ON TTY. PLEASE NOTE THAT EACH CHARACTER PRINTED IS ACTUALLY AND "END PASS" INDICATION. THIS WAS USED IN PLACE OF "BELL" BECAUSE IF SW12=1 AND AN ERROR OCCURED THE BELL MAY BE MISTAKEN FOR END PASS. THE PASS EXECUTION IS SO FAST THAT THE STANDARD END PASS WAS TOO LENGHTLY. THEREFORE EACH CHAR IS AN "END PASS AND THE ENTIRE "END" IS NOT REQUIRED FOR ACCEPTANCE.

8.4 KEY LOCATIONS

RETURN (1212) CONTAINS THE ADDRESS WHERE PROGRAM WILL RETURN WHEN ITERATION COUNT IS REACHED OR IF LOOP ON TEST IS ASSERTED.

NEXT (1214) CONTAINS THE ADDRESS OF THE NEXT TEST TO BE PEFORMED.

TSTNO (1224) CONTAINS THE NUMBER OF THE TEST NOW BEING PEFORMED.

RUN (1302) THE BIT IN 'RUN' ALWAYS POINTS ONE PAST THE DV11 CURRENTLY BEING TESTED. EXAMPLE: (RUN) 1302/000000C001C00000 MEANS THAT DV11 NO.05 IS THE DV11 NOW RUNNING.

DVCR00-DVCR17
DVST00-DVST17
(1500)-(1736)

THESE LOCATIONS CONTAIN THE INFORMATION NEEDED TO TEST UP TO 8 (DECIMAL) DV11S SEQUENTIALY. THEY CONTAIN THE CSR,VECTOR AND STATUS CONCERNING THE CONFIGURATION OF EACH DV11.

DVACTV (1276) EACH BIT SET IN THIS LOCATION INDICATES THAT THE ASSOCIATED DV11 WILL BE TESTED IN TURN. EXAMPLE: (DVACTV) 1276/000000000011111 MEANS THAT DV11 NO. 00,01,02,03,04 WILL BE TESTED. EXAMPLE: (DVACTV) 1276/000000000010001 MEANS THAT DV11 NO. 00,04 WILL BE TESTED.

DVSCR (1356) CONTAINS THE RECEIVER CSR OF THE CURRENT DV11 UNDER TEST.

L00.03 (1412)
L04.07 (1414)
L08.11 (1416)
L12.15 (1420) CONTAINS THE STATUS OF THE CURRENT DV11 UNDER TEST.

BIT 15	SET:	LINE CARD *NOT INSTALLED (AND WONT BE TESTED)
BIT 14	SET:	RESERVED
BIT 13	SET:	RESERVED
BIT 12	SET:	ONE SYNC, =0: TWO SYNCS.
BIT 11	SET:	ASYNC LINE CARD. =0 SYNC LINE CARD.
BIT 10	SET:	RESERVED
BIT 09	SET:	BITS PER CHAR. (USED WITH BIT8)
BIT 08	SET:	BITS PER CHAR. (USED WITH BIT9)

BIT09	BIT08	BITS PER CHAR.
0	0	8
0	1	7
1	0	6
1	1	5

BIT 07-00 SYNC "A" FOR SPECIFIED LINE CARD. BITS 07-00 MUST BE ALL ZEROS FOR TESTING ASYNC LINE CARDS.

8.4A MORE ON THAT 'STATUS TABLE' (1500-1736)

'MAP OF DV11 STATUS'

1500	175000
1502	000300
1504	000226
1506	000062
1510	000226
1512	000062
1514	004000
1516	000000
1520	004000
1522	000000

THE ABOVE INFORMATION WILL BE REPEATED FOR EACH OF UP TO 8 DV11'S IN THE SYSTEM(THESE WILL FOLLOW UNDER THIS TABLE). EXPLANATION:

1500 175000 THIS IS THE SYSTEM CONTROL REGISTER FOR THE 1ST DV11 IN THE SYSTEM.

1502 000300 THIS IS VECTOR 'A' FOR THE FIRST DV11 IN THE SYSTEM.

1504 000226 THIS REPRESENTS 'SYNC A' AND THE SOFTWARE STATUS FOR THE 1ST LINE CARD IN THE 1ST DV11. THE BITS ARE AS FOLLOWS:

BIT 15 SET: LINE CARD *NOT INSTALLED (AND WONT BE TESTED)
BIT 14 SET: RESERVED
BIT 13 SET: RESERVED
BIT 12 SET: ONE SYNC, =0: TWO SYNCS.
BIT 11 SET: ASYNC LINE CARD, =0 SYNC LINE CARD.
BIT 10 SET: RESERVED
BIT 09 SET: BITS PER CHAR. (USED WITH BIT8)
BIT 08 SET: BITS PER CHAR. (USED WITH BIT9)

BIT09	BIT08	BITS PER CHAR.
0	0	8
0	1	7
1	0	6
1	1	5

BIT 07-00 SYNC 'A' FOR SPECIFIED LINE CARD.

1506 000062 THIS REPRESENTS 'SYNC B' FOR THE 1ST LINE CARD.

1510 000226 THIS IS 'SYNC A' AND LINE STATUS FOR THE 2ND LINE CARD. (FOR BITS DEFINATION SEE EXPLANATION FOR LINE CARD 1).

1512 000062 THIS IS 'SYNC B' FOR THE SECOND LINE CARD.

1514 000226 THIS IS 'SYNC A' AND LINE STATUS FOR THE 3RD LINE CARD. (FOR BITS DEFINATION SEE EXPLANATION FOR LINE CARD 1).

1516 000062 THIS IS 'SYNC B' FOR LINE CARD NO. 3.

1520 000226 THIS IS 'SYNC A' AND LINE STATUS FOR THE 4TH LINE CARD. (FOR BITS DEFINATION SEE EXPLANATION FOR LINE CARD 1).

1522 000062 THIS IS SYNC B FOR THE 4TH LINE CARD.

THE ABOVE IS REPEATED FOR EACH DV11 IN THE SYSTEM. THE TABLE IS FILLED BY AUTO SIZING OR BY THE MANUAL PARAMETER INPUT PROGRAM AS DESCRIBED PREVIOUSLY. ALSO IF DESIRED BY USER; THE LOCATIONS MAY BE ALTERED BY HAND (TOGGLED IN) TO SUIT THE SPECIFIC CONFIGURATION.

9.5 *** METHOD OF AUTO SIZING ***

9.5.1 FINDING THE CONTROL STATUS REGISTER.

THE PROGRAM WILL START AT ADDRESS 175000 AND START 'REFERENCEING' ADDRESS. IF A NON-EX MEMORY TRAP OCCURES, THE POINTER (HOLDING 175000) IS UPDATED BY 10 AND THE ABOVE IS REPEATED UNTILL ADDRESS 175400 IS REACHED. IF A 'SLAVE SYNC RESPONSE' WAS ISSUED BY THE DV11 (OR ANY OTHER DEVICE) (NO NXM TRAP)(AND IT (SEL0, WAS=0) : POINTER PLUS 12 (SEL12) IS TESTED TO CONTAIN 177777 (MUST BE EXACTLY 177777): IF A TRAP IS ENCOUNTERED OR IF SEL12 DOES NOT CONTAIN 177777 THE ABOVE UPDATING IS PERFORMED. IF SEL12 WAS EQUAL TO 177777 THE POINTER IS STORED AWAY AND THE ROUTINE CONTINUES AS ABOVE:
NOTE: IF THE PROGRAM DOES NOT FIND YOUR DV11; SOMETHING IS WRONG AND AUTO SIZING SHOULD NOT BE DONE.

9.5.2 FINDING THE VECTOR

THE VECTOR AREA (ADDRESS 300-776) IS FILLED WITH THE INSTRUCTION JOT AND '.+2' (NEXT ADDRESS). BIT7 AND BIT6 (RX INTERUPT AND RX INTERUPT IE) ARE SET INTO DVSCR REGISTER; A DELAY IS MADE AND IF NO INTERUPT OCCURES (BECAUSE OF A BAD DV11) THE PROGRAM ASSUMES VECTOR ADDRESS 300 AND THE PROBLEM SHOULD BE FIXED IN THE DIAGNOSTIC. ONCE THE PROBLEM IS FIXED, THE PROGRAM SHOULD BE RE-SET UP AGAIN TO GET CORRECT VECTOR. IF AN INTERUPT OCCURED, THE ADDRESS TO WHICH THE DV11 INTERUPTED TO IS PICKED UP AND REPORTED AS THE VECTOR. NOTE: IF THE VECTOR REPORTED IS NOT THE VECTOR SET UP BY YOU; THERE IS A PROBLEM AND AUTO SIZING SHOULD NOT BE DONE.

9.5.3 PARAMETER ASSUMPTIONS.

SINCE TOO MUCH HARDWARE WOULD NEED TO BE TURNED ON TO SIZE THE REST OF THE PARAMETERS, THE PROGRAM MUST ASSUME THE REMAINING VARIATIONS. THE RESULT IF NOT TO YOUR SPECIFIC CONFIGURATION MAY BE ALTERED BY HAND (TOGGLE IN) IS DESIRED. IN THIS WAY 95% OF THE PARAMETER SETUP WAS DONE BY THE PROGRAM AND 5% BY YOU.
THEREFORE:

1) ALL LINE CARDS(4) ARE ASSUMED TO BE INSTALLED.
   SET BITS OF STATUS MAP OF ANY (APPROIATE) LINE CARDS MISSING
2) TWO SYNCS.
   SET BIT12 IF YOU HAVE A 4 LINE GROUP SET FOR 1 SYNC.
3) EIGHT BITS PER CHAR.
   ADJUST BITS 9 AND BIT 8 IN STATUS MAP FOR YOUR CORRECT CONFIG.
4) SYNCHRONOUS LINE CARDS INSTALLED
   SET BIT11 OF STATUS MAP FOR ASYNC LINE CARD AND ZERO SYNC CHARS.
5) SYNC "A"=226 AND SYNC "B"=062

IN ALL ADJUSTMENTS PLEASE REFER TO SECTION 9.4A FOR GRETER DETAIL.
$

;*MAINDEC-11-D2DVD-B [illegible] "FREE RUNNING" TEST PART 2
;*COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
;*----------

```
                                        ;STARTING PROCEDURE
                                        ;LOAD PROGRAM
                                        ;LOAD ADDRESS 000200
                                        ;PRESS START
                                        ;PROGRAM WILL TYPE "MAINDEC-11-DZDVD-B(377)/"FREE RUNNING" TEST PART 2"
                                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                                        ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                                        ;AND THEN RESUME TESTING

                                ;SWITCH REGISTER OPTIONS
                                ;----------------------

100000                          SW15=100000             :=1.HALT ON ERROR
040000                          SW14=40000              :=1.LOOP ON CURRENT TEST
020000                          SW13=20000              :=1.INHIBIT ERROR TYPEOUT
010000                          SW12=10000              :=1.DELETE TYPEOUT/BELL ON EPROR.
004000                          SW11=4000               :=1.INHIBIT ITERATIONS
002000                          SW10=2000               :=1.ESCAPE TO NEXT TEST ON ERROR
001000                          SW09=1000               :=1.LOOP WITH CURRENT DATA
000400                          SW08=400                :=1.LOOP ON ERROR
000200                          SW07=200                :=1. DO "AUTO SIZING" ON INITAL START UP.
000100                          SW06=100
000040                          SW05=40
000020                          SW04=20
000010                          SW03=10
000004                          SW02=4
000002                          SW01=2
000001                          SW00=1



                                ;LOCK ON TEST SELECT
                                ;RESTART PROGRAM AT SELECTED TEST
                                ;RESELECT DVII DESIRED ACTIVE
                                ;NOTE: THIS MUST NOT EXCEED ORIGINAL COUNT
```

```
                                ;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
                                ;----------------------

177776                          PS=177776       ;PROCESSOR STATUS WORD
001200                          STACK=1200      ;START OF PROCESSOR STACK

100000                          BIT15=100000
040000                          BIT14=40000
020000                          BIT13=20000
010000                          BIT12=10000
004000                          BIT11=4000
002000                          BIT10=2000
001000                          BIT9=1000
000400                          BIT8=400
000200                          BIT7=200
000100                          BIT6=100
000040                          BIT5=40
000020                          BIT4=20
000010                          BIT3=10
000004                          BIT2=4
000002                          BIT1=2
000001                          BIT0=1
                                ;---------------------------------

                                ALU=BIT12
                                RAM=BIT13
                                XFR=BIT13+BIT12
                                MPR=BIT14
                                S.C=BIT14+BIT12
                                [illegible]=BIT14+BIT13
                                ERB=BIT14+BIT13+BIT12
                                ;---------------------------------
```

```
                                        ;;**********************************************************************
                                        ;-----------------------------------------------------------------------
                                        ;TRAPCATCHER FOR ILEGAL INTERRUPTS
                                        ;THE STANDARD "TRAP CATCHER" IS PLACED
                                        ;BETWEEN ADDRESS 0 TO ADDRESS 776.
                                        ;IT LOOKS LIKE "PC+2 HALT".
                                        ;-----------------------------------------------------------------------
                                        ;;**********************************************************************

                 000000                 .=0
                                        ;STANDARD INTERRUPT VECTORS
                                        ;-------------------------

                 000024                 .=24
 000024  004402                         .PFAIL                  ;POWER FAIL HANDLER
 000026  000340                         340                     ;SERVICE AT LEVEL 7
 000030  004002                         .HLT                    ;ERROR HANDLER
 000032  000340                         340                     ;SERVICE AT LEVEL 7
 000034  003750                         .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
 000036  000340                         340                     ;SERVICE AT LEVEL 7
                 000040                 .=40
 000040  000000                         .BLKW 1                 ;SAVE FOR ACT-11 OR DDP2
 000042  000000                         .BLKW 1                 ;RETURN ADDRESS IF UNDER ACT-11 OR DDP2
 000044  000001                         .BLKW 1                 ;SAVE FOR ACT-11 OR DDP2
 000046  002563                         LOGICAL                 ;FOR USE WITH ACT-11 OR DDP2

                 000174                 .=174
 000174  000000                 LIGHT:  0
                 000176                 .=176
 000176  000000                 SSWR:   0

                 000200                 .=200
 000200  000137  001742                 JMP     .START          ;GO TO START OF PROGRAM

                 001000                 .=1000
 001000  XXXXXX  006377  040515  047111 MTITLE: .ASCIZ \377 12 "MAINDEC-11-DCDVD-B 377 "FREE RUNNING" TEST PART 2 \377
                 001200                 .=1200
                 001200                 LIGHTS:
 001200  177570                         SWR:    177570
 001202  177570                         SWR:    177570
                                        ;INDIRECT POINTERS TO TELETYPE VECTORS AND REGISTERS
                                        ;--------------------------------------------------

 001204  177560                 TKCSR:  177560                  ;TELETYPE KEYBOARD CONTROL REGISTER
 001206  177562                 TKDBR:  177562                  ;TELETYPE KEYBOARD DATA BUFFER
 001210  177564                 TPCSR:  177564                  ;TELEPRINTER CONTROL REGISTER
 001212  177566                 TPDBR:  177566                  ;TELEPRINTER DATA BUFFER

                                        ;PROGRAM CONTROL PARAMETERS
                                        ;--------------------------

 001214  000000                 RETURN: 0                       ;SCOPE ADDRESS FOR LOOP ON TEST
 001216  000000                 NEXT:   0                       ;ADDRESS OF NEXT TEST TO BE EXECUTED
 001220  000000                 LOCK:   0                       ;ADDRESS FOR LOCK ON CURRENT DATA
```

F02

```
DZDVD-S MACY11 27(732)  17-SEP-75  11:06  PAGE 17
DZDVD8.P11      PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

                001322  000003          ICOUNT: 3                       ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
                001324  000000          LPCNT:  0                       ;NUMBER OF ITERATIONS COMPLETED
                001326  000000          TSTNO:  0                       ;NUMBER OF TEST IN PROGRESS
                001330  000000          PASCNT: 0                       ;NUMBER OF PASSES COMPLETED
                001332  000000          ERRCNT: 0                       ;TOTAL NUMBER OF ERRORS
                001334  000000          LSTERR: 0                       ;PC OF LAST ERROR CALL

                                                ;PROGRAM VARIABLES
                                                ;-----------------

                001336  000000          STAT:   0                       ;DV STATUS WORD STORAGE
                001340  000000          SYNCX:  0
                001342  000000          CLKX:   0
                001344  000000          MASKX:  0
                001346  000000          TEMP1:  0                       ;TEMPORARY STORAGE
                001350  000000          TEMP2:  0                       ;TEMPORARY STORAGE
                001352  000000          TEMP3:  0                       ;TEMPORARY STORAGE
                001354  000000          TEMP4:  0                       ;TEMPORARY STORAGE
                001356  000000          TEMP5:  0                       ;TEMPORARY STORAGE
                001360  000000          SAVR0:  0                       ;R0 STORAGE
                001362  000000          SAVR1:  0                       ;R1 STORAGE
                001364  000000          SAVR2:  0                       ;R2 STORAGE
                001366  000000          SAVR3:  0                       ;R3 STORAGE
                001370  000000          SAVR4:  0                       ;R4 STORAGE
                001372  000000          SAVR5:  0                       ;R5 STORAGE
                001374  000000          SAVSP:  0                       ;STACK POINTER STORAGE
                001376  000000          SAVPC:  0                       ;PROGRAM COUNTER STORAGE
                001300  000001          DVACTV: .BLKB 1                 ;DVII'S SELECTED ACTIVE.
                001301  000001          DVNUM:  .BLKB 1                 ;OCTAL NUMBER OF DVII'S.
                001302  000001          SPVACT: .BLKB 1                 ;ORIGINAL ACTV.  DEVICES.
                001303  000001          SAVNUM: .BLKB 1                 ;WORKABLE NUMBER.
                001304  000001          RUN:    .BLKB 1                 ;POINTER ONE PAST RUNNING DEVICE.
                001306                  .EVEN
                001306  001500          CREAM:  DV.MAP                  ;TABLE POINTER.
```

```
                                        ;PROGRAM CONTROL FLAGS
                                        ;---------------------

001310  000000          INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001311  000000          ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001312  000000          LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
001313  000000          QV.FLG: .BYTE   0               ;QUICK VERIFY FLAG.
                                                        ;ON FIRST PASS OF EACH DVII ITERATIONS WILL BE SUPPRESSE
                                .EVEN
                000000  $T=0

                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                        ;POINTERS TO SUBROUTINES CAN BE FOUND
                                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS

                                ;;**************************************************************
                                ;--------------------------------------------------------------
001314                          .TRPTAB:
                104400          SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001314  002634                          .SCOPE
                104401          SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
001316  003020                          .SCOP1
                104402          TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
001320  003044                          .TYPE
                104403          INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
001322  003120                          .INSTR
                104404          INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
001324  003224                          .INSTER
                104405          PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
001326  003244                          .PARAM
                104406          SAVOS=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001330  003444                          .SAVOS
                104407          RESOS=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001332  003504                          .RESOS
                104410          CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001334  003536                          .CONVRT
                104411          CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001336  003542                          .CNVRT
                104412          MSTCLR=TRAP+12          ;CALL TO ISUE A MASTER CLEAR
001340  004556                          .MSTCLR
                104413          RAMCLR=TRAP+13          ;CALL TO CLEAR THE RAMS
001342  004516                          .RAMCLR
                104414          DELAY=TRAP+14           ;CALL TO VARIABLE DELAY COUNTER
001344  004476                          .DELAY
                104415          ROMCLK=TRAP+15          ;CALL TO CLOCK ROM ONCE
001346  004566                          .ROMCLK
                104416          DATACLK=TRAP+16         ;CALL TO CLK DATA
001350  004576                          .DATACLK

                                ;--------------------------------------------------------------
                                ;;**************************************************************
```

H02


```
                                        ;DV11 VECTOR AND REGISTER INDIRECT POINTERS
                                        ;
001350  000000          DVRVEC: 0       ;POINTER TO DV11 RECEIVER INTERRUPT VECTOR
001354  000000          DVRLVL: 0       ;POINTER TO DV11 RECEIVER INTERRUPT SERVICE PS
001356  000000          DVTVEC: 0       ;POINTER TO DV11 TRANSMITTER INTERRUPT VECTOR
001360  000000          DVTLVL: 0       ;POINTER TO DV11 TRANSMITTER INTERRUPT SERVICE PS
001362  000000          DVSCR:  0       ;POINTER TO DV11 SYSTEM CONTROL REGISTER
001364  000000          DVSCRH: 0       ;POINTER TO DV11 SYSTEM CONTROL REGISTER HIGH BYTE.
001366  000000          DVRIC:  0       ;POINTER TO DV11 NEXT RECEIVED CHARACTER REGISTER
001370  000000          DVLCR:  0       ;POINTER TO DV11 LINE PRAMETER REGISTER
001372  000000          DVSRS:  0       ;POINTER TO DV11 SECONDARY REGISTER SELECT REGISTER
001374  000000          DVSRSH: 0       ;POINTER TO DV11 SECONDARY REGISTER SELECT HIGH BYTE.
001376  000000          DVSRA:  0       ;POINTER TO DV11 SECONDARY REGISTER ACCESS REGISTER
001400  000000          DVSFR:  0       ;POINTER TO DV11 SPECIAL FUNCTIONS REGISTER
001402  000000          DVNSR:  0       ;POINTER TO DV11 NPR STATUS REGISTER
001404  000000          RESV16: 0       ;POINTER TO RESERVED REGISTER.

                                        ;DV11 CONTROL INDICATORS FOR CURRENT DV11 UNDER TEST
                                        ;--------------------------------------------------
001406      000         MASK.A: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 00-03
001407      000         MASK.B: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 04-07
001410      000         MASK.C: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 08-11
001411      000         MASK.D: .BYTE 000       ;LAST CHAR TO TEST AND PARITY MASK FOR LINES 12-15

001412      010         CLK.A:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 00-03
001413      010         CLK.B:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 04-07
001414      010         CLK.C:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 08-11
001415      010         CLK.D:  .BYTE 8.        ;NUMBER OF CLOCKS NEEDED FOR ONE CHAR FOR LINES 12-15

001416  000000          L00.03: 000000          ;PARAMETERS FOR LINES 00-03
001420  000000          L04.07: 000000          ;PARAMETERS FOR LINES 04-07
001422  000000          L08.11: 000000          ;PARAMETERS FOR LINES 08-11
001424  000000          L12.15: 000000          ;PARAMETERS FOR LINES 12-15

001426  000000          SYNC2A: 000000          ;SYNC 2
001430  000000          SYNC2B: 000000          ;
001432  000000          SYNC2C: 000000          ;
001434  000000          SYNC2D: 000000          ;

                                ;SUMMARY
                                ;-------

;               MASK.X          040     5 BITS PER CHAR.
;                               100     6 BITS PER CHAR.
;                               200     7 BITS PER CHAR.
;                               000     8 BITS PER CHAR.

;               CLK.X           005     5 BITS PER CHAR.
;                               006     6 BITS PER CHAR.
;                               007     7 BITS PER CHAR.
;                               010     8 BITS PER CHAR.
```

```
                                        ;DV11 STATUS TABLE AND ADDRESS ASSIGNMENTS
                                        ;-----------------------------------------

001500                          .=1500
001500                          DV.MAP:
001500  000001                  DVCR00: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 00
001502  000001                  DVTR00: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 00
001504  000001                  DV00.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 00
001506  000001                  SYNA00: .BLKW 1         ;SYNC TWO
001510  000001                  DV00.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 00
001512  000001                  SYNB00: .BLKW 1         ;SYNC TWO
001514  000001                  DV00.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 00
001516  000001                  SYNC00: .BLKW 1         ;SYNC TWO
001520  000001                  DV00.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 00
001522  000001                  SYND00: .BLKW 1         ;SYNC TWO

001524  000001                  DVCR01: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 01
001526  000001                  DVTR01: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 01
001530  000001                  DV01.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 01
001532  000001                  SYNA01: .BLKW 1         ;SYNC TWO
001534  000001                  DV01.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 01
001536  000001                  SYNB01: .BLKW 1         ;SYNC TWO
001540  000001                  DV01.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 01
001542  000001                  SYNC01: .BLKW 1         ;SYNC TWO
001544  000001                  DV01.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 01
001546  000001                  SYND01: .BLKW 1         ;SYNC TWO

001550  000001                  DVCR02: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 02
001552  000001                  DVTR02: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 02
001554  000001                  DV02.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 02
001556  000001                  SYNA02: .BLKW 1         ;SYNC TWO
001560  000001                  DV02.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 02
001562  000001                  SYNB02: .BLKW 1         ;SYNC TWO
001564  000001                  DV02.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 02
001566  000001                  SYNC02: .BLKW 1         ;SYNC TWO
001570  000001                  DV02.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 02
001572  000001                  SYND02: .BLKW 1         ;SYNC TWO

001574  000001                  DVCR03: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 03
001576  000001                  DVTR03: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 03
001600  000001                  DV03.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 03
001602  000001                  SYNA03: .BLKW 1         ;SYNC TWO
001604  000001                  DV03.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 03
001606  000001                  SYNB03: .BLKW 1         ;SYNC TWO
001610  000001                  DV03.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 03
001612  000001                  SYNC03: .BLKW 1         ;SYNC TWO
001614  000001                  DV03.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 03
001616  000001                  SYND03: .BLKW 1         ;SYNC TWO

001620  000001                  DVCR04: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 04
001622  000001                  DVTR04: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 04
001624  000001                  DV04.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 04
001626  000001                  SYNA04: .BLKW 1         ;SYNC TWO
001630  000001                  DV04.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 04
001632  000001                  SYNB04: .BLKW 1         ;SYNC TWO
001634  000001                  DV04.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 04
```

```
   853  001636  000001          SYNC04: .BLKW 1         ;SYNC TWO
   854  001640  000001          DV04.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 04
   855  001642  000001          SYND04: .BLKW 1         ;SYNC TWO
   856
   857  001644  000001          DVCR05: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 05
   858  001646  000001          DVTR05: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 05
   859  001650  000001          DV05.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 05
   860  001652  000001          SYNA05: .BLKW 1         ;SYNC TWO
   861  001654  000001          DV05.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 05
   862  001656  000001          SYNB05: .BLKW 1         ;SYNC TWO
   863  001660  000001          DV05.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 05
   864  001662  000001          SYNC05: .BLKW 1         ;SYNC TWO
   865  001664  000001          DV05.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 05
   866  001666  000001          SYND05: .BLKW 1         ;SYNC TWO
   867
   868  001670  000001          DVCR06: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 06
   869  001672  000001          DVTR06: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 06
   870  001674  000001          DV06.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 06
   871  001676  000001          SYNA06: .BLKW 1         ;SYNC TWO
   872  001700  000001          DV06.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 06
   873  001702  000001          SYNB06: .BLKW 1         ;SYNC TWO
   874  001704  000001          DV06.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 06
   875  001706  000001          SYNC06: .BLKW 1         ;SYNC TWO
   876  001710  000001          DV06.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 06
   877  001712  000001          SYND06: .BLKW 1         ;SYNC TWO
   878
   879  001714  000001          DVCR07: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 07
   880  001716  000001          DVTR07: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 07
   881  001720  000001          DV07.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 07
   882  001722  000001          SYNA07: .BLKW 1         ;SYNC TWO
   883  001724  000001          DV07.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 07
   884  001726  000001          SYNB07: .BLKW 1         ;SYNC TWO
   885  001730  000001          DV07.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 07
   886  001732  000001          SYNC07: .BLKW 1         ;SYNC TWO
   887  001734  000001          DV07.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 07
   888  001736  000001          SYND07: .BLKW 1         ;SYNC TWO
   889
   890  001740  000000          DV.END: 000000
```

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

001742  012737  000340  177776  .START: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
001750  012706  001200                  MOV     #STACK,SP               ;SET UP STACK
001754  012737  004402  000024          MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
001762  113737  001301  001303          MOVB    DVNUM,SAVNUM            ;SAVE NUMBER OF DEVICES IN SYSTEM.
001770  005037  001230                  CLR     PASCNT                  ;CLEAR PASS COUNT
001774  105037  001311                  CLRB    ERRFLG                  ;CLEAR ERROR FLAG
002000  105037  001313                  CLRB    QV.FLG                  ;ZERO QUICK VERIFY FLAG
002004  012737  001500  001306          MOV     #DV.MAP,CREAM           ;GET MAP POINTER.
002012  112737  000001  001304          MOVB    #1,RUN                  ;POINT POINTER TO FIRST DEVICE.
002020  005037  001232                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
002024  005037  001234                  CLR     LSTERR                  ;CLEAR LAST ERROR POINTER
002030  012737  000001  001226          MOV     #1,TSTNO                ;SET UP FOR TEST 1
002036  012737  001742  001214          MOV     #.START,RETURN          ;SET UP FOR POWER FAIL BEFORE
                                                                        ;TESTING STARTS
002044  105737  001310                  TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
002050  001063                          BNE     1$                      ;BR IF YES
002052  013746  000004                  MOV     4,-(SP)                 ;
002056  013746  000006                  MOV     6,-(SP)                 ;
002062  005037  000006                  CLR     6                       ;
002066  012737  002104  000004          MOV     #80$,4                  ;
002074  005777  177102                  TST     @SWR                    ;
002100  000240                          NOP                             ;
002102  000407                          BR      81$                     ;
002104  022626                  80$:    CMP     (SP)+,(SP)+             ;
002106  012737  000174  001200          MOV     #LIGHTS,LIGHTS          ;
002114  012737  000176  001202          MOV     #SSWR,SWR               ;
002122  012637  000006          91$:    MOV     (SP)+,6                 ;
002126  012637  000004                  MOV     (SP)+,4                 ;
002132  104402  001000                  TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
002136  105137  001310                  COMB    INIFLG                  ;IF NOT SET FLAG AND DO
002142  105777  177034                  TSTB    @SWR                    ;BIT7=1??
002146  100402                          BMI     16$                     ;BR IF NO AUTO SIZE
002150  004737  006624                  JSR     PC,CSRMAP               ;GO DO THE AUTO SIZE
002154  104402  005461          16$:    TYPE    ,XHEAD          ;TYPE HEADER
002160  012737  001500  001246          MOV     #DV.MAP,TEMP1           ;SET POINTER
002166  017737  177054  001250  5$:     MOV     @TEMP1,TEMP2            ;SET DATA
002174  022737  177777  001250          CMP     #177777,TEMP2           ;ALL DONE?
002202  001406                          BEQ     1$                      ;BR IF YES
002204  104410                          CONVRT                          ;
002206  005506                          XSTATQ                          ;
002210  062737  000002  001246          ADD     #2,TEMP1                ;UPDATE POINTER
002216  000763                          BR      5$
002220  005737  000042          1$:     TST     @#42                    ;IS PROGRAM RUNNING UNDER MONITOR
002224  001030                          BNE     3$                      ;BR IF YES
002226  032777  000001  176746          BIT     #SW00,@SWR              ;SELECT SPECIFIC DEVICES??
002234  001424                          BEQ     3$                      ;BR IF NO.
002236  104402  005402                  TYPE    ,MNEW                   ;TYPE THE MESSAGE.
002242  005000                          CLR     R0                      ;ZERO DATA LIGHTS
```

```
                                                HALT                    ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
002246  127737  176730  001302                CMPB    @SWR,SAVACT     ;IS THE NUMBER VALID?
002254  101404                                BLOS    2$              ;BR IF NUMBER IS OK.
002256  104402  005243                        TYPE    .MERR3          ;TELL USER OF INVALID NUMBER.
002262  000000                                HALT                    ;STOP EVERY THING.
002264  000776                                BR      .-2             ;RESTART THE PROGRAM AGAIN.
002266  117737  176710  001300        2$:     MOVB    @SWR,DVACTV     ;GET NEW DEVICE PATTERN
002274  113700  001300                        MOVB    DVACTV,R0       ;SHOW THE USER WHAT HE SELECTED.
002300  042700  177400                        BIC     #^C<377>,R0     ;USE ONLY LOW BYTE.
002304  000000                                HALT                    ;CONTINUE DYNAMIC SWITCHES.
002306  012700  000300                3$:     MOV     #300,R0         ;PREPARE TO CLEAR THE FLOATING
002312  012701  000302                        MOV     #302,R1         ;VECTOR AREA. 300-776
002316  010120                        4$:     MOV     R1,(R0)+        ;START PUTTING "PC+2 - HALT"
002320  005021                                CLR     (R1)+           ;IN VECTOR AREA.
002322  022021                                CMP     (R0)+,(R1)+     ;POP POINTERS
002324  022700  001000                        CMP     #1000,R0        ;ALL DONE??
002330  001372                                BNE     4$              ;BR IF NO.

                                                ;TEST START AND RESTART
                                                ;----------------------

002332  012737  000340  177776  .BEGIN:  MOV     #340,PS         ;LOCK OUT INTERRUPTS
002340  012706  001200                        MOV     #STACK,SP       ;SET UP STACK
002344  005737  000042                        TST     @#42            ;IS PROGRAM UNDER MONITOR CONTROL
002350  001023                                BNE     3$              ;BR IF YES
002352  032777  000004  176622                BIT     #BIT2,@SWR      ;CHECK FOR LOCK ON TEST
002360  001411                                BEQ     1$              ;BR IF NO LOCK DESIRED.
002362  104402  005301                        TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
002366  012737  000240  002702                MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
002374  012737  000240  002704                MOV     #NOP,TTST+2     ;SET UP TO LOCK
002402  000406                                BR      2$              ;CONTINUE ALONG.
002404  013737  003014  002702        1$:     MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
002412  013737  003016  002704                MOV     BRX,TTST+2      ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
002420                                2$:
002420  012737  005666  001214        3$:     MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
002426  104402  005171                4$:     TYPE    ,MR             ;TYPE R
002432  000177  176556                        JMP     @RETURN         ;START TESTING
```

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

002436  000005                        .EOP:   RESET                   ;MAKE THE  WORLD CLEAN AGAIN.
002440  005037  001234                        CLR     LSTERR          ;CLEAR LAST ERROR PC
002444  105037  001311                        CLRB    ERRFLG          ;CLEAR ERROR FLAG
002450  005237  001230                        INC     PASCNT          ;UPDATE PASS COUNT
002454  013777  001230  176516              MOV     PASCNT,@LIGHTS  ;DISPLAY PASS COUNT
002462  104402  005145                        TYPE    ,MEPASS         ;TYPE END PASS
002466  104402  005330                        TYPE    ,MCSRX          ;TYPE CSR
002472  104411  002604                        CNVRT   ,XCSR           ;SHOW IT
002476  104402  005336                        TYPE    ,MVECX          ;TYPE VECTOR
002502  104411  002612                        CNVRT   ,XVEC           ;SHOW IT
002506  104402  005344                        TYPE    ,MPASSX         ;TYPE PASSES
002512  104411  002620                        CNVRT   ,XPASS          ;SHOW IT
002516  104402  005355                        TYPE    ,MERRX          ;TYPE ERRORS
002522  104411  002626                        CNVRT   ,XERR           ;SHOW IT
002526  105337  001303                        DECB    SAVNUM          ;ARE ALL DEVICES TESTED?
002532  001017                              BNE     RESTRT          ;BR IF NO.
002534  112737  000377  001313              MOVB    #377,QV.FLG     ;SET THE QUICK VERIFY FLAG.
002542  113737  001301  001303              MOVB    DVNUM,SAVNUM    ;RESTORE THE COUNT
002550  013701  000042                        MOV     @#42,R1         ;CHECK FOR ACT-11 OR DDP
002554  001406                              BEQ     RESTRT          ;IF NOT, CONTINUE TESTING
002556  000005                              RESET                   ;STOP THE SHOW--CLEAR THE WORLD
002560                              LOGICAL:
002560  004711                              JSR     PC,(R1)
002562  000240                              NOP
002564  000240                              NOP
002566  000240                              NOP
002570  000240                              NOP
002572  012737  005666  001214      RESTRT: MOV     #CYCLE,RETURN
002600  000137  005666                      JMP     CYCLE
002604  000001                      XCSR:   1
002606     006     002                      .BYTE   6,2
002610  001362                              DVSCR
002612  000001                      XVEC:   1
002614     003     002                      .BYTE   3,2
002616  001352                              DVRVEC
002620  000001                      XPASS:  1
002622     006     002                      .BYTE   6,2
002624  001230                              PASCNT
002626  000001                      XERR:   1
002630     006     002                      .BYTE   6,2
002632  001232                              ERRCNT

                                            ;SCOPE LOOP AND INTERATION HANDLER
                                            ;--------------------------------

002634                              .SCOPE:
002634  022737  177570  001202              CMP     #177570,SWR     ;IS THERE A REAL SWR?
002642  001411                              BEQ     64$             ;BR IF YES
002644  017746  176336                        MOV     @TKDBR,-(SP)    ;SAVE KEYBOARD CHAR
002650  042716  000200                        BIC     #BIT7,(SP)      ;CLEAR PARITY BIT
```

```
1040  002654  122726  000007                        CMPB    #7,(SP)+        ;WAS IT CNTRL 'G' ?
1041  002660  001002                                BNE     .+6             ;BR IF NO.
1042  002662  004737  004640                        JSR     PC,SERV.G       ;SERVICE "CNTRL 'G'".
1043  002666  005037  001234              64$:      CLR     LSTERR          ;CLEAR LAST ERROR PC.
1044  002672  010016                                MOV     R0,(SP)         ;SAVE R0 ON THE STACK
1045  002674  032777  040000  176300                BIT     #BIT14,@SWR     ;"LOOP ON THIS TEST"?
1046  002702  001407                      TTST:     BEQ     1$              ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240)
1047  002704  000437                                BR      3$              ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240)
1048  002706  105777  176272                        TSTB    @TKCSR          ;KEYBOAD DONE?
1049  002712  100034                                BPL     3$              ;BR IF NO. (LOCK: HIT KEY TO GOTO NEXT TEST)
1050  002714  017700  176266                        MOV     @TKDBR,R0       ;CLEAR DONE BIT
1051  002720  000415                                BR      2$              ;CONTINUE
1052  002722  032777  004000  176252        1$:     BIT     #SW11,@SWR      ;DELETE ITERATION?  (QUICK PASS)
1053  002730  001011                                BNE     2$              ;BR IF YES
1054  002732  105737  001313                        TSTB    QV.FLG          ;HAVE PASSES BEECOMPLETED?
1055  002736  001406                                BEQ     2$              ;BR IF QUICK PASS.
1056  002740  005237  001224                        INC     LPCNT           ;UPDATE ITERATION COUNTER
1057  002744  023737  001224  001222                CMP     LPCNT,ICOUNT    ;ARE ALL ITERATIONS DONE??
1058  002752  001014                                BNE     3$              ;BR IF NOT YET
1059  002754  105037  001311              2$:       CLRB    ERRFLG          ;PREPARE FOR NEW TEST
1060  002760  005037  001224                        CLR     LPCNT           ;START ICOUNTER AT 0
1061  002764  005037  001220                        CLR     LOCK
1062  002770  012737  000024  001222                MOV     #20.,ICOUNT     ;RESET ITERATIONS
1063  002776  013737  001216  001214                MOV     NEXT,RETURN     ;GET NEXT TEST
1064  003004  011600                      3$:       MOV     (SP),R0         ;POP R0 OFF OF THE STACK
1065  003006  022626                                POP2SP                  ;FAKE AN "RTI"
1066  003010  000177  176200                        JMP     @RETURN         ;GO DO THE TEST
1067  003014  001407                      BRW:      1407
1068  003016  000437                      BRX:      437
1069
1070                                                ;CHECK FOR FREEZE ON CURRENT DATA
1071                                                ;--------------------------------
1072
1073  003020  032777  001000  176154      .SCOP1:   BIT     #SW09,@SWR      ;IS SW09=1(SET)?
1074  003026  001405                                BEQ     1$              ;BR IF NOT SET.
1075  003030  005737  001220                        TST     LOCK
1076  003034  001402                                BEQ     1$
1077  003036  013716  001220                        MOV     LOCK,(SP)       ;GOTO THE ADDRESS IN LOCK.
1078  003042  000002                      1$:       RTI                     ;GO BACK.
1079
1080                                                ;TELETYPE OUTPUT ROUTINE
1081                                                ;-----------------------
1082
1083  003044  010546                      .TYPE:    MOV     R5,-(SP)        ;SAVE R5 ON THE STACK.
1084  003046  017605  000002                        MOV     @2(SP),R5       ;GET ADDRESS OF MESSAGE.
1085  003052  062766  000002  000002                ADD     #2,2(SP)        ;POP OVER ADDRESS.
1086  003060  032777  010000  176114      1$:       BIT     #SW12,@SWR      ;INHIBIT ALL PRINT OUT??
1087  003066  001012                                BNE     3$              ;BR IF NO PRINT OUT WANTED (SW12=1)
1088  003070  105715                                TSTB    (R5)            ;IS NUMBER MINUS? (MSB=1(BIT7))
1089  003072  100002                                BPL     2$              ;BR IF NUMBER IS PLUS
1090  003074  104402  005104                        TYPE    ,MCRLF          ;TYPE A CR/LF!
1091  003100  105777  176104              2$:       TSTB    @TPCSR          ;TTY READY?
1092  003104  100375                                BPL     2$              ;BR IF NO.
1093  003106  112577  176100                        MOVB    (R5)+,@TPDBR    ;PRINT CURRENT CHAR.
1094  003112  001362                                BNE     1$              ;IF NOT ZERO KEEP PRINTING!
1095  003114  012605                      3$:       MOV     (SP)+,R5        ;END OF OUTPUT. RESTORE R5
```

```
                                                RTI                     ;GO HOME
                                                ;-----------------------

                                .INSTR: MOV     R3,-(SP)                ;SAVE R3 ON STACK
                                        MOV     R4,-(SP)                ;SAVE R4 ON STACK
                                        MOV     @#4,SP                  ;MSG
                                        ADD     #2,4(SP)
                                .INST1: .TYPE
                                .MSG:
                                        MOV     #177560,R4
                                        MOVB    #1,R3
                                1$:     TSTB    @#TKCSR
                                        BPL     1$
                                        MOVB    R3,@#TKDBR
                                        DEC     #200,R4
                                        BNE     2$
                                        CMPB    (R4)+,#15
                                        BNE     INSTR2
                                2$:     TSTB    @#TPCSR
                                        BPL     2$
                                        MOVB    @TKDBR,@TPDBR
                                        DECB    R3
                                        BNE     1$
                                        MOV     (SP)+,R4
                                        MOV     (SP)+,R3
                                .INSTE: .TYPE   .MOM
                                        MOV     R3,-(SP)
                                        MOV     R4,-(SP)
                                        BR      .INST1
                                INSTR2: MOV     (SP)+,R4                ;RESTORE R4
                                        MOV     (SP)+,R3                ;RESTORE R3
                                        RTI

                                        ;CONVERT ASCII STRING TO OCTAL
                                        ;----------------------------

                                .PARAM: MOV     R5,-(SP)
                                        MOV     R4,-(SP)
                                        MOV     4(SP),R5
                                        MOV     (R5)+,LOLIM
                                        MOV     (R5)+,HILIM
                                        MOV     (R5)+,DEVADR
                                        MOVB    (R5)+,LOBITS
                                        MOVB    (R5)+,ADRCNT
                                        MOV     R5,4(SP)
                                PARAM1: CLR     R5
                                        MOV     #INBUF,R4
                                        CMPB    #15,(R4)
                                        BEQ     PARERR
                                1$:     CMPB    (R4),#60
                                        BLT     PARERR
                                        CMPB    (R4),#67
                                        BGT     PARERR
                                        BICB    #60,(R4)
                                        BISB    (R4)+,R5
                                        CMPB    #15,(R4)
                                        BEQ     LIMITS
```

```
        003350  006305                          ASL     R5
        003352  006305                          ASL     R5
        003354  006305                          ASL     R5
        003356  000760                          BR      1$
        003360  104410                  PARERR: INSTER
        003362  000750                          BR      PARAM1

                                                ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
                                                ;--------------------------------------

        003364  020537  003436          LIMITS: CMP     R5,HILIM
        003370  101373                          BHI     PARERR
        003372  020537  003434                  CMP     R5,LOLIM
        003376  103770                          BLO     PARERR
        003400  133705  003442                  BITB    LOBITS,R5
        003404  001365                          BNE     PARERR

                                                ;STORE NUMBER AT SPECIFIED ADDRESS

        003406  013704  003440                  MOV     DEVADR,R4
        003412  010524                  1$:     MOV     R5,(R4)+
        003414  062705  000002                  ADD     #2,R5
        003420  105337  003443                  DECB    ADRCNT
        003424  001372                          BNE     1$
        003426  012604                          MOV     (SP)+,R4
        003430  012605                          MOV     (SP)+,R5
        003432  000002                          RTI
        003434  000000                  LOLIM:  0
        003436  000000                  HILIM:  0
        003440  000000                  DEVADR: 0
        003442  000000                  LOBITS: 0
                003443                  ADRCNT=LOBITS+1

                                                ;SAVE PC OF TEST THAT FAILED AND R0-R5
                                                ;------------------------------------

        003444  016637  000004  001276  .SAV05: MOV     4(SP),SAVPC             ;SAVE R7 (PC)

                                                ;SAVE R0-R5

        003452  010537  001272          SV05:   MOV     R5,SAVR5                ;SAVE R5
        003456  010437  001270                  MOV     R4,SAVR4                ;SAVE R4
        003462  010337  001266                  MOV     R3,SAVR3                ;SAVE R3
        003466  010237  001264                  MOV     R2,SAVR2                ;SAVE R2
        003472  010137  001262                  MOV     R1,SAVR1                ;SAVE R1
        003476  010037  001260                  MOV     R0,SAVR0                ;SAVE R0
        003502  000002                          RTI                             ;LEAVE.

                                                ;RESTORE R0-R5

        003504  013700  001260          .RES05: MOV     SAVR0,R0                ;RESTORE R0
        003510  013701  001262                  MOV     SAVR1,R1                ;RESTORE R1
        003514  013702  001264                  MOV     SAVR2,R2                ;RESTORE R2
        003520  013703  001266                  MOV     SAVR3,R3                ;RESTORE R3
        003524  013704  001270                  MOV     SAVR4,R4                ;RESTORE R4
        003530  013705  001272                  MOV     SAVR5,R5                ;RESTORE R5
```

```
 1208  003534  000002                        RTI                     ;LEAVE

                                             ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
                                             ;-----------------------------------------------------

 003536  104402  005104          .CONVR: TYPE    ,NCRLF
 003542  010046                  .CONVRT: MOV     R0,-(SP)
 003544  010146                           MOV     R1,-(SP)
 003546  010346                           MOV     R3,-(SP)
 003550  010446                           MOV     R4,-(SP)
 003552  010546                           MOV     R5,-(SP)
 003554  016601  000012                    MOV     @12(SP),R1
 003560  062766  000002  000012            ADD     #2,12(SP)
 003566  012137  003742                    MOV     (R1)+,WRDCNT
 003572  112137  003744            1$:     MOVB    (R1)+,CHRCNT
 003576  112137  003745                    MOVB    (R1)+,SPACNT
 003602  012137  003746                    MOV     @(R1)+,BINWRD
 003606  013704  003746            2$:     MOV     BINWRD,R4
 003612  113705  003744                    MOVB    CHRCNT,R5
 003616  012700  005562                    MOV     #TEMP,R0
 003622  010403                    3$:     MOV     R4,R3
 003624  042703  177770                    BIC     #177770,R3
 003630  062703  000060                    ADD     #060,R3
 003634  110320                           MOVB    R3,(R0)+
 003636  000241                           CLC
 003640  006004                           ROR     R4
 003642  000241                           CLC
 003644  006004                           ROR     R4
 003646  000241                           CLC
 003650  006004                           ROR     R4
 003652  005305                           DEC     R5
 003654  001362                           BNE     3$
 003656  012703  005624                    MOV     #MDATA,R3
 003662  114023            4$:     MOVB    -(R0),(R3)+
 003664  105337  003744                    DECB    CHRCNT
 003670  001374                           BNE     4$
 003672  105737  003745                    TSTB    SPACNT
 003676  001405                           BEQ     6$
 003700  112723  000040            5$:     MOVB    #040,(R3)+
 003704  105337  003745                    DECB    SPACNT
 003710  001373                           BNE     5$
 003712  105013                    6$:     CLRB    (R3)
 003714  104402  005624                    TYPE    ,MDATA
 003720  005337  003742                    DEC     WRDCNT
 003724  001322                           BNE     1$
 003726  012605                           MOV     (SP)+,R5
 003730  012604                           MOV     (SP)+,R4
 003732  012603                           MOV     (SP)+,R3
 003734  012601                           MOV     (SP)+,R1
 003736  012600                           MOV     (SP)+,R0
 003740  000002                           RTI
 003742  000000            WRDCNT: 0
 003744  000000            CHRCNT: 0
                             003745  SPACNT=CHRCNT+1
 003746  000000            BINWRD: 0
```

```
                                          ;TRAP DISPATCH SERVICE
                                          ;ARGUMENT OF TRAP IS EXTRACTED
                                          ;AND USED AS OFFSET TO OBTAIN POINTER
                                          ;TO SELECTED SUBROUTINE

003750  011646                  .TRPSR: MOV     (SP),-(SP)      ;GET PC OF RETURN
003752  162716  000002                  SUB     #2,(SP)         ;=PC OF TRAP
003756  017616  000000                  MOV     @(SP),(SP)      ;GET TRP
003762  006316                  TRPOK:  ASL     (SP)            ;MULTIPLY TRAP ARG BY 2
003764  042716  177001                  BIC     #177001,(SP)    ;CLEAR UNWANTED BITS
003770  062716  001314                  ADD     #.TRPTAB,(SP)   ;POINTER TO SUBROUTINE ADDRESS
003774  017616  000000                  MOV     @(SP),(SP)      ;SUBROUTINE ADDRESS
004000  000136                          JMP     @(SP)+          ;GO TO SUBROUTINE

                                          ;ERROR HANDLER
                                          ;-------------

004002                          .HLT:
004002  022737  177570  001202          CMP     #177570,SWR     ;IS THERE A REAL SWR?
004010  001411                          BEQ     64$             ;BR IF YES
004012  017746  175170                  MOV     @TKDBR,-(SP)    ;SAVE KEYBOARD CHAR
004016  042716  000200                  BIC     #BIT7,(SP)      ;CLEAR PARITY BIT
004022  122726  000007                  CMPB    #7,(SP)+        ;WAS IT CNTRL "G" ?
004026  001002                          BNE     .+6             ;BR IF NO.
004030  004737  004640                  JSR     PC,SERV.G       ;SERVICE "CNTRL 'G'".
004034  032777  010000  175140  64$:    BIT     #SW12,@SWR      ;BELL ON ERROR?
004042  001406                          BEQ     XBX             ;BR IF NO BELL
004044  105777  175140                  TSTB    @TPCSR          ;TTY READY.
004050  100003                          BPL     XBX             ;DON'T WAIT IF TTY NOT READY.
004052  112777  000207  175132          MOVB    #207,@TPDBR     ;PUSH A BELL AT THE TTY.
004060  032777  020000  175114  XBX:    BIT     #SW13,@SWR      ;DELETE ERROR PRINT OUT?
004066  001105                          BNE     HALTS           ;BR IF NO PRINT OUT WANTED.
004070  021637  001234                  CMP     (SP),LSTERR     ;WAS THIS ERROR FOUND LAST TIME?
004074  001404                          BEQ     1$              ;BR IF YES
004076  011637  001234                  MOV     (SP),LSTERR     ;RECORD BEING HERE
004102  105037  001311                  CLRB    ERRFLG          ;PREPARE HEADER
004106  104406                  1$:     SAVOS                   ;SAVE ALL PROC REGISTERS
004110  011605                          MOV     (SP),R5         ;GET THE PC OF ERROR
004112  162705  000002                  SUB     #2,R5           ;GET ADDRESS OF TRAP CALL
004116  011504                          MOV     (R5),R4         ;GET HLT INSTRUCTION
004120  006304                          ASL     R4              ;MULT BY TWO
004122  061504                          ADD     (R5),R4         ;DOUBLE IT
004124  006304                          ASL     R4              ;MULT AGAIN
004126  042704  177001                  BIC     #177001,R4      ;CLEAR JUNK
004132  062704  034404                  ADD     #.ERRTAB,R4     ;GET POINTER
004136  012437  004252                  MOV     (R4)+,ERRMSG    ;GET ERROR MESSAGE
004142  012437  004264                  MOV     (R4)+,DATAHD    ;GET DATA HEADRER
004146  011437  004276                  MOV     (R4),DATABP     ;GET DATA TABLE
004152  105737  001311                  TSTB    ERRFLG          ;TYPE HEADREER
004156  001403                          BEQ     TYPMSG          ;BR IF YES
004160  005737  004276                  TST     DATABP          ;DOES DATA TABLE EXIST?
004164  001040                          BNE     TYPDAT          ;BR IF YES.
004166  104402  005104          TYPMSG: TYPE    .MCRLF
004172  104402  005104                  TYPE    .MCRLF
004176  005737  001220                  TST     LOCK
```

F03


```
                                        BEQ     1$
                                        TYPE    .MASTEK
                                1$:     TYPE    .MTSTN
                                        CNVRT   .DISIN          ;SHOW II
                                        TYPE    .MERRPC         ;TYPE PC.
                                        CNVRT   .ERTABD         ;SHOW IT
                                        TYPE    .MCRLF          ;GIVE A CR,LF
                                        MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
                                        TST     ERRMSG          ;IS THERE AN ERROR MESSAGE
                                        BEQ     WRKC.FM         ;BR IF NO.
                                        TYPE
                                ERRMSG: 0                       ;       ERROR MESSAGE
                                WRKC.FM:
                                        TST     DATAHD          ;DATA HEADER?
                                        BEQ     TYPDAT          ;BR IF NO
                                        TYPE                    ;TYPE
                                DATAHD: 0                       ;       DATA HEADER
                                TYPDAT: TST     DATABP          ;DATA TABLE?
                                        BEQ     RESREG          ;BR IF NO.
                                        CON.RT                  ;SHOW
                                DATABP: 0                       ;       DATA TABLE
                                RESREG: RESCS                   ;RESTORE PROC REGISTERS
                                HALTS:  TST     @SWR            ;HALT ON ERROR?
                                        BPL     EXITER          ;BR IF NO HALT ON ERROR
                                        PUSHRC                  ;SAVE RC
                                        MOV     2(SP),RC        ;SHOW ERROR PC IN DATA LIGHTS
                                        HALT                    ;HALT
                                        POPRC                   ;GET RC
                                EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
                                        BIT     #SW09,@SWR      ;GOTO TOP OF TEST?
                                        BNE     1$              ;BR IF YES
                                        BIT     #SW10,@SWR      ;GOTO NEXT TEST?
                                        BEQ     2$              ;BR IF NO
                                        MOV     NEXT,RETURN     ;SET FOR NEXT TEST
                                1$:     MOV     #STACK,SP       ;RESET SP
                                        JMP     @RETURN         ;GOTO SPECIFIED TEST
                                2$:     RTI                     ;RETURN
                                ERTABC: 1
                                        .BYTE   6,2
                                        SAVPC
                                XTSTN:  1
                                        .BYTE   3,2
                                        TSTNO
                                ;ENTER HERE ON POWER FAILURE
                                ;--------------------------


                                .PFAIL:
                                        MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
                                        HALT                            ;HALT ON POWER DOWN NORMAL
                                        BR      .

                                ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED


                                RESTAR:
                                        MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
```

```
                                                MOV     #STACK,SP       ;RESET THE STACK POINTER
                                                CLR     TEMP            ;READY FOR TIMMER
                                                INC     TEMP            ;PLUS ONE TO THE TIMER!
                                                BNE     .-4             ;BR IF MORE TO GO
                                                TYPE    ,MPFAIL         ;TYPE THE MESSAGE
                                                CNVRT   ,PFTAB          ;TELL WHAT TEST TO RETURN TO.
                                                CLRB    ERRFLG          ;START CLEAN
                                                CLR     LSTERR          ;**********
                                                MSTCLR                  ;START CLEAN UP OF DEVICE
                                                RAMCLR                  ;CLEAR IT ALL!
                                                JMP     @RETURN         ;START DOING THAT TEST AGAIN.

                                PFTAB:  1
                                .BYTE   3,2
                                        TSTNO
                                .DELAY: MOV     R0,-(SP)
                                        MOV     #5,R0
                                        DEC     R0
                                        BNE     .-2
                                        MOV     (SP)+,R0
                                        RTI
                                1$:     30.

                                .RAMCLR:
                                        MOV     #MRESET,@DVSCR  ;ISSUE A MASTER CLEAR
                                        MOV     R1,-(SP)        ;SAVE R1 ON THE STACK
                                        MOV     R4,-(SP)        ;SAVE R4 ON THE STACK
                                        MOV     DVSRS,R1        ;GET SECONDARY SEL. REG.
                                        MOV     DVSRA,R4        ;GET SECONDARY REGISTER ACCESS REG.
                                1$:     CLR     (R4)            ;ZERO THE SECONDARY REGISTER.
                                        ADD     #^C<BIT11+BIT10+BIT9+BIT8+BIT3+BIT2+BIT1+BIT0+BIT0>,R1
                                        BNE     1$
                                        MOV     (SP)+,R4        ;RESTORE R4
                                        MOV     (SP)+,R1        ;RESTORE R1
                                        RTI

                                .MSTCLR:
                                        MOV     #MRESET,@DVSCR  ;ISSUE MASTER CLEAR.
                                        RTI

                                .ROMCLK:
                                        BIS     #BIT1,@DVSCR
                                        RTI

                                .DATACLK:
                                        MOV     R0,-(SP)
                                        CLR     R0
                                        BIS     #BIT8,@DVLCR
                                1$:     MOV     @DVLCR,3$
                                        RORB    3$+1
                                        BCC     2$
                                        INC     R0
                                        BNE     1$
                                        HLT     0
                                2$:     MOV     (SP)+,R0
                                        RTI
                                3$:     .BLKW   1
```

H03


```
004640  032777  004000  174336  SERV.G: BIT     #4000,@TKCSR    ;RX BUSY?
004646  001374                          BNE     SERV.G          ;BR IF YES
004650  017737  174326  005072          MOV     @SWR,90$        ;SAVE (SWR).
004656  013777  005072  174316  1$:     MOV     90$,@SWR        ;
004664  104402  005052                  TYPE    ,89$            ;
004670  104411  005064                  CNVRT   ,88$            ;
004674  104402  005074                  TYPE    ,91$            ;
004700  105777  174300                  TSTB    @TKCSR          ;WAIT FOR DONE.
004704  100375                          BPL     .-4
004706  017746  174274                  MOV     @TKDBR,-(SP)    ;
004712  042716  000200                  BIC     #BIT7,(SP)      ;
004716  122726  000015                  CMPB    #15,(SP)+       ;
004722  001450                          BEQ     5$              ;
004724  005077  174252                  CLR     @SWR            ;
004730  105777  174254          2$:     TSTB    @TPCSR          ;
004734  100375                          BPL     .-4
004736  016677  177776  174246          MOV     -2(SP),@TPDBR   ;
004744  000241                          CLC                     ;
004746  006177  174230                  ROL     @SWR            ;
004752  006177  174224                  ROL     @SWR            ;
004756  006177  174220                  ROL     @SWR            ;
004762  103735                          BCS     1$              ;ERROR
004764  026627  177776  000060          CMP     -2(SP),#60      ;
004772  002731                          BLT     1$              ;
004774  026627  177776  000067          CMP     -2(SP),#67      ;
005002  003325                          BGT     1$              ;
005004  042766  177770  177776          BIC     #^C<7>,-2(SP)   ;
005012  056677  177776  174162          BIS     -2(SP),@SWR     ;
005020  105777  174160                  TSTB    @TKCSR          ;
005024  100375                          BPL     .-4             ;
005026  017746  174154                  MOV     @TKDBR,-(SP)
005032  042716  000200                  BIC     #BIT7,(SP)
005036  122726  000015                  CMPB    #15,(SP)+
005042  001332                          BNE     2$              ;
005044  104402  005104          5$:     TYPE    ,MCRLF          ;
005050  000207                          RTS     PC

005052  020377  051450  051127  89$:    .ASCIZ  <377>" (SWR)= "
005060  036451  000057
                                .EVEN
005064  000001                  88$:    1
005066     006     000                  .BYTE   6,0
005070  005072                          90$
005072  000000                  90$:    .WORD   0
005074  036457  000057          91$:    .ASCIZ  "/=/"
                                .EVEN
005100  020040  000077          MQM:    .ASCIZ  /  ?/
005104  005015     000          MCRLF:  .ASCIZ  <15><12>
005107     377  053520  020122  MPFAIL: .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
005145     377  047105  020104  MEPASS: .ASCIZ  <377>/END PASS DZDVD-B  /
005171     377  000122          MR:     .ASCIZ  <377>/R/
005174  050377  047522  051107  MERR2:  .ASCIZ  <377>/PROGRAM INDICATES NO DEVICES PRESENT.
005243     377  047111  052523  MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
005267     377  042524  052123  MTSTPC: .ASCIZ  <377>/TEST PC-/
005301     377  047514  045503  MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST
```

```
[illegible] MACY11 30(732)  12-SEP-75  11:05  PAGE 33
[illegible]VSB.P11      GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

[illegible]  005330  051503  035123  000040  MCSRX:  .ASCIZ   /CSR: /
[illegible]  005336  042526  035103  000040  MVECX:  .ASCIZ  /VEC: /
[illegible]  005344  040520  051523  051505  MPASSX: .ASCIZ  /PASSES: /
[illegible]  005356     105  051122  051117  MERRX:  .ASCIZ  /ERRORS:
[illegible]  005366  042524  052123  047040  MTSTN:  .ASCIZ  /TEST NO: /
[illegible]  005400  000052                  MASTEK: .ASCIZ   *
[illegible]  005403  051777  052105  051440  MNEW:   .ASCIZ  <377>/SET SWITCH REG TO DV11'S DESIRED ACTIVE.
[illegible]  005454  041520  020072     000  MERRPC: .ASCIZ  /PC: /
[illegible]  005461     377  040515  020123  XHEAD:  .ASCIZ  <377>/MAP OF DV11 STATUS/ 377>
                                             .EVEN
[illegible]  005506  000002                  XSTATS: 2
[illegible]  005510     006     003                  .BYTE   6,3
[illegible]  005512  001246                          TEMP1
[illegible]  005514     006     002                  .BYTE   6,2
[illegible]  005516  001250                          TEMP2
                                             .EVEN

                                                     ;BUFFERS FOR INPUT-OUTPUT

[illegible]  005520  000000                  INBUF:  0
[illegible]  005562                          .=.+40
[illegible]  005562  000000                  TEMP:   0
[illegible]  005624                          .=.+40
[illegible]  005624  000000                  MDATA:  0
[illegible]  005666                          .=.+40
```

```
                                                ;
                                                ;ROUTINE USED TO "CYCLE" THROUGH UP TO EIGHT DV11'S
                                                ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
                                                ;AND RUNS THE SPECIFIED DV11'S.  THIS ROUTINE *MUST*
                                                ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
                                                ;SETUP NECESSARY.
                                                ;
005666  105737  001300          CYCLE:  TSTB    D.ACTV          ;ARE ANY DV11'S TO BE TESTED?
005672  001004                          BNE     1$              ;BR IF OK.
005674  104402  005174                  TYPE    .MERR2          ;NO DV11'S SELECTED!!
005730  000000                          HALT                    ;STOP THE SHOW.
005702  000775                          BR      .-2             ;DISQUALIFY CONT. SW.
005704  133737  001304  001300  1$:     BITB    RUN,DVACTV      ;IS THIS ONE "ACTIVE"
005712  001020                          BNE     2$              ;BR IF GOOD ONE FOUND.
005714  000241                          CLC                     ;CLEAR PROC. CARRY BIT.
005716  106137  001304                  ROLB    RUN             ;UPDATE POINTER
005722  105537  001304                  ADCB    RUN             ;CATCH CARRY FROM RUN
005726  062737  000024  001306          ADD     #24,CREAM       ;UPDATE ADDRESS POINTER.
005734  022737  001740  001306          CMP     #DV.END,CREAM
005742  001360                          BNE     1$              ;KEEP GOING; NOT ALL TESTED FOR.
005744  012737  001500  001306          MOV     #DV.MAP,CREAM   ;RESET ADDRESS POINTER.
005752  000754                          BR      1$              ;KEEP LOOKING FOR ACTIVE DV11
005754  000241                  2$:     CLC                     ;CLEAR PROC. CARRY.
005756  106137  001304                  ROLB    RUN             ;UPDATE POINTER.
005762  105537  001304                  ADCB    RUN             ;CATCH CARRY.
005766  013700  001306                  MOV     CREAM,R0        ;GET ADDRESS POINTER.
005772  062737  000024  001306          ADD     #24,CREAM       ;UPDATE.
006000  022737  001740  001306          CMP     #DV.END,CREAM
                                                ;ALL DONE?
006006  001003                          BNE     3$              ;BR IF NO.
006010  012737  001500  001306          MOV     #DV.MAP,CREAM   ;RESTORE POINTER.
006016  012037  001362          3$:     MOV     (R0)+,DVSCR     ;LOAD SYSTEM CTRL. REG
006022  012037  001352                  MOV     (R0)+,DVRVEC    ;LOAD VECTOR
006026  012037  001416                  MOV     (R0)+,L00.03    ;GET LINE PARAMETERS. 00-03
006032  012037  001426                  MOV     (R0)+,SYNC2A    ;
006036  012037  001420                  MOV     (R0)+,L04.07    ;                     04-07
006042  012037  001430                  MOV     (R0)+,SYNC2B    ;
006046  012037  001422                  MOV     (R0)+,L08.11    ;                     08-11
006052  012037  001432                  MOV     (R0)+,SYNC2C    ;
006056  012037  001424                  MOV     (R0)+,L12.15    ;                     12-15
006062  012037  001434                  MOV     (R0)+,SYNC2D    ;
006066  012700  000002                  MOV     #2,R0           ;SAVE CORE THIS WAY!
006072  013737  001362  001364          MOV     DVSCR,DVSCRH    ;GET SYS CTRL. REG HIGH BYTE.
006100  005237  001364                  INC     DVSCRH          ;GOT IT.
006104  013737  001364  001366          MOV     DVSCRH,DVRIC    ;GET NXT REC. CHAR REG.
006112  005237  001366                  INC     DVRIC           ;GOT IT
006116  013737  001366  001370          MOV     DVRIC,DVLCR     ;GET LN. PAR.REG.
006124  060037  001370                  ADD     R0,DVLCR        ;GOT IT
006130  013737  001370  001372          MOV     DVLCR,DVSRS     ;GET SEC. REG. SEL. REG.
006136  060037  001372                  ADD     R0,DVSRS        ;GOT IT
006142  013737  001372  001374          MOV     DVSRS,DVSRSH    ;GET HIGH BYTE.
006150  005237  001374                  INC     DVSRSH          ;GOT IT
006154  013737  001374  001376          MOV     DVSRSH,DVSRA    ;SEC. REG. ACCESS.
006162  005237  001376                  INC     DVSRA           ;GOT IT
```

```
1550  006166  013737  001376  001400          MOV     DVSRA,DVSFR     ;SPEC. FUN. REG.
1551  006174  060037  001400                  ADD     R0,DVSFR        ;
1552  006200  013737  001400  001402          MOV     DVSFR,DVNSR     ;NPR STAT. REG.
1553  006206  060037  001402                  ADD     R0,DVNSR        ;
1554  006212  013737  001402  001404          MOV     DVNSR,RESV16    ;RESERVED REG
1555  006220  060037  001404                  ADD     R0,RESV16       ;
1556
1557  006224  013737  001352  001354          MOV     DVRVEC,DVRLVL   ;PTY LVL
1558  006232  060037  001354                  ADD     R0,DVRLVL       ;
1559  006236  013737  001354  001356          MOV     DVRLVL,DVTVEC   ;TX VEC
1560  006244  060037  001356                  ADD     R0,DVTVEC       ;
1561  006250  013737  001356  001360          MOV     DVTVEC,DVTLVL   ;TX LVL
1562  006256  060037  001360                  ADD     R0,DVTLVL
1563
1564  006262  012700  001416                  MOV     #L00.03,R0      ;LOAD STAUS 00-03
1565  006266  012701  001406                  MOV     #MASK.A,R1      ;PREPARE MASK.
1566  006272  012702  001412                  MOV     #CLK.A,R2       ;PREPARE CLOCKS
1567  006276  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1568
1569  006302  012700  001420                  MOV     #L04.07,R0      ;LOAD STAUS 00-03
1570  006306  012701  001407                  MOV     #MASK.B,R1      ;PREPARE MASK.
1571  006312  012702  001413                  MOV     #CLK.B,R2       ;PREPARE CLOCKS
1572  006316  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1573
1574  006322  012700  001422                  MOV     #L08.11,R0      ;LOAD STAUS 00-03
1575  006326  012701  001410                  MOV     #MASK.C,R1      ;PREPARE MASK.
1576  006332  012702  001414                  MOV     #CLK.C,R2       ;PREPARE CLOCKS
1577  006336  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1578
1579  006342  012700  001424                  MOV     #L12.15,R0      ;LOAD STAUS 00-03
1580  006346  012701  001411                  MOV     #MASK.D,R1      ;PREPARE MASK.
1581  006352  012702  001415                  MOV     #CLK.D,R2       ;PREPARE CLOCKS
1582  006356  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1583  006362  032777  000002  172612          BIT     #SW01,@SWR
1584  006370  001445                          BEQ     7$
1585  006372                          4$:
1586  006372  005737  000042                  TST     @#42
1587  006376  001042                          BNE     7$
1588  006400  104402  005104                  TYPE    ,MCRLF
1589  006404  104403                          INSTR
1590  006406  005366                          MTSTN
1591  006410  104405                          PARAM
1592  006412  000001                          1
1593  006414  001000                          1000
1594  006416  001226                          TSTNO
1595  006420     000                  .BYTE   0
1596  006421     001                  .BYTE   1
1597  006422  012700  007256                  MOV     #TST1,R0
1598  006426  022710                  5$:     CMP     (PC)+,(R0)
1599  006430  012737                          MOV     (PC)+,@(PC)+
1600  006432  001015                          BNE     6$
1601  006434  023760  001226  000002          CMP     TSTNO,2(R0)
1602  006442  001011                          BNE     6$
1603  006444  022760  001226  000004          CMP     #TSTNO,4(R0)
1604  006452  001005                          BNE     6$
1605  006454  010037  001214                  MOV     R0,RETURN
```

```
1606  006460  104402  005104                        TYPE    ,MCRLF
1607  006464  000412                                BR      9$
1608  006466  005720                        6$:     TST     (R0)+
1609  006470  020027  021152                        CMP     R0,#TLAST+10
1610  006474  001354                                BNE     5$
1611  006476  104402  005100                        TYPE    ,MQM
1612  006502  000733                                BR      4$
1613  006504  012737  007256  001214        7$:     MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
1614  006512  000177  124776                9$:     JMP     @RETURN         ;GO START TESTING.
1615
1616  006516  011003                        FIX.00: MOV     (R0),R3         ;GET PARAMETERS.
1617  006520  042703  176377                        BIC     #^C<1400>,R3    ;CLEAR JUNK.
1618  006524  005703                                TST     R3              ;TEST FOR EIGHT BITS.
1619  006526  001004                                BNE     1$              ;BR IF NOT 8 BITS.
1620  006530  105011                                CLRB    (R1)            ;SET
1621  006532  112712  000010                        MOVB    #8.,(R2)        ;
1622  006536  000424                                BR      4$
1623  006540  022703  000400                1$:     CMP     #400,R3         ;CHECK FOR SEVEN BITS.
1624  006544  001005                                BNE     2$              ;BR IF NOT 7 BITS.
1625  006546  112711  000200                        MOVB    #200,(R1)       ;
1626  006552  112712  000007                        MOVB    #7,(R2)         ;
1627  006556  000414                                BR      4$
1628  006560  022703  001000                2$:     CMP     #1000,R3        ;CHECK FOR SIX BITS.
1629  006564  001005                                BNE     3$              ;BR IF NOT SIX BITS.
1630  006566  112711  000300                        MOVB    #300,(R1)       ;
1631  006572  112712  000006                        MOVB    #6,(R2)         ;
1632  006576  000404                                BR      4$
1633  006600  112711  000340                3$:     MOVB    #340,(R1)       ;IF NONE OF THE ABOVE; MUST BE 5 BITS.
1634  006604  112712  000005                        MOVB    #5,(R2)         ;
1635  006610  032710  040000                4$:     BIT     #PARBIT,(R0)    ;PARITY ENABLED?
1636  006614  001401                                BEQ     5$              ;IF =0; THEN NO PARITY.
1637  006616  105212                                INCB    (R2)            ;PLUS ONE TO THE CLOCK!
1638  006620  000207                        5$:     RTS     PC              ;
1639
1640                                                ;*ROUTINE USED TO "AUTO SIZE" THE DV11
1641                                                ;*CSR AND VECTOR.
1642                                                ;*NOTE: THE CSR MAY BE ANY WHERE IN THE FLOATING
1643                                                ;*      ADDRESS RANGE (175000:175400)
1644                                                ;*      AND THE VECTOR MAY BE ANY WHERE IN THE
1645                                                ;*      FLOATING VECTOR RANGE (300:770)
1646                                                ;*
1647
1648  006622                                AUTO.SIZE:
1649  006622  000005                                RESET                   ;INSURE A BUS INIT.
1650  006624  012702  001500                CSRMAP: MOV     #DV.MAP,R2      ;LOAD MAP POINTER.
1651  006630  005022                        1$:     CLR     (R2)+           ;ZERO ENTIRE MAP
1652  006632  022702  001740                        CMP     #DV.END,R2      ;ALL DONE?
1653  006636  001374                                BNE     1$              ;BR IF NO
1654  006640  105037  001301                        CLRB    DVNUM           ;SET OCTAL NUMBER OF DV11'S TO 0
1655  006644  012702  001500                        MOV     #DV.MAP,R2
1656  006650  012701  175000                        MOV     #175000,R1      ;SET FOR FIRST ADDRESS TO BE TESTED
1657  006654  012737  007074  000004                MOV     #6$,@#4         ;SET FOR NON-EXISTANT DEVICE TIME OUT
1658  006662  005711                        2$:     TST     (R1)            ;IF DV11 DVSCR S/B 0
1659  006664  001037                                BNE     3$              ;IF NO DEV ; TRAP TO 4. IF NO BIT 8 THEN NO DV11
1660  006666  022761  177777  000012                CMP     #177777,12(R1)  ;IF DV11 THEN DVSFR S/B ALL 1'S ON INIT!
1661  006674  001033                                BNE     3$              ;BR IF NOT DV11
```

```
DZDVC-B MACY11 27(732)  17-SEP-75  11:06  PAGE 37
DZDVCB.P11      GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

 1662  006676  005761  000016                  TST     16(R1)          ;IF DV11 THEN RESV16 S/B ALL 0'S
 1663  006702  001030                          BNE     3$              ;BR IF NOT DV11
 1664                                  ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DV11 CSR ADDRESS.
 1665  006704  010122                          MOV     R1,(R2)+        ;STORE CSR IN CORE TABLE.
 1666  006706  005722                          TST     (R2)+           ;POP OVER VECTOR STORE AREA
 1667  006710  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 1 STAT AND SYNC
 1668  006714  052722  000062                  BIS     #62,(R2)+       ;
 1669  006720  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 2 STAT AND SYNC
 1670  006724  052722  000062                  BIS     #62,(R2)+       ;
 1671  006730  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 3 STAT AND SYNC
 1672  006734  052722  000062                  BIS     #62,(R2)+       ;
 1673  006740  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 4 STAT AND SYNC
 1674  006744  052722  000062                  BIS     #62,(R2)+       ;
 1675  006750  105237  001301                  INCB    DVNUM           ;UPDATE DEVICE COUNTER
 1676  006754  122737  000010  001301          CMPB    #10,DVNUM       ;ARE MAX. NO. OF DEV FOUND?
 1677  006762  001405                          BEQ     100$            ;YES DON'T LOOK FOR ANY MORE.
 1678  006764  062701  000010          3$:     ADD     #10,R1          ;UPDATE CSR POINTER ADDRESS
 1679  006770  022701  175400                  CMP     #175400,R1
 1680  006774  001332                          BNE     2$              ;BR IF MORE ADDRESS TO CHECK.
 1681  006776  012722  177777          100$:   MOV     #177777,(R2)+   ;TERMINATER.
 1682  007002  105037  001300                  CLRB    DVACTV
 1683  007006  105737  001301                  TSTB    DVNUM           ;WERE ANY DV11'S FOUND AT ALL?
 1684  007012  001423                          BEQ     5$              ;ERROR AUTO SIZER FOUND NO DV11'S IN THIS SYS.
 1685  007014  113701  001301                  MOVB    DVNUM,R1
 1686  007020  110137  001303                  MOVB    R1,SAVNUM       ;SAVE NUMBER OF DEVICES
 1687  007024  000241          4$:     CLC
 1688  007026  106137  001300                  ROLB    DVACTV          ;GENERATE ACTIVE REGISTER OF DEVICES.
 1689  007032  105237  001300                  INCB    DVACTV          ;SET THE BIT
 1690  007036  005301                          DEC     R1
 1691  007040  001371                          BNE     4$              ;BR IF MORE TO GENERATE
 1692  007042  012737  000006  000004          MOV     #6,@#4          ;RESTORE TRAP VECTOR
 1693  007050  113737  001300  001302          MOVB    DVACTV,SAVACT   ;SAVE ACTIVE REGISTER
 1694  007056  000137  007102                  JMP     VECMAP          ;GO FIND THE VECTOR NOW.
 1695  007062  104402  005174          5$:     TYPE    ,MERR2          ;NOTIFY OPR THAT NO DV11'S FOUND.
 1696  007066  005000                          CLR     R0              ;MAKE DATA LIGHTS ZERO
 1697  007070  000000                          HALT                    ;STOP THE SHOW
 1698  007072  000776                          BR      .-2             ;DISABLE CONT. SW.
 1699  007074  012716  006764          6$:     MOV     #3$,(SP)        ;ENTERED BY NON-EXISTANT TIME-OUT.
 1700  007100  000002                          RTI                     ;RETURN TO MAINSTREAM
 1701
 1702  007102  012737  000340  000022  VECMAP: MOV     #340,@#22       ;SET IOT TRAP PRIO TO 7
 1703  007110  012737  007232  000020          MOV     #4$,@#20        ;SET IOT TRAP VECTOR
 1704  007116  012702  001500                  MOV     #DV.MAP,R2      ;SET SOFTWARE POINTER
 1705  007122  012700  000300                  MOV     #300,R0         ;FLOATING VECTORS START HERE.
 1706  007126  012701  000302                  MOV     #302,R1         ;PC OF IOT INSTR.
 1707  007132  010120          1$:     MOV     R1,(R0)+        ;START FILLING VECTOR AREA
 1708  007134  012721  000004                  MOV     #4,(R1)+        ;WITH .+2; IOT
 1709  007140  022021                          CMP     (R0)+,(R1)+     ;ADD 2 TO R0 +R1
 1710  007142  020127  001000                  CMP     R1,#1000
 1711  007146  101771                          BLOS    1$              ;BR IF MORE TO FILL
 1712  007150  113737  001300  001246          MOVB    DVACTV,TEMP1    ;STORE TEMPORALLY
 1713  007156  006037  001246          2$:     ROR     TEMP1           ;BRING OUT A BIT
 1714  007162  103034                          BCC     5$              ;BR IF ALL DONE
 1715  007164  005037  177776                  CLR     PS              ;ZERO CPU PRIO
 1716  007170  012772  001300  000000          MOV     #BIT9+BIT7+BIT5,@(R2)
 1717  007176  005000                          CLR     R0              ;ATTEMPT TO FORCE AN INTERUPT
```

```
 1718  007200  005200                          INC     R0              ;STALL
 1719  007202  001376                          BNE     .-2             ;       FOR TIME TO INTERUPT
 1720  007204  052762  000300  000002          BIS     #300,2(R2)      ;NO INTERUPT ASSUME 300 AND FIX DV11 LATER
 1721  007212  042772  176777  000000  3$:     BIC     #^C<BIT9>,@(R2)
 1722  007220  005072  000000                  CLR     @(R2)
 1723  007224  062702  000024                  ADD     #24,R2          ;POP SOFTWARE POINTER
 1724  007230  000752                          BR      2$              ;KEEP GOING
 1725  007232  051662  000002          4$:     BIS     (SP),2(R2)      ;GET VECTOR ADDRESS
 1726  007236  042762  000007  000002          BIC     #7,2(R2)        ;CLEAR JUNK
 1727  007244  022626                          CMP     (SP)+,(SP)+     ;POP TOT JUNK OFF STACK
 1728  007246  012716  007212                  MOV     #3$,(SP)        ;SET FOR RETURN
 1729  007252  000002                          RTI
 1730  007254  000207                  5$:     RTS     PC              ;ALL DONE WITH "AUTO SIZING"
 1731
```

```
                                        ;********************** TEST 1 ****************************
                                        ;*TEST OF TRANSMITTER CONTROL BYTES.
                                        ;*TEST OF "NEXT MODE" FOR TRANSMITTER.
                                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                        ;**********************************************************

                                ;  TEST 1
                                ;--------------
001226  000001  001226  TST1:   MOV     #1,TSTNO
001216  001664  001216          MOV     #TST2,NEXT
                                MOV     #0,R0                   ;PLACE LINE NUMBER INTO R0
001416  001236                  MOV     L00.03.STAT             ;LOAD LINE CARD STATUS INTO STAT
                                BMI     100$                    ;BR IF LINE CARD NOT TO BE TESTED
                                JSR     PC,105$                 ;GO DO THE TEST FOR LINE CARD 1
000004                  100$:   MOV     #4,R0                   ;PLACE LINE NUMBER INTO R0
001420  001236                  MOV     L04.07.STAT             ;LOAD LINE CARD STATUS INTO STAT
                                BMI     101$                    ;BR IF LINE CARD NOT TO BE TESTED
                                JSR     PC,105$                 ;GO DO THE TEST FOR LINE CARD 2
000010                  101$:   MOV     #8,R0                   ;LOAD LINE NUMBER
001422  001236                  MOV     L08.11.STAT             ;LOAD LINE CARD STATUS INTO STAT
                                BMI     102$                    ;BR IF LINE CARD NOT TO BE TESTED
                                JSR     PC,105$                 ;DO THE TEST FOR LINE CARD 3
000014                  102$:   MOV     #12.,R0                 ;LOAD LINE NO.
001424  001236                  MOV     L12.15.STAT             ;LOAD LINE CARD STATUS
                                BMI     103$                    ;BR IF LINE CARD NOT TO BE TESTED
                                JSR     PC,105$                 ;DO THE TESTS FOR LINE CARD 4
                        103$:   SCOPE                           ;SCOPE THIS TEST.
                        105$:                                   ;TEST ENTRANCE.
000422  001220                  MOV     #1$,-(SP)               ;SET IF SW09=1 (LOOP)
                                RAMCLR                          ;CLEAR ALL SEP REGISTERS
                                CLR     R3                      ;SET IMAGE EXPECTED MODE=0
                                CLR     R1                      ;SET IMAGE "NEXT MODE"=0
000025  022560                  MOVB    #25,TXBAP               ;SET TX DATA CHAR
000004                          MOV     #4,R2                   ;SET FOR 4 LINE GROUP
023605                  1$:     MOVB    R1,TXTAB+25             ;LOAD CONTROL BYTE.MODE)
177745                          MOV     R0,@CSRS                ;LOAD LINE NUMBER
004537  022120                  PERFORM ,SETREG                 ;
000 001                         .BYTE   000,001                 ;TX PRINCIPLE BA, PRINCIPLE BC
                                TXBAP                           ;
                                -1                              ;
004537  022120                  PERFORM ,SETREG                 ;
013 010                         .BYTE   013,010                 ;LINE STATE, CNTRL TABLE
000004                          BIT2                            ;TXGO
023560                          TXTAB                           ;
004537  022120                  PERFORM ,SETREG                 ;
014 014                         .BYTE   014,014                 ;TX MODE REG
000000                          0                               ;MAKE
000000                          0                               ;IT=0
032737  004000  001236          BIT     #ASYNC,STAT             ;#IS THIS ASYNC LINE CARD?
001407                          BEQ     60$                     ;#BR IF NO.
004537  022164                  PERFORM ,LOAD.MODE              ;#
015000                          ;BIT12+BIT11+BIT9               ;#8 BITS PER CHAR
004537  022164                  PERFORM ,LOAD.MODE              ;#
                                 BIT14+BIT13+BIT12 +BIT10
                                                                ;#9600 BAUD.
```

```
                                                        BR      61$
                                        000164          60$:    PERFORM LOAD.MODE       ;LOAD
                                                                BIT12+BIT11             ;MODE
                                        000340  177776  61$:    MOV     #340,PS         ;LOCK OUT INTERUPTS
                                        000340  177616          MOV     #3$,@DVTVEC     ;SET TRANS VECTOR
                                        000340  177616          MOV     #340,@DVTLVL    ;LOAD PRIO.
                                        020001  176000          BIS     #BIT13+BIT0,@DVSCR      ;SET STATUS IE AND LOOP GO.
                                                                CLRB    R5              ;WAIT
                                                        2$:     DELAY                   ;STALL FOR TIME
                                        177775                  CLR     PS              ;ALLOW INTERUPTS (NSR ENTRY)
                                                                INC     R5              ;ENTRY
                                                                BNE     2$              ;
                                                                HLT                     ;NO SILO ENTRY (DVSCR IS NOT=1)
                                                                CMP     -(SP),-(SP)     ;FAKE INTERUPT BECAUSE NO REAL ONE HAPPENED.
                                        020000  176560  3$:     BIC     #BIT13,@DVSCR   ;CLR IE
                                        177776                  CLRB    @SP             ;ZERO PSW
                                                                CMP     (SP)+,(SP)+     ;FAKE AN RTI
                                        000014  176556          MOV.B   #14,@DVSRSH     ;SEL TX MODE REGISTER
                                        176554                  MOV     @DVSRA,R4       ;READ MODE REG.
                                                                MOV     R3,R5           ;SET EXPECTED
                                                                CMP     R5,R4           ;WAS "NEXT MODE" LOADED CORRECTLY?
                                                                BEQ     4$              ;BR IF YES
                                                                HLT     3               ;TX MODE REGISTER WRONG
                                                        4$:     MSTCLR                  ;INIT DV11
                                                                SCOPE                   ;LOCK ON MODE, LOCK ON LINE?
                                                                INC     R3              ;UPDATE EXPECTED MODE
                                        000040                  ADD     #BIT5,R1        ;UPDATE CNTRL BYTE IMAGE
                                                                TST     R1              ;ALL DONE??
                                        007646  001665          BEQ     1$              ;BR IF NO
                                        007650  005001          CLR     R1              ;ZERO EXPECTE MODE
                                        007652  005003          CLR     R3              ;ZERO CNTRL BYTE MODE
                                        007654  005200          INC     R0              ;UPDATE LINE NO POINTER
                                        007656  005302          DEC     R2              ;4 LINES DONE
                                        007660  001350          BNE     1$              ;BR IF YES
                                        007662  000207          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES


                                                        ;********************** TEST 2 ******************************
                                                        ;*TEST OF TRANSMITTER IDLE FUNCTIONS.
                                                        ;*TEST THAT THE TRANSMITTER WILL IDLE
                                                        ;*SYNC (IDLE) CHARS WHEN BIT 0 OF
                                                        ;*DLE/PROTOCOL REGISTER IS CLEARED.
                                                        ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
                                                        ;;*************************************************************

                                                ;  TEST 2
                                                ;--------------
                                        001226  007664  012737  000002  TST2:   MOV     #2,TSTNO
                                        001216  007672  012737  010430          MOV     #TST3,NEXT
                                                007700  012700  000000          MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
                                        001244  007704  113737  001406          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
                                        001236  007712  013737  001416          MOV     LOO.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                                007720  100402                  BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
                                                007722  004737  010032          JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
                                                007726  012700  000004  100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
                                        001244  007732  113737  001407  00:244  MOVB    MASK.B,MASKX    ;GET MASK
```

```
                013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
                100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
                004737  010036                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
                012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
                112737  001400  001244          MOVB    MASK,C,MASKX    ;GET MASK
                013737  001422  001236          MOV     L09.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
                100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
                004737  010032                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
                012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
                112737  001411  001244          MOVB    MASK,C,MASKX    ;GET MASKK
                013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
                100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
                004737  010032                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
                104400          103$:   SCOPE                           ;SCOPE THIS TEST.
                                105$:                                   ;TEST ENTRANCE.
                032737  004000  001236          BIT     #ASYNC.STAT     ;#IS THIS AN ASYNC LINE CARD?
                                                BEQ     .+4             ;#BR IF NOT ASYNC.
                                                RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED
                012737  010116  001220          MOV     #3$,LOCK        ;SET FOR RETURN IF SWC9=1
                104412                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
                012705  023560                  MOV     #TXTAB,R5       ;CLEAR
                012704  030160                  MOV     #RXTAB,R4       ;RECEIVER
                005001                          CLR     R1              ;AND
                005025                  1$:     CLR     (R5)+           ;TRANSMITTER
                005024                          CLR     (R4)+           ;CONTROL
                105201                          INCB    R1              ;TABLES
                100374                          BPL     1$              ;
                012737  000001  022560          MOV     #1,TXBAP        ;LOAD TX
                112737  000015  022561          MOVB    #15,TXBAP+1     ;DTA
                012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
                010077  171250          3$:     MOV     R0,@DVSRS       ;LOAD LINE NUMBER
                005037  027560                  CLR     RXBA            ;CLEAR
                005037  027562                  CLR     RXBA+2          ;RECEIVER
                005037  027564                  CLR     RXBA+4          ;BUFFER
                032737  004000  001236          BIT     #ASYNC.STAT     ;#IS THIS AN ASYNC LINE CARD?
                001406                          BEQ     BC$             ;#BR IF NOT ASYNC.
                004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
                000.001                         .BYTE   000.001         ;#REGISTERS
                022560                          TXBAP                   ;#LOAD FOR ASYNC
                177776                          -2                      ;#LOAD FOR ASYNC
                000406                          BR      9:$             ;#CONTINUE TEST
                004537  022120          BC$:    PERFORM ,SETREG         ;
                000.001                         .BYTE   000.001         ;TX PRINCIPLE BA, PRINCIPLE BC
                022566                          SYNC                    ;
                177774                          -4                      ;
                004537  022120          9:$:    PERFORM ,SETREG         ;
                004.005                         .BYTE   004,005         ;RX BA, RX BC
                027560                          RXBA                    ;
                177772                          -6                      ;
                004537  022120                  PERFORM ,SETREG         ;
                010.011                         .BYTE   010.011         ;TX TABLE, RX TABLE
                023560                          TXTAB                   ;
                030160                          RXTAB                   ;
                004537  022120                  PERFORM ,SETREG         ;
                013.012                         .BYTE   013.012         ;LINE STATE, LINE PROTOCOL
                000004                          BIT2                    ;TX GOOD
```

```
                                                        0                       ;DEFAULT-IDLE SYNC
                                                        BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
                                                        BEQ     60$             ;#BR IF NO.
                                                        PERFORM .LOAD.MODE      ;#LOAD PARAMETERS.
                                                        BIT13                   ;#RECEIVER ENABLE
                                                        PERFORM .LOAD.MODE      ;#
                                                        .BIT12+BIT11)+BIT9      ;#8 BITS PER CHAR
                                                        PERFORM .LOAD.MODE      ;#
                                                        (BIT14+BIT13+BIT12)+BIT10
                                                                                ;#9600 BAUD.
                                                        BR      4$
                                                60$:    PERFORM .LOAD.MODE      ;LOAD
                                                        BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
                                                        PERFORM .SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
                                                -$:     INC     @DVSCR          ;SET MICRO CPU GO
                                                        TSTB    @DVSCR          ;WAIT FOR
                                                        BP      .-4             ;DVSCR07=1
                                                        CLR     R4              ;
                                                        MOV     #1,R5           ;SET EXPECTED
                                                        MOVB    RXBA,R4         ;READ 1ST CHAR
                                                        CMP     R5,R4           ;OK?
                                                        BEQ     5$              ;
                                                        HLT     1               ;1ST CHAR S/B=1!
                                                5$:     MOVB    #15,R5          ;SET EXPECTED
                                                        MOVB    RXBA+1,R4       ;GET 2ND CHAR
                                                        CMP     R5,R4           ;
                                                        BEQ     6$              ;
                                                        HLT     1               ;2ND CHAR S/B=15
                                                6$:
                                                        MOVB    STAT,R5         ;SET EXPECTED=SYNC CHAR
                                                        BIC     #^C<377>,R5     ;CLEAR HIGH BYTE
                                                        BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
                                                        MOV     #4,R3           ;SET TO LOOK AT 4 CHARS
                                                        MOV     #RXBA+2,R1      ;GET RX DATA POINTER
                                                7$:     MOVB    (R1)+,R4        ;GET FOUND DATA
                                                        BIC     #^C<377>,R4     ;CLEAR HIGH BYTE
                                                        CMP     R5,R4           ;
                                                        BEQ     8$              ;
                                                        HLT     1               ;TRANSMITTER IDLED WRONG
                                                8$:     DEC     R3              ;4 CHARS CHECKED?
                                                        BNE     7$              ;BR IF NO
                                                        MSTCLR                  ;INIT DV11
                                                        SCOPI                   ;LOCK ON LINE?
                                                        INC     R0              ;UPDATE LINE POINTER
                                                        DEC     R2              ;4 LINE GROUP DONE?
                                                        BNE     6$              ;BR IF NO
                                                        RTS     PC              ;EXIT FOR NEXT GROUP


                                                ;********************** TEST 3 ******************************
                                                ;*TEST OF TRANSMITTER IDLE FUNCTIONS.
                                                ;*TEST THAT THE TRANSMITTER WILL IDLE
                                                ;*MARK STATE (377) WHEN BIT0 IS
                                                ;*SET IN THE DLE/PROTOCOL REGISTER.
                                                ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
                                                ;;************************************************************
```

F04


```
                                        ;  TEST 3
                                        ;-------------
                                TST3:   MOV     #3,ISTNO
                                        MOV     #TST4,NEXT
                                        MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
                                        MOVB    MASK,A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
                                        MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                        BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
                                100$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
                                        MOVB    MASK,B,MASKX    ;GET MASK
                                        MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                        BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
                                101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
                                        MOVB    MASK,C,MASKX    ;GET MASK
                                        MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                        BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
                                103$:   MOV     #12.,R0         ;LOAD LINE NO.
                                        MOVB    MASK,D,MASKX    ;GET MASKK
                                        MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
                                        BMI     105$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
                                105$:   SCOPE                   ;SCOPE THIS TEST.
                                        ;TEST ENTRANCE.
                                        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
                                        BEQ     .+4             ;#BR IF NOT ASYNC .
                                        RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
                                        MOV     #3$,LOOP        ;SET FOR RETURN IF SW09=1
                                        RAMCLR                  ;CLEAR ALL SEC REGISTERS
                                        MOV     #TXTAB,R5       ;CLEAR
                                        MOV     #RXTAB,R4       ;RECEIVER
                                        CLR     R1              ;AND
                                1$:     CLR     (R5)+           ;TRANSMITTER
                                        CLR     (R4)+           ;CONTROL
                                        INCB    R1              ;TABLES
                                        BPL     1$              ;
                                        MOV     #1,TXBAP        ;LOAD TX
                                        MOVB    #1$,TXBAP+1     ;DTA
                                        MOV     #4,R2           ;SET FOR 4 LINE GROUP
                                3$:     MOV     R0,3DVSRS       ;LOAD LINE NUMBER
                                        CLR     RXBA            ;CLEAR
                                        CLR     RXBA+2          ;RECEIVER
                                        CLR     RXBA+4          ;BUFFER
                                        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
                                        BEQ     80$             ;#BR IF NOT ASYNC.
                                        PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
                                        .BYTE   000,001         ;#REGISTERS
                                        TXBAP                   ;#LOAD FOR ASYNC
                                        -2                      ;#LOAD FOR ASYNC
                                        BR      81$             ;#CONTINUE TEST
                                80$:    PERFORM ,SETREG         ;
                                        .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
                                        SYNC                    ;
```

```
010736  177774                                  -4                              ;
010740  004537  022120          81$:    PERFORM .SETREG
010744     004     005                  .BYTE   004,005                 ;RX BA, RX BC
010746  027560                          RXBA                            ;
010750  177772                          -6                              ;
010752  004537  022120                  PERFORM .SETREG
010756     010     011                  .BYTE   010,011                 ;TX TABLE, RXTABLE
010760  023560                          TXTAB                           ;
010762  030160                          RXTAB                           ;
010764  004537  022120                  PERFORM .SETREG
010770     013     012                  .BYTE   013,012                 ;LINE STATE, LINE PROTOCOL
010772  000004                          BIT2                            ;TX GOOD
010774  000001                          BIT0                            ;IDLE MARK ON BYTE CNT=0
010776  032737  004000  001236          BIT     #ASYNC,STAT             ;#IS THIS ASYNC LINE CARD?
011004  001412                          BEQ     60$                     ;#BR IF NO.
011006  004537  022164                  PERFORM .LOAD.MODE              ;#LOAD PARAMETERS.
011012  020000                          BIT13                           ;#RECEIVER ENABLE
011014  004537  022164                  PERFORM .LOAD.MODE              ;#
011020  015000                          <BIT12+BIT11>+BIT9              ;#8 BITS/PER/CHAR
011022  004537  022164                  PERFORM .LOAD.MODE              ;#
011026  072000                          <BIT14+BIT13+BIT12 +BIT10       ;#
                                                                        ;#9600 BAUD.
011030  000405                          BR      4$
011032  004537  022164          60$:    PERFORM .LOAD.MODE              ;LOAD
011036  034000                          BIT13+BIT12+BIT11               ;MODE AND RX ENABLE
011040  004537  021706                  PERFORM .SETSYNC                ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
011044  005277  170312          4$:     INC     @DVSCR                  ;SET MICRO CPU GO
011050  105777  170306                  TSTB    @DVSCR                  ;WAIT FOR
011054  100375                          BPL     .-4                     ;DVSCR07=1
011056  005004                          CLR     R4
011060  012705  000001                  MOV     #1,R5                   ;SET EXPECTED
011064  113704  027560                  MOVB    RXBA,R4                 ;READ 1ST CHAR
011070  020504                          CMP     R5,R4                   ;OK?
011072  001401                          BEQ     5$
011074  104001                          HLT     1                       ;1ST CHAR S/B=1!
011076  112705  000015          5$:     MOVB    #15,R5                  ;SET EXPECTED
011102  113704  027561                  MOVB    RXBA+1,R4               ;GET 2ND CHAR
011106  020504                          CMP     R5,R4
011110  001401                          BEQ     6$
011112  104001                          HLT     1                       ;2ND CHAR S/B=15
                                6$:
011114  012705  000377                  MOV     #377,R5                 ;SET EXPECTED=MARK CHAR
011120  042705  177400                  BIC     #!C<377>,R5             ;CLEAR HIGH BYTE
011124  143705  001244                  BICB    MASKX,R5                ;CLEAR BITS/PER CHAR MASK.
011130  012703  000004                  MOV     #4,R3                   ;SET TO LOOK AT 4 CHARS
011134  012701  027562                  MOV     #RXBA+2,R1              ;GET RX DATA POINTER
011140  112104                  7$:     MOVB    (R1)+,R4                ;GET FOUND DATA
011142  042704  177400                  BIC     #!C<377>,R4             ;CLEAN HIGH BYTE
011146  020504                          CMP     R5,R4
011150  001401                          BEQ     9$                      ;
011152  104001                          HLT     1                       ;TRANSMITTER IDLED WRONG
011154  005303                  9$:     DEC     R3                      ;4 CHARS CHECKED?
011156  001370                          BNE     7$                      ;BR IF NO
011160  104412                          MSTCLR                          ;INIT DV11
011162  104401                          SCOP1                           ;LOOK ON LINE?
011164  005200                          INC     R0                      ;UPDATE LINE POINTER
```

```
011166  005302          DEC     R2              ;4 LINE GROUP DONE?
011170  001356          BNE     3$              ;BR IF NO
011172  000207          RTS     PC              ;EXIT FOR NEXT GROUP


                        ;********************** TEST 4 ****************************
                        ;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
                        ;*TEST OF THE "STORE/DISCARD" FUNCTIONS.
                        ;*TEST THAT CHARS:
                        ;*      25      STORED
                        ;*      23      DISCARDED
                        ;*      31      STORED
                        ;*      32      DISCARDED
                        ;*SINCE TWO CHRS SHOULD BE THROWN AWAY;
                        ;*THE TX LINE IS SET TO GO BACK TO A MARK STATE;
                        ;*THEREFORE THE RX BUFFER S/B:
                        ;*RXBA  31,25
                        ;*      377,377
                        ;*(AT 8 BITS PER CHAR)
                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                        ;;*****************************************************************

                    ;  TEST 4
                    ;--------------
011174  012737  000004  001336  ST4:    MOV     #4,TSTNO
011202  012737  011442  001216          MOV     #ST5,NEXT
011210  012700  000000          1$:     MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
011214  113737  001405  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
011222  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
011230  100402                          BMI     10C$            ;BR IF LINE CARD NOT TO BE TESTED
011232  004737  011342                  JSR     PC,10S$         ;GO DO THE TEST FOR LINE CARD 1
011236  012700  000004          10C$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
011242  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
011250  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
011256  100402                          BMI     10I$            ;BR IF LINE CARD NOT TO BE TESTED
011260  004737  011342                  JSR     PC,10S$         ;GO DO THE TEST FOR LINE CARD 2
011264  012700  000010          10I$:   MOV     #8.,R0          ;LOAD LINE NUMBER
011270  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
011276  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
011304  100402                          BMI     12$             ;BR IF LINE CARD NOT TO BE TESTED
011306  004737  011342                  JSR     PC,10S$         ;DO THE TEST FOR LINE CARD 3
011312  012700  000014          12$:    MOV     #12.,R0         ;LOAD LINE NO.
011316  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
011324  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
011332  100402                          BMI     13$             ;BR IF LINE CARD NOT TO BE TESTED
011334  004737  011342                  JSR     PC,10S$         ;DO THE TESTS FOR LINE CARD 4
011340  104400          13$:    SCOPE                           ;SCOPE THIS TEST.
011342                  10S$:                                   ;TEST ENTRANCE.
011342  012737  011442  001220          MOV     #1$,LOCK        ;SET RETURN IF SW09=1
011350  104413                          RAMCLR                  ;CLEAR ALL DV11 SEC REGISTERS
011352  105037  023605                  CLRB    TXTAB+25        ;ZERO
011356  105037  023603                  CLRB    TXTAB+23        ;       USED
011362  105037  023611                  CLRB    TXTAB+31        ;                CONTROL
011366  105037  023612                  CLRB    TXTAB+32        ;                        BYTES
011372  105037  024157                  CLRB    TXTAB+377       ;FOR TRANSMITTER
011376  012705  023560                  MOV     #TXBAR,R5       ;LOAD
```

```
011402  012725                          MOV     (PC)+,(R5)+     ;TRANSMITTER
011404     025     023                  .BYTE   25,23           ;DATA
011406  012715                          MOV     (PC)+,(R5)      ;CHARS
011410     031     032                  .BYTE   31,32           ;
011412  112737  000020  030203          MOVB    #BIT4,RXTAB+23  ;DSCARD
011420  112737  000020  030212          MOVB    #BIT4,RXTAB+32  ;DSCARD
011426  105037  030205                  CLRB    RXTAB+25        ;DEFAULT-STORE
011432  105037  030211                  CLRB    RXTAB+31        ;DEFAULT-STORE
011436  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
011442  010077  167724          1$:     MOV     R0,@DVSRS       ;LOAD LINE NO.
011446  005037  027560                  CLR     RXBA            ;MAKE SURE
011452  005037  027562                  CLR     RXBA+2          ;RX BUFFER=0
011456  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
011464  001405                          BEQ     80$             ;#BR IF NOT ASYNC.
011466  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
011472     000     001                  .BYTE   000,001         ;#REGISTERS
011474  022560                          TXBAP                   ;#LOAD FOR ASYNC
011476  177774                          -4                      ;#LOAD FOR ASYNC
011500  000405                          BR      81$             ;#CONTINUE TEST
011502  004537  022120          80$:    PERFORM ,SETREG         ;
011506     000     001                  .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
011510  022556                          SYNC                    ;SYNC CHAR
011512  177772                          -6                      ;2 SYNC, 4 DATA=6
011514                          81$:
011514  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
011522  001406                          BEQ     82$             ;#BR IF NOT ASYNC.
011524  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
011530     004     005                  .BYTE   004,005         ;#REGISTERS
011532  027560                          RXBA                    ;#LOAD FOR ASYNC
011534  177776                          -2                      ;#LOAD FOR ASYNC
011536  000405                          BR      83$             ;#CONTINUE TEST
011540  004537  022120          82$:    PERFORM ,SETREG         ;
011544     004     005                  .BYTE   004,005         ;RXBA, RXBC
011546  027560                          RXBA                    ;
011550  177774                          -4                      ;
011552  004537  022120          83$:    PERFORM ,SETREG         ;
011556     010     011                  .BYTE   010,011         ;TX TABLE, RX TABLE
011560  023560                          TXTAB                   ;
011562  033160                          RXTAB                   ;
011564  004537  022120                  PERFORM ,SETREG         ;
011570     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
011572  000004                          BIT2                    ;TX GO
011574  000001                          BIT0                    ;IDLE MARK ON BYTE COUNTS=0
011576  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
011604  001412                          BEQ     60$             ;#BR IF NO.
011606  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
011612  020000                          BIT13                   ;#RECEIVER ENABLE
011614  004537  022164                  PERFORM ,LOAD.MODE      ;#
011620  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER CHAR
011622  004537  022164                  PERFORM ,LOAD.MODE      ;#
011626  072000                          (BIT14+BIT13+BIT12 +BIT10
                                                                ;#9600 BAUD.
011630  000405                          BR      2$
011632  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
011636  034000                          BIT13+BIT12+BIT11       ;MODE+RX ENABLE
011642  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
```

```
011644  005277  167512          3$:     INC     @DVSCR          ;SET MICRO CPU GO
011650  005005                          CLR     R5              ;DELAY
011652  105777  167504          3$:     TSTB    @DVSCR          ;FOR
011656  100404                          BMI     4$              ;RX INTERRUPT (BIT 7)
011660  104414                          DELAY                   ;WASTE TIME
011662  005205                          INC     R5              ;KEEP COUNTING.
011664  001372                          BNE     3$              ;BR
011666  104000                          HLT                     ;BIT 7 OF DVSCR NOT SET!
011670                          4$:
011670  012705  000025                  MOV     #25,R5          ;SET EXPECTED
011674  113704  027560                  MOVB    RXBA,R4         ;GET FOUND
011700  020504                          CMP     R5,R4           ;OK?
011702  001401                          BEQ     5$              ;
011704  104002                          HLT     2               ;'25' NOT FIRST IN RX BUFFER
011706  012705  000031          5$:     MOV     #31,R5          ;NEXT CHAR S/B '31'
011712  113704  027561                  MOVB    RXBA+1,R4       ;GET NEXT CHAR
011716  120504                          CMPB    R5,R4           ;OK
011720  001401                          BEQ     6$              ;
011722  104002                          HLT     2               ;'31' NOT SECOND IN RX BUFFER
011724  032737  004000  001236  6$:     BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
011732  001016                          BNE     8$              ;#BR IF YES.
011734  112705  000377                  MOVB    #377,R5         ;MARK=377 (NEXT CHAR)

011740  143705  001244                  BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
011744  113704  027562                  MOVB    RXBA+2,R4       ;GET FOUND
011750  120504                          CMPB    R5,R4           ;OK
011752  001401                          BEQ     7$              ;
011754  104002                          HLT     2               ;EITHER TX NOT AT MARK (377) OR RX WRONG.
011756  113704  027563          7$:     MOVB    RXBA+3,R4       ;NEXT CHAR
011762  120504                          CMPB    R5,R4           ;
011764  001401                          BEQ     8$              ;
011766  104002                          HLT     2               ;IF ABOVE PASSED; RX WRONG!
011770  104412                  8$:     MSTCLR                  ;INIT DV11
011772  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
011774  005200                          INC R0                  ;UPDATE LINE POINTER
011776  005302                          DEC     R2              ;4 LINES DONE?
012000  001220                          BNE     1$              ;BR IF NO
012002  000207                          RTS     PC              ;EXIT FOR NEXT GROUP
```

```
;************************ TEST 5 ********************************
;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
;*TEST OF THE "INCLUDE IN BCC  YES/NO FUNCTION"
;*TEST THAT THE CHAR "031" IS INCLUDED
;*IN THE BCC WHEN AT:
;*LRC8
;*CRC16
;*CRC.CCITT
;*THE RECEIVER BCC STARTS AT 0 AND CALCULATES
;*ONLY ONE CHAR (31).
;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
;;*************************************************************

;  TEST 5
;--------------
```

```
2236  012004  012737  000005  001226  TST5:   MOV     #5,TSTNO
2237  012012  012737  012512  001216          MOV     #TST6,NEXT
2238  012020  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2239  012024  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2240  012032  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2241  012034  004737  012122                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2242  012040  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2243  012044  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2244  012052  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2245  012054  004737  012122                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2246  012060  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2247  012064  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2248  012072  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2249  012074  004737  012122                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2250  012100  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2251  012104  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2252  012112  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2253  012114  004737  012122                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2254  012120  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2255  012122                          105$:                           ;TEST ENTRANCE.
2256  012122  012737  012156  001220          MOV     #1$,LOCK        ;SET FOR "LOCK ON LINE".
2257  012130  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
2258  012132  105037  023611                  CLRB    TXTAB+31        ;CLEAT CNTRL BYTE (TX)
2259  012136  112737  000010  030211          MOVB    #BIT3,RXTAB+31  ;SET "INC/BCC" IN RX CNTRL BYTE
2260  012144  112737  000031  022560          MOVB    #31,TXBAP       ;SET TX DATA CHAR
2261  012152  012702  000004                  MOV     #4,R2           ;4 LINE GROUP
2262  012156                          1$:
2263  012156  104412                  54$:    MSTCLR                  ;INIT DV11
2264  012160  010077  167206                  MOV     R0,@DVSRS       ;LOAD LINE NO.
2265  012164  004737  022224                  JSR     PC,DV11ON       ;GOSUB DV11ON
2266  012170  004537  022120                  PERFORM ,SETREG         ;
2267  012174     007     012                  .BYTE   007,012         ;RXBCC, LINE PROTOCOL
2268  012176  000000                          0                       ;START BCC AT 0.
2269  012200  000000                          0                       ;POLONOMINAL SELECT
2270  012202  005277  167154                  INC     @DVSCR          ;SET MICRO CPU GO
2271  012206  105777  167150          65$:    TSTB    @DVSCR          ;WAIT FOR
2272  012212  100375                          BPL     65$             ;BIT 7 OF DVSCR=1
2273  012214  112777  000007  167152          MOVB    #7,@DVSRSH      ;SEL RX BCC REG
2274  012222  017704  167150                  MOV     @DVSRA,R4       ;READ BCC
2275  012226  005037  022116                  CLR     CALBCC          ;SET SOFTWARE BCC=0
2276  012232  012737  000200  022112          MOV     #LRC8,XPOLY     ;SET SOFTWARE POLONOMINAL
2277  012240  004537  021740                  JSR     R5,SIMBCC       ;GO GET SOFTWARE BCC
2278  012244  000010                          8.                      ;SHIFTS
2279  012246  000031                          31                      ;DATA
2280  012250  000000                          0                       ;PREVIOUS BCC
2281  012252  013705  022116                  MOV     CALBCC,R5       ;GET SOFTWARE BCC
2282  012256  020504                          CMP     R5,R4           ;SOFT=HARD?
2283  012260  001401                          BEQ     .+4             ;
2284  012262  104004                          HLT     4               ;RECEIVER BCC INCORRECT!
2285  012264  104412                  66$:    MSTCLR                  ;INIT DV11
2286  012266  010077  167100                  MOV     R0,@DVSRS       ;LOAD LINE NO.
2287  012272  004737  022224                  JSR     PC,DV11ON       ;GOSUB DV11ON
2288  012276  004537  022120                  PERFORM ,SETREG         ;
2289  012302     007     012                  .BYTE   007,012         ;RXBCC, LINE PROTOCOL
2290  012304  000000                          0                       ;START BCC AT 0.
2291  012306  000010                          BIT3                    ;POLONOMINAL SELECT
```

```
 2292  012310  005277  167046                 INC     @DVSCR          ;SET MICRO CPU GO
 2293  012314  105777  167042         67$:    TSTB    @DVSCR          ;WAIT FOR
 2294  012320  100375                         BPL     67$             ;BIT 7 OF DVSCR=1
 2295  012322  112777  000007  167044         MOVB    #7,@DVSRSH      ;SEL RX BCC REG
 2296  012330  017704  167042                 MOV     @DVSRA,R4       ;READ BCC
 2297  012334  005037  022116                 CLR     CALBCC          ;SET SOFTWARE BCC=0
 2298  012340  012737  120001  022112         MOV     #CRC16,XPOLY    ;SET SOFTWARE POLONOMINAL
 2299  012346  004537  021740                 JSR     R5,SIMBCC       ;GO GET SOFTWARE BCC
 2300  012352  000010                         8.                      ;SHIFTS
 2301  012354  000031                         31                      ;DATA
 2302  012356  000000                         0                       ;PREVIOUS BCC
 2303  012360  013705  022116                 MOV     CALBCC,R5       ;GET SOFTWARE BCC
 2304  012364  020504                         CMP     R5,R4           ;SOFT=HARD?
 2305  012366  001401                         BEQ     .+4             ;
 2306  012370  104004                         HLT     4               ;RECEIVER BCC INCORRECT!
 2307  012372  104412                 68$:    MSTCLR                  ;INIT DV11
 2308  012374  010077  166772                 MOV     R0,@DVSRS       ;LOAD LINE NO.
 2309  012400  004737  022224                 JSR     PC,DV11ON       ;GOSUB DV11ON
 2310  012404  004537  022120                 PERFORM ,SETREG         ;
 2311  012410     007     012                 .BYTE   007,012         ;RXBCC, LINE PROTOCOL
 2312  012412  000000                         0                       ;START BCC AT 0.
 2313  012414  000030                         BIT4+BIT3                       ;POLONOMINAL SELECT
 2314  012416  005277  166740                 INC     @DVSCR          ;SET MICRO CPU GO
 2315  012422  105777  166734         69$:    TSTB    @DVSCR          ;WAIT FOR
 2316  012426  100375                         BPL     69$             ;BIT 7 OF DVSCR=1
 2317  012430  112777  000007  166736         MOVB    #7,@DVSRSH      ;SEL RX BCC REG
 2318  012436  017704  166734                 MOV     @DVSRA,R4       ;READ BCC
 2319  012442  005037  022116                 CLR     CALBCC          ;SET SOFTWARE BCC=0
 2320  012446  012737  102010  022112         MOV     #CRC.CCITT,XPOLY        ;SET SOFTWARE POLONOMINAL
 2321  012454  004537  021740                 JSR     R5,SIMBCC       ;GO GET SOFTWARE BCC
 2322  012460  000010                         8.                      ;SHIFTS
 2323  012462  000031                         31                      ;DATA
 2324  012464  000000                         0                       ;PREVIOUS BCC
 2325  012466  013705  022116                 MOV     CALBCC,R5       ;GET SOFTWARE BCC
 2326  012472  020504                         CMP     R5,R4           ;SOFT=HARD?
 2327  012474  001401                         BEQ     .+4             ;
 2328  012476  104004                         HLT     4               ;RECEIVER BCC INCORRECT!
 2329  012500  104401                         SCOP1                   ;LOCK ON SELECTED LINE?
 2330  012502  005200                         INC     R0              ;UPDATE LINE NO. POINTER
 2331  012504  005302                         DEC     R2              ;ALL LINES DONE?
 2332  012506  001223                         BNE     1$              ;BR IF NO
 2333  012510  000207                         RTS     PC              ;EXIT FOR NEXT GROUP
 2334
 2335
 2336                                         ;************************ TEST 6 *******************************
 2337                                         ;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
 2338                                         ;*TEST OF THE "NEXT MODE" FUNCTION.
 2339                                         ;*TEST THAT THE NEXT MODE REGISTER (015)
 2340                                         ;*CAN BE LOADED FROM THE CONTROL BYTES.
 2341                                         ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
 2342                                         ;:***********************************************************
 2343
 2344                                 ;  TEST 6
 2345                                 ;--------------
 2346  012512  012737  000006  001226 TST6:   MOV     #6,TSTNO
 2347  012520  012737  012772  001216         MOV     #TST7,NEXT
```

```
2348  012526  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2349  012532  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2350  012540  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2351  012542  004737  012630                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2352  012546  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2353  012552  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2354  012560  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2355  012562  004737  012630                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2356  012566  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2357  012572  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2358  012600  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2359  012602  004737  012630                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2360  012606  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2361  012612  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2362  012620  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2363  012622  004737  012630                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2364  012626  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2365  012630                          105$:                           ;TEST ENTRANCE.
2366  012630  012737  012662  001220          MOV     #1$,LOCK        ;SET IF SW09=1
2367  012636  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
2368  012640  005003                          CLR     R3              ;SET EXPECT RESULTS OF MODE REGISTER
2369  012642  005001                          CLR     R1              ;SET CNTRL BYTE MODE
2370  012644  012702  000004                  MOV     #4,R2           ;SET FOR4 LINE GROUP
2371  012650  012737  000031  022560          MOV     #31,TXBAP       ;LOAD TX DATA CHAR
2372  012656  105037  023611                  CLRB    TXTAB+31        ;ZERO TX CNTRL BYTE
2373  012662  110137  030211          1$:     MOVB    R1,RXTAB+31     ;LOAD RX CNTRL BYTE (WITH MODE)
2374  012666  004737  022224                  JSR     PC,DV11ON       ;GO SETUP ROUTINE THINGS (BA,BC,LS,LP)
2375  012672  004537  022120                  PERFORM ,SETREG         ;ZERO
2376  012676     015     015                  .BYTE   015,015         ;RECEIVER
2377  012700  000000                          0                       ;MODE
2378  012702  000000                          0                       ;REGISTER
2379  012704  005277  166452                  INC     @DVSCR          ;SET MICRO CPU GO
2380  012710  105777  166446                  TSTB    @DVSCR          ;WAIT FOR
2381  012714  100375                          BPL     .-4             ;DVSCR07=1
2382  012716  112777  000015  166450          MOVB    #15,@DVSRSH     ;SEL RX MODE REGISTER
2383  012724  017704  166446                  MOV     @DVSRA,R4       ;READ MODE REGISTER
2384  012730  010305                          MOV     R3,R5           ;SET EXPECTED MODE
2385  012732  020504                          CMP     R5,R4           ;
2386  012734  001401                          BEQ     3$              ;
2387  012736  104002                          HLT     2               ;RX MODE REGISTER WRONG
2388  012740  104412                  3$:     MSTCLR                  ;INIT DV11
2389  012742  005203                          INC     R3              ;UPDATE EXPECTED MODE
2390  012744  062701  000040                  ADD     #BIT5,R1        ;UPDATE LOADED (NEXT) MODE
2391  012750  105701                          TSTB    R1              ;ALL DONE?
2392  012752  001743                          BEQ     1$              ;BR IF NO
2393  012754  005001                          CLR     R1              ;ZERO LOAD MODE
2394  012756  005003                          CLR     R3              ;ZERO EXPECTED MODE
2395  012760  104401                          SCOP1                   ;LOCK ON SELECTED LINE?
2396  012762  005200                          INC     R0              ;UPDATE LINE POINTER
2397  012764  005302                          DEC     R2              ;4 LINE GROUP DONE?
2398  012766  001335                          BNE     1$              ;BR IF NO
2399  012770  000207                          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
2400
2401
2402                                  ;********************** TEST 7 ******************************
2403                                  ;*TEST OF TRANSMITTER CONTROL BYTE OPERATIONS.
```

```
2404                                                    ;*TEST OF THE "SEND DLE NEXT" FUNCTION
2405                                                    ;*THE "TRANSMITTER DLE REGISTER" IS LOADED
2406                                                    ;*WITH CHAR "025". THE RECEIVER IS SET TO RECEIVE
2407                                                    ;*ONE CHAR (THE DLE) SO RX BA S/B=25
2408                                                    ;*THE TRANSMITTER DATA CHAR IS "031".
2409                                                    ;;*****************************************************************
2410
2411                                            ;  TEST 7
2412                                            ;--------------
2413  012772  012737  000007  001226  TST7:     MOV     #7,TSTNO
2414  013000  012737  013244  001216            MOV     #TST10,NEXT
2415  013006  012700  000000                    MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2416  013012  013737  001416  001236            MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2417  013020  100402                            BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2418  013022  004737  013110                    JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2419  013026  012700  000004          100$:     MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2420  013032  013737  001420  001236            MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2421  013040  100402                            BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2422  013042  004737  013110                    JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2423  013046  012700  000010          101$:     MOV     #8.,R0          ;LOAD LINE NUMBER
2424  013052  013737  001422  001236            MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2425  013060  100402                            BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2426  013062  004737  013110                    JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2427  013066  012700  000014          102$:     MOV     #12.,R0         ;LOAD LINE NO.
2428  013072  013737  001424  001236            MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2429  013100  100402                            BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2430  013102  004737  013110                    JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2431  013106  104400                  103$:     SCOPE                   ;SCOPE THIS TEST.
2432  013110                          105$:                             ;TEST ENTRANCE.
2433  013110  012737  013144  001220            MOV     #1$,LOCK        ;SET IF SW09=1
2434  013116  104413                            RAMCLR                  ;CLEAR ALL SEC REGISTERS
2435  013120  112737  000002  023611            MOVB    #BIT1,TXTAB+31  ;SET "SND/DLE" IN CNTRL BYTE
2436  013126  112737  000031  022560            MOVB    #31,TXBAP       ;SET TX DATA CHAR
2437  013134  105037  030211                    CLRB    RXTAB+31        ;ZERO RX CNTRL BYTE
2438  013140  012702  000004                    MOV     #4,R2           ;SET FOR 4 LINE GROUP
2439  013144  004737  022224          1$:       JSR     PC,DV11ON       ;SET ROUTINE THING
2440  013150  004537  022120                    PERFORM ,SETREG         ;
2441  013154     012     012                    .BYTE   012,012         ;LINE PROTOCOL REG
2442  013156  012400                            25*400                  ;PUT 25
2443  013160  012400                            25*400                  ;IN HIGH BYTE
2444  013162  005037  027560                    CLR     RXBA            ;ZERO RX BUFFER
2445  013166  005277  166170                    INC     @DVSCR          ;SET MICRO CPU GO
2446  013172  105777  166164                    TSTB    @DVSCR          ;WAIT FOR
2447  013176  100375                            BPL     .-4             ;DVSCR07=1
2448  013200  013704  027560                    MOV     RXBA,R4         ;GET DATA
2449  013204  012705  000025                    MOV     #25,R5          ;LOAD DLE INTO EXPECTED
2450  013210  020504                            CMP     R5,R4           ;
2451  013212  001401                            BEQ     2$              ;
2452  013214  104003                            HLT     3               ;25 (DLE) NOT 1ST IN RX BUFFER
2453  013216  104412                  2$:       MSTCLR                  ;INIT DV11
2454  013220  112777  000012  166146            MOVB    #12,@DVSRSH     ;SEL LINE PROTOCOL
2455  013226  005077  166144                    CLR     @DVSRA          ;ZERO IT.
2456  013232  104401                            SCOP1                   ;LOCK ON SELECTED LINE?
2457  013234  005200                            INC     R0              ;UPDATE LINE POINTER
2458  013236  005302                            DEC     R2              ;4 LINE GROUP DONE?
2459  013240  001341                            BNE     1$              ;BR IF NO
```

```
013242  000207                          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES


                                        ;************************ TEST 10 ******************************
                                        ;*TEST OF BOTH BITS 6 AND 5  OF THE LINE PROTOCOL REG.
                                        ;*TEST THAT NEITHER THE TRANSMITTER OR RECEIVER
                                        ;*CONTROL BYTES ARE USED AND THAT
                                        ;*THE CHARS ARE AUTOMATICALLY INCLUDED INTO THE BCC.
                                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                        ;;*************************************************************

                                ;  TEST 10
                                ;--------------
013244  012737  013410  001226  TST10:  MOV     #10,TSTNO
013252  012737  013540  001216          MOV     #TST11,NEXT
013260  012700  000000                  MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
013264  013701  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
013272  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
013274  004737  013362                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
013300  012700  000004          100$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
013304  013701  001420  001236          MOV     L04.07.STAT     ;LOAD LINE CARD STATUS INTO STAT
013312  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
013314  004737  013362                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
013320  012700  000010          101$:   MOV     #8,,R0          ;LOAD LINE NUMBER
013324  013701  001422  001236          MOV     L08.11.STAT     ;LOAD LINE CARD STATUS INTO STAT
013332  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
013334  004737  013362                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
013340  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
013344  013701  001424  001236          MOV     L12.15.STAT     ;LOAD LINE CARD STATUS
013352  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
013354  004737  013362                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
013360  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
013362                          105$:                           ;TEST ENTRANCE.
013362  012737  013412  001220          MOV     #1$,LOOK        ;SET RETURN IF SW09=1
013370  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
013372  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
013376  112737  000340  023575          MOVB    #BIT7+BIT6+BIT5,XTAB+15
013404  113737  023575  030175          MOVB    XTAB+15,RXTAB+15        ;SET RX AND TX NEXT MODE=7
013412  004737  022224          1$:     JSR     PC,DV11ON       ;SET UP MINOR DETAILS
013416  112777  000012  165750          MOVB    #12,@DVSRSH     ;GET LINE PROTOCOL REGISTER
013424  052777  000140  165744          BIS     #BIT6+BIT5,@DVSRA       ;SET TX AND RX DDCMP MODE
013432  112737  000015  022560          MOVB    #15,TXBAP       ;LOAD DATA CHAR
013440  005277  165716                  INC     @DVSCR          ;SET MICRO CPU GO
013444  105777  165712                  TSTB    @DVSCR          ;WAIT FOR
013450  100375                          BPL     .-4             ;DVSCR07=1
013452  005005                          CLR     R5              ;EXPECTED=0
013454  112777  000014  165712          MOVB    #14,@DVSRSH     ;GET TX MODE REG
013462  017704  165710                  MOV     @DVSRA,R4       ;READ MODE REG
013466  001401                          BEQ     .+4             ;S/B=0
013470  104001                          HLT     1               ;TX MODE REG S/B=0
013472  105277  165676                  INCB    @DVSRSH         ;GET RX MODE REG
013476  017704  165674                  MOV     @DVSRA,R4       ;READ RX MODE
013502  001401                          BEQ     3$              ;
013504  104001                          HLT     1               ;RX MODE REG S/B=0
013506  112777  000006  165660  3$.     MOVB    #6,@DVSRSH      ;TX BCC REG.
013514  017704  165656                  MOV     @DVSRA,R4       ;READ TXBCC REG.
```

```
                                        BNE     4$              :S/B NOT=0
                                        HLT     0               :NOTHING IN BCC!! (T)
                                        INCB    @DVSPSH         :GET RX BCC REG
                                4$:     MOV     @DVSRH,R4       :READ INTO R4
                                        BNE     5$              :
                                        HLT     0               :NOTHING IN RXBCC!!
                                5$:     MSTCLR                  :INIT DV11
                                        SCOPI                   :LOCK ON SELECTED LINE*
                                        INC     R0              :UPDATE LINE POINTER
                                        DEC     R2              :4 LINES DONE*
                                        BNE     1$              :BR IF NO
                                        RTS     PC              :EXIT FOR NEXT 4 LINE GROUP


                                        ;************************ TEST 11 *********************************
                                        ;*TEST OF BIT 1 IN LINE PROTOCOL PARAMETER REGISTER.
                                        ;*TEST OF "STRIP LEADING SYNCS".
                                        ;*TEST TO XMIT 10. SYNC CHARS, 1 NON-SYNC, AND 2 SYNCS
                                        ;*(13 CHARS TOTAL).
                                        ;*DV11 SHOULD RECEIVE 1 NON-SYNC,AND TWO SYNCS.
                                        ;*(3 CHARS TOTAL).
                                        ;*THE TEN LEADING SYNCS S B STRIPPED
                                        ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
                                        ;;*************************************************************

                                ;  TEST 11
                                ;--------------
013354  012737  000011  001226  TST11:  MOV     #11,TSTNO
013362  012737  014166  001216          MOV     #TST12,NEXT
013370  012700  000000                  MOV     #0.,R0          :PLACE LINE NUMBER INTO R0
013374  113737  001406  001244          MOVB    MASK.A,MASKX    :PLACE "MASK"FOR CHARS INTO MASKX
013402  013737  001416  001236          MOV     L00.03,STAT     :LOAD LINE CARD STATUS INTO STAT
013410  100402                          BMI     100$            :BR IF LINE CARD NOT TO BE TESTED
013412  004737  013722                  JSR     PC,105$         :GO DO THE TEST FOR LINE CARD 1
013416  012700  000004          100$:   MOV     #4.,R0          :PLACE LINE NUMBER INTO R0
013422  113737  001407  001244          MOVB    MASK.B,MASKX    :GET MASK
013430  013737  001420  001236          MOV     L04.07,STAT     :LOAD LINE CARD STATUS INTO STAT
013436  100402                          BMI     101$            :BR IF LINE CARD NOT TO BE TESTED
013440  004737  013722                  JSR     PC,105$         :GO DO THE TEST FOR LINE CARD 2
013444  012700  000010          101$:   MOV     #8.,R0          :LOAD LINE NUMBER
013450  113737  001410  001244          MOVB    MASK.C,MASKX    :GET MASK
013456  013737  001422  001236          MOV     L08.11,STAT     :LOAD LINE CARD STATUS INTO STAT
013464  100402                          BMI     102$            :BR IF LINE CARD NOT TO BE TESTED
013466  004737  013722                  JSR     PC,105$         :DO THE TEST FOR LINE CARD 3
013472  012700  000014          102$:   MOV     #12.,R0         :LOAD LINE NO.
013476  113737  001411  001244          MOVB    MASK.D,MASKX    :GET MASKK
013504  013737  001424  001236          MOV     L12.15,STAT     :LOAD LINE CARD STATUS
013512  100402                          BMI     103$            :BR IF LINE CARD NOT TO BE TESTED
013514  004737  013722                  JSR     PC,105$         :DO THE TESTS FOR LINE CARD 4
013520  104400                  103$:   SCOPE                   :SCOPE THIS TEST.
013522                          105$:   ;TEST ENTRANCE.
013522  032737  004000  001236          BIT     #ASYNC,STAT     :#IS THIS AN ASYNC LINE CARD?
013530  001401                          BEQ     .+4             :#BR IF NOT ASYNC LINE CARD.
013532  000207                          RTS     PC              :#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
013534  012737  014004  001220          MOV     #2$,LOOP        :SET RETURN IF SWO9=1
013542  104413                          RAMCLR                  :CLEAR ALL SEC REGISTERS
```

```
                                                MOV     #4,R2           ;4 LINE GROUP
                                                MOV     #0,.R4          ;LOAD TX BUFFER
                                                MOV     #TXBAP,R5       ;WITH
                                        1$:     MOVB    STA*,.R5+       ;8. SYNC
                                                DEC     R4              ;CHARS
                                                BNE     1$              ;
                                                MOVB    #5,.R5)+        ;LOAD "NON-SYNC" CHAR
                                                MOVB    STAT,.R5)+      ;SYNC
                                                MOVB    STAT,.R5)+      ;SYNC
                                        3$:     JSR     PC,DV11M        ;MINOR DETAIL SETUP
                                                CLR     RXBA            ;CLEAR
                                                CLR     RXBA+2          ;RX BUFFER
                                                .BYTE   SETREG          ;
                                                .BYTE   001,005         ;TX PRINCIPLE BC, RX BC
                                                .EVEN                   ;
                                                MOVB    #12,DVSSR       ;LINE PROTOCOL REG
                                                MOVB    #BI16+BITB+BIT1+BIT0,DVSRA
                                                MOV     #TX+RX DDCMP, STRIP SYNC, IDLE MARK
                                                BPL     .-2             ;WAIT FOR
                                                BIT     #3,DVSCR        ;DVSCR07=1
                                                BEQ     .-4             ;
                                                MOV     #5,R5           ;1ST DATA S/B=15
                                                MOVB    RXBA,R4         ;GET DATA
                                                BIC     #^C377,R4       ;STRIP HIGH BYTE
                                                CMP     R5,R4           ;OK
                                                BEQ     3$              ;
                                                HALT                    ;1ST CHAR NOT=15
                                        33$:    MOVB    STAT,R5         ;LOAD SYNC INTO EXPECTED
                                                BIC     #^C377,R5       ;STRIP HIGH BYTE
                                                MOVB    #BITB,R5        ;CLEAR BITS/PER CHAR MASK.
                                                MOVB    RXBA+1,R4       ;GET SYNC CHAR
                                                BIC     #^C377,R4       ;STRIP HIGH BYTE
                                                CMP     R5,R4           ;WERE *ONLY* LOADING SYNC STRIPPED
                                                BEQ     4$              ;
                                                HALT                    ;1ST *LEADING* SYNCS ARE TO BE STRIPPED
                                        4$:     MOVB    RXBA+2,R4       ;GET 3RD CHAR
                                                BIC     #^C377,R4       ;STRIP HIGH BYTE
                                                CMP     R5,R4           ;OK
                                                BEQ     5$              ;
                                                HALT                    ;1ST *LEADING* SYNCS ARE TO BE STRIPPED
                                        5$:     MSTCLR                  ;INIT DV11
                                                SCOPI                   ;LOOK ON SELECTED LINES
                                                INC     R0              ;UPDATE LINE POINTER
                                                DEC     R2              ;4 LINE GROUP DONE
                                                BNE     2$              ;BR IF NO
                                                RTS     PC              ;EXIT FOR NEXT GROUP


                        ;********************** TEST 12 ******************************
                        ;*TEST OF BIT09 OF D/SCR.
                        ;*TEST OF "RECEIVER INTERUPT RESPONSE COMPLETE"
                        ;*TEST TO RECEIVE 6 CHARS INTERUPTING
                        ;*ON EACH CHAR HAVING IT BEING A "SPECIAL CHAR"
                        ;*AND THE RESTARTING THE MICRO PROCESSOR AFTER EACH
                        ;*INTERUPT FLAG.
                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
```

```
                                                ;;*****************************************************************
                                        ;  TEST 12
                                        ;--------------
                                TST12:  MOV     #12,TSTNO
                                        MOV     #TST13,NEXT
                                        MOV     #0,R0           ;PLACE LINE NUMBER INTO R0
                                        MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                        BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
                                100$:   MOV     #4,R0           ;PLACE LINE NUMBER INTO R0
                                        MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                        BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
                                101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
                                        MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
                                        BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
                                102$:   MOV     #12.,R0         ;LOAD LINE NO.
                                        MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
                                        BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
                                        JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
                                103$:   SCOPE                   ;SCOPE THIS TEST.
                                105$:                           ;TEST ENTRANCE.
                                        MOV     #66$,LOOK
                                        RAMCLR                  ;CLEAR ALL SEC REGISTERS
                                        CLR     R1              ;
                                        MOV     #4,R2           ;SET FOR 4 LINE GROUP
                                        CLR     R5              ;CAD
                                        MOV     #TXBAF,R4       ;TX DATA
                                1$:     MOVB    R5,(R4)+        ;
                                        INC     R5              ;
                                        CMP     #7,R5           ;
                                        BNE     1$              ;
                                        MOV     #6,R5           ;FILL
                                        MOV     #RXTAB,R4       ;THE
                                2$:     MOVB    #BIT0,(R4)+     ;RX CNTRL TABLE
                                        DEC     R5              ;WITH SPECIAL
                                        BNE     2$              ;CHAR BITS
                                66$:    JSR     PC,DV11ON       ;SET UP DV11
                                        PERFORM  SETREG         ;
                                        .BYTE   001,005         ;TX PRINCIPLE BC, RX BC
                                        -8.                     ;
                                        -6                      ;
                                        MOVB    #12,@DVSR5H     ;LINE PROTOCOL
                                        BIS     #BIT6,@DVSRA    ;TX DDCMP
                                        MOV     #340,PS         ;LOCK OUT INTERUPTS
                                        MOV     #67$,@DVRVEC    ;SET RX INTER VECTOR.
                                        MOV     #340,@DVRLVL    ;SET PRIO. LEVEL TO 7
                                        BIS     #BIT6+BIT0,@DVSCR
                                                                ;SET RX IE AND DCPL BC.
                                        CLR     R3              ;DATA IMAGE
                                3$:     CLR     69$             ;STALL COUNTER
                                        CLR     PS              ;ENABLE INTERUPTS
                                        DELAY                   ;WASTE TIME
                                        INC     69$             ;UPDATE STALL
```

```
014442 000764          BNE     .-12            ;BR  BACK
                       HLT                     ;NO INTERUPT OCCURED.
                       CMP     -(SP),-(SP      ;FAKE AN INTERUPT
                 67$:  MOV     R0,R5           ;LOAD LINE NO.
                       SWAB    R5              ;PUT IN HIGH BYTE
                       BIS     R3,R5           ;SET DATA
014450 177704 164662   MOV     @DVRIC,R4       ;READ FOUND RESULT
014454 020504          CMP     R5,R4           ;
014456 001401          BEQ     4$              ;
014460 000001          HLT     1               ;DVRIC WRONG!
014462 052777 000400 164642 4$: BIS     #BIT8,@DVSCR    ;SET "RECEIVER INT RESP COMP"
014470 005203          INC     R3              ;UPDATE DATA IMAGE
014472 020306          CMP     #6,R3           ;ALL DONE?
014474 001403          BEQ     70$             ;BR IF YES
014476 012716 014446   MOV     #3$,(SP)        ;SET RETURN
014502 000002          RTI                     ;CONTINUE
014504 042777 000100 164616 70$: BIC     #BIT6,@DVSCR    ;NO MORE INTERUPTS.
014512 012716 014552   MOV     #69$,(SP)       ;SET RETURN
014516 000002          RTI                     ;CONT.
014520 105777 164604   69$:   TSTB    @DVSCR          ;WAIT FOR
014524 100375          BPL     .-4             ;DVSCR07=1
014526 010005          MOV     R0,R5           ;LOAD LINE NO.
014530 000305          SWAB    R5              ;PUT IN HIGH BYTE
014532 052705 040005   BIS     #BIT14+5,R5     ;"BYTE CNT WARNING + DATA"
014536 017704 164572   MOV     @DVRIC,R4       ;READ RESULTS
014542 020504          CMP     R5,R4           ;
014544 001401          BEQ     5$              ;
014546 000001          HLT     1               ;DVRIC WRONG!
014550 012701 027560   5$:     MOV     #RXBA,R1        ;GET RX POINTER
014554 005005          CLR     R5              ;
014556 005004          CLR     R4              ;
014560 112104          6$:     MOVB    (R1)+,R4        ;GET RX DATA (INCORE)
014562 020504          CMP     R5,R4           ;
014564 001401          BEQ     7$              ;
014566 000001          HLT     1               ;RECEIVER PLACED DATA IN CORE WRONG
014570 005205          7$:     INC     R5              ;UPDATE DATA IMAGE
014572 022705 000006   CMP     #6,R5           ;ALL DONE?
014576 001370          BNE     6$              ;BR IF NO
014600 104412          MSTCLR                  ;INIT DV11
014602 104401          SCOPE                   ;LOCK ON CURRENT LINE?
014604 005200          INC     R0              ;UPDATE LINE POINTER
014606 005302          DEC     R2              ;4 LINE GROUP DONE?
014610 001247          BNE     66$             ;BR IF NO
014612 000207          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
014614 000000          69$:    0
```

```
;********************** TEST 13 ********************************
;*TEST OF THE "MARKED BYTE COUNT".
;*TEST THAT WHEN BIT15=0 FOR THE RECEIVER THAT
;*BITS 13,14,15 OF LINE STATE OCCUR IN
;*THE RECEIVER MODE BITS REGISTER.
;*TEST THAT WHEN BIT15=0 FOR THE TRANSMITTER
;*THAT BITS 13,14,15 OF THE LINE PROGRESS REGISTER
;*OCCUR INT THE TRANSMITTER MODE REG.
;*ALSO VERIFY THAT BIT10=1 IN LINE STATE MARKS
```

```
                                        ;*RECEIVER "EXPECT THE BCC"
                                        ;*AND THAT BIT10 IN LINE PROGRESS TELL TX TO SEND BCC.
                                        ;*THIS TEST USES CRC-CCITT FOR THE POLYNOMIAL
                                        ;**NOTE*: IF LINE CARD IS SET FOR OTHER THAN "8" BITS
                                        ;*THE TEST WILL *NOT* BE EXECUTED ON THAT LINE CARD!!
                                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                        ;;*************************************************************

                                ;  TEST 13
                                ;--------------
014650  012737  000013  001226  TST13:  MOV     #13,TSTNO
014656  012737  015442  001216          MOV     #TST14,NEXT
014664  012700  000000                  MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
014670  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
014676  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
014700  004737  014766                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
014704  012700  000004          100$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
014710  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
014716  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
014720  004737  014766                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
014724  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
014730  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
014736  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
014740  004737  014766                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
014744  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
014750  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
014756  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
014760  004737  014766                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
014764  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
014766                          105$:                           ;TEST ENTRANCE.
014766  012737  015114  001220          MOV     #65$,LOOK       ;SET RETURN IF SW09=1
014774  032737  001400  001236          BIT     #BIT9+BIT8,STAT ;"8 BITS/PER/CHAR"?
015002  001401                          BEQ     .+4             ;BR IF YES
015004  000207                          RTS     PC              ;EXIT TEST FOR THIS LINE CARD!
015006  104413                          RAMCLR                  ;CLEAR ALL SECONDARY REGISTERS
015010  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
015014  012704  000012                  MOV     #10.,R4         ;LOAD 10 BYTES
015020  012705  023560                  MOV     #TXTAB,R5       ;WITH
015024  112725  000010          1$:     MOVB    #BIT3,(R5)+     ;INC BCC
015030  005304                          DEC     R4              ;
015032  001374                          BNE     1$              ;
015034  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
015040  013704  001436                  MOV     STAT,R4         ;SYNC
015044  042704  177400                  BIC     #^C<377>,R4     ;CONTROL
015050  060405                          ADD     R4,R5           ;BYTE
015052  105015                          CLRB    (R5)            ;
015054  012705  022560                  MOV     #TXBAP,R5       ;LOAD
015060  005004                          CLR     R4              ;DATA
015062  110425                  2$:     MOVB    R4,(R5)+        ;INTO
015064  005204                          INC     R4              ;TRANSMITTER BUFFER
015066  022704  000013                  CMP     #11.,R4         ;
015072  001373                          BNE     2$              ;
015074  012705  030160                  MOV     #RXTAB,R5       ;LOAD
015100  012704  000011                  MOV     #10.,R4         ;10
015104  112725  000010          3$:     MOVB    #BIT3,(R5)+     ;RECEIVER
015110  005304                          DEC     R4              ;CONTROL BYTES
```

```
                                                BNE     3$              ;WITH "INC/BCC"
                                        164252          MOV     R0,@DVSRS       ;LOAD LINE NO.
                                        004000  001236  BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
                                                BEQ     80$             ;#BR IF NOT ASYNC.
                                        022120          PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
                                           001          .BYTE   000,001         ;#REGISTERS
                                                TXBAP                   ;#LOAD FOR ASYNC
                                                (-10.)-BIT15                    ;#LOAD FOR ASYNC
                                                BR      81$             ;#CONTINUE TEST
                                        022120          PERFORM ,SETREG         ;
                                           001          .BYTE   000,001         ;TX PRINCIPLE BA, BC
                                                SYNC                    ;
                                                (-12.)-BIT15            ;MARKED BC!
                                        022120          PERFORM ,SETREG         ;
                                           005          .BYTE   004,005         ;RX BA, BC
                                                RXBA                    ;
                                                (-10.)-BIT15            ;MARKED BC!
                                        022120          PERFORM ,SETREG         ;
                                           011          .BYTE   010,011         ;TX TABLE, RX TABLE
                                                TXTAB
                                                RXTAB
                                        022120          PERFORM ,SETREG
                                           013          .BYTE   012,013         ;LINE PROTOCOL, LINE STATE
                                                BIT4+BIT3+BIT0  ;CRC.CCITT, IDLE MARK
                                                BIT15+BIT14+BIT13+BIT10+BIT2
                                        022120          PERFORM ,SETREG         ;MODE 7, , TXGO
                                           017          .BYTE   016,017         ;LINE PROGRESS REC, REC CNTR STORE
                                                BIT15+BIT14+BIT13+BIT10 ;NEXT MODE=7
                                                0                       ;ZERO
                                        004000  001236  BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
                                                BEQ     60$             ;#BR IF NO.
                                        022164          PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
                                                BIT13                   ;#RECEIVER ENABLE
                                        022164          PERFORM ,LOAD.MODE      ;#
                                                (BIT12+BIT11)+BIT9      ;#9 BITS PER CHAR
                                        022164          PERFORM ,LOAD.MODE      ;#
                                                (BIT14+BIT13+BIT12)+BIT10
                                                                        ;#9600 BAUD.
                                                BR      61$
                                        022164  60$:     PERFORM ,LOAD.MODE      ;LOAD
                                                BIT13+BIT12+BIT11       ;MODE AND RECV ENABLE
                                        021706          PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
                                        005277  164062  61$:    INC     @DVSCR          ;SET MICRO CPU GO
                                        105777  164056          TSTB    @DVSCR          ;WAIT FOR
                                        100375                  BPL     .-4             ;DVSCR07=1
                                        017704  164054          MOV     @DVRIC,R4       ;READ RESULT
                                                MOV     R0,R5           ;LOAD LINE NUMBER
                                                SWAB    R5              ;PUT IN HIGH BYTE
                                        052705  050000          BIS     #BIT14+BIT12,R5 ;SET "BLOCK CHECK COMPLETE"
                                                CMP     R5,R4           ;RIC OK
                                                BEQ     4$              ;
                                                HLT     1               ;DVRIC INCORRECT
                                        112777  000014  164036  4$:     MOVB    #14,@DVSRSH     ;GET TX MODE REGISTER
                                        017704  164034          MOV     @DVSRA,R4       ;
                                        012705  000007          MOV     #BIT2+BIT1+BIT0,R5      ;WAS NEXT MODE PICKED UP?
                                                CMP     R5,R4           ;
```

```
015350  001401                          BEQ     5$              ;
015352  104001                          HLT     1               ;NEXT MODE INCORRECT ' S/B=7
015354  105277  164014          5$:     INCB    @DVSRSH         ;SEL RX MODE REG
015360  017704  164012                  MOV     @DVSRA,R4       ;READ
015364  020504                          CMP     R5,R4           ;
015366  001401                          BEQ     6$              ;
015370  104001                          HLT     1               ;RX MODE REGISTER INCORRECT. S B=7
015372  005005          6$:             CLR     R5              ;SET EXPECTED=0
015374  112777  000006  163772          MOVB    #6,@DVSRSH      ;SEL TX BCC REG
015402  017704  163770                  MOV     @DVSRA,R4       ;READ
015406  001401                          BEQ     7$              ;BR IF=0
015410  104001                          HLT     1               ;IF BCC WAS SENT; BCC S/B=0
015412  105277  163756          7$:     INCB    @DVSRSH         ;SEL RX BCC REG
015416  017704  163754                  MOV     @DVSRA,R4       ;READ IT
015422  001401                          BEQ     8$              ;
015424  104001                          HLT     1               ;IF RX RECVED GOOD BCC; BCC S/B=0
015426  104413          8$:             RAMCLR                  ;CLEAR ALL SEC REG
015430  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
015432  005200                          INC     R0              ;UPDATE LINE POINTER
015434  005302                          DEC     R2              ;4 LINE GROUP DONE?
015436  001226                          BNE     65$             ;BR IF NO
015440  000207                          RTS     PC              ;EXIT FOR NEXT 4 LINE GROUP
```

```
;************************ TEST 14 ********************************
;*TEST OF THE "MARKED BYTE COUNT".
;*TEST THAT WHEN BIT15=0 FOR THE RECEIVER THAT
;*BITS 13,14,15 OF LINE STATE OCCUR IN
;*THE RECEIVER MODE BITS REGISTER.
;*TEST THAT WHEN BIT15=0 FOR THE TRANSMITTER
;*THAT BITS 13,14,15 OF THE LINE PROGRESS REGISTER
;*OCCUR INT THE TRANSMITTER MODE REG.
;*ALSO VERIFY THAT BIT10=1 IN LINE STATE MAKES
;*RECEIVER "EXPECT THE BCC"
;*AND THAT BIT10 IN LINE PROGRESS TELL TX TO SEND BCC.
;*THIS TEST USES LRCB FOR THE POLYNOMIAL.
;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
;:*************************************************************
```

```
;  TEST 14
;--------------
015442  012737  000014  001226  TST14:  MOV     #14,TSTNO
015450  012737  016222  001216          MOV     #TST15,NEXT
015456  012700  000000                  MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
015462  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
015470  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
015472  004737  015560                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
015476  012700  000004          100$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
015502  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
015510  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
015512  004737  015560                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
015516  012700  000010          101$:   MOV     #8,,R0          ;LOAD LINE NUMBER
015522  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
015530  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
015532  004737  015560                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
015536  012700  000014          102$:   MOV     #12,,R0         ;LOAD LINE NO.
```

```
                                                MOV     L12.15.STAT     ;LOAD LINE CARD STATUS
                                                BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
                                                JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
                                        103$:   SCOPE                   ;SCOPE THIS TEST.
                                        105$:                           ;TEST ENTRANCE.
                                                MOV     #65$,LOOP       ;SET RETURN IF SW09=1
                                                RAMCLR                  ;CLEAR ALL SECONDARY REGISTERS
                                                MOV     #4,R2           ;SET FOR 4 LINE GROUP
                                                MOV     #10.,R4         ;LOAD 10 BYTES
                                                MOV     #TXTAB,R5       ;WITH
                                        1$:     MOVB    #BIT3,(R5)+     ;INC'BCC
                                                DEC     R4              ;
                                                BNE     1$              ;
                                                MOV     #TXTAB,R5       ;CLEAR
                                                MOV     STAT,R4         ;SYNC
                                                BIC     #^C<377>,R4     ;CONTROL
                                                ADD     R4,R5           ;BYTE
                                                CLRB    (R5)            ;
                                                MOV     #TXBAP,R5       ;LOAD
                                                CLR     R4              ;DATA
                                        2$:     MOVB    R4,(R5)+        ;INTO
                                                INC     R4              ;TRANSMITTER BUFFER
                                                CMP     #11.,R4         ;
                                                BNE     2$              ;
                                                MOV     #RXTAB,R5       ;LOAD
                                                MOV     #10.,R4         ;10
                                        3$:     MOVB    #BIT3,(R5)+     ;RECEIVER
                                                DEC     R4              ;CONTROL BYTES
                                                BNE     3$              ;WITH "INC/BCC"
                                        65$:    MOV     R0,@DVSRS       ;LOAD LINE NO.
                                                BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
                                                BEQ     80$             ;#BR IF NOT ASYNC.
                                                PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
                                                .BYTE   000,001         ;#REGISTERS
                                                TXBAP                   ;#LOAD FOR ASYNC
                                                <-10.>-BIT15                    ;#LOAD FOR ASYNC
                                                BR      81$             ;#CONTINUE TEST
                                        80$:    PERFORM ,SETREG         ;
                                                .BYTE   000,001         ;TX PRINCIPLE BA, BC
                                                SYNC                    ;
                                                <-12.>-BIT15            ;MARKED BC!
                                        81$:    PERFORM ,SETREG         ;
                                                .BYTE   004,005         ;RX BA, BC
                                                RXBA                    ;
                                                <-10.>-BIT15            ;MARKED BC!
                                                PERFORM ,SETREG         ;
                                                .BYTE   010,011         ;TX TABLE, RX TABLE
                                                TXTAB
                                                RXTAB
                                                PERFORM ,SETREG
                                                .BYTE   012,013         ;LINE PROTOCOL, LINE STATE
                                                BIT0                    ;LRCC, IDLE MARK
                                                BIT15+BIT14+BIT13+BIT10+BIT2
                                                PERFORM ,SETREG         ;MODE 7, , TXGO
                                                .BYTE   016,017         ;LINE PROGRESS REC, REC CNTR STORE
                                                BIT15+BIT14+BIT13+BIT10 ;NEXT MODE=7
```

```
 2964  016004  000000                    0                       ;ZERO
 2965  016006  032737  004000  001236    BIT     #ASYNC.STAT     ;#IS THIS ASYNC LINE CARD?
 2966  016014  001412                    BEQ     60$             ;#BR IF NO.
 2967  016016  004537  022164            PERFORM .LOAD.MODE      ;#LOAD PARAMETERS.
 2968  016022  020000                    BIT13                   ;#RECEIVER ENABLE
 2969  016024  004537  022164            PERFORM .LOAD.MODE      ;#
 2970  016030  015000                    (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
 2971  016032  004537  022164            PERFORM .LOAD.MODE      ;#
 2972  016036  072000                    (BIT14+BIT13+BIT12)+BIT10
 2973                                                            ;#9600 BAUD.
 2974  016040  000405                    BR      61$
 2975  016042  004537  022164    60$:    PERFORM .LOAD.MODE      ;LOAD
 2976  016046  034000                    BIT13+BIT12+BIT11       ;MODE AND RECV ENABLE
 2977  016050  004537  021706            PERFORM .SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
 2978  016054  005277  163302    61$:    INC     @DVSCR          ;SET MICRO CPU GO
 2979  016060  105777  163276            TSTB    @DVSCR          ;WAIT FOR
 2980  016064  100375                    BPL     .-4             ;DVSCR07=1
 2981  016066  017704  163274            MOV     @DVRIC,R4       ;READ RESULT
 2982  016072  010005                    MOV     R0,R5           ;LOAD LINE NUMBER
 2983  016074  000305                    SWAB    R5              ;PUT IN HIGH BYTE
 2984  016076  052705  050000            BIS     #BIT14+BIT12,R5 ;SET "BLOCK CHECK COMPLETE"
 2985  016102  020504                    CMP     R5,R4           ;RIC OK
 2986  016104  001401                    BEQ     4$              ;
 2987  016106  104001                    HLT     1               ;DVRIC INCORRECT
 2988  016110  112777  000014  163256 4$: MOVB    #14,@DVSRSH     ;GET TX MODE REGISTER
 2989  016116  017704  163254            MOV     @DVSRA,R4       ;
 2990  016122  012705  000007            MOV     #BIT2+BIT1+BIT0,R5      ;WAS NEXT MODE PICKED UP?
 2991  016126  020504                    CMP     R5,R4           ;
 2992  016130  001401                    BEQ     5$              ;
 2993  016132  104001                    HLT     1               ;NEXT MODE INCORRECT, S/B=7
 2994  016134  105277  163234    5$:     INCB    @DVSRSH         ;SEL RX MODE REG
 2995  016140  017704  163232            MOV     @DVSRA,R4       ;READ
 2996  016144  020504                    CMP     R5,R4           ;
 2997  016146  001401                    BEQ     6$              ;
 2998  016150  104001                    HLT     1               ;RX MODE REGISTER INCORRECT. S/B=7
 2999  016152  005005            6$:     CLR     R5              ;SET EXPECTED=0
 3000  016154  112777  000006  163212    MOVB    #6,@DVSRSH      ;SEL TX BCC REG
 3001  016162  017704  163210            MOV     @DVSRA,R4       ;READ
 3002  016166  001401                    BEQ     7$              ;BR IF=0
 3003  016170  104001                    HLT     1               ;IF BCC WAS SENT; BCC S/B=0
 3004  016172  105277  163176    7$:     INCB    @DVSRSH         ;SEL RX BCC REG
 3005  016176  017704  163174            MOV     @DVSRA,R4       ;READ IT
 3006  016202  001401                    BEQ     8$              ;
 3007  016204  104001                    HLT     1               ;IF RX RECVED GOOD BCC: BCC S B=0
 3008  016206  104413            8$:     RAMCLR                  ;CLEAR ALL SEC REG
 3009  016210  1044C1                    SCOPI                   ;LOCK ON CURRENT LINE
 3010  016212  005200                    INC     R0              ;UPDATE LINE POINTER
 3011  016214  005302                    DEC     R2              ;4 LINE GROUP DONE?
 3012  016216  001226                    BNE     65$             ;BR IF NO
 3013  016220  000207                    RTS     PC              ;EXIT FOR NEXT 4 LINE GROUP
 3014
 3015
 3016                            ;************************ TEST 15 *******************************
 3017                            ;*TEST OF RECIEVER AND TRANSMITTER MODE BITS.
 3018                            ;*TEST TO TRANSMIT AND RECEIVE
 3019                            ;*A DIFFERENT CHAR FROM EACH
```

```
                                                ;*MODE. THE TX TABLE WILL BE
                                                ;*FILLED WITH "SEND DLE" SO IF CHAR
                                                ;*GOES TO WRONG TABLE RX WILL
                                                ;*RECEIVE A DLE CHAR(31). THE RX
                                                ;*FILLS TABLE WITH "INCLUDE IN BCC"
                                                ;*SO THAT IF RECV GOES TO WRONG
                                                ;*TABLE THE RX BCC REG WILL
                                                ;*BE NON-ZERO!
                                                ;*CHAR  CURRENT MODE    NEXT MODE
                                                ;*  15          0            1
                                                ;*  16          1            2
                                                ;*  21          2            3
                                                ;*  23          3            4
                                                ;*  25          4            5
                                                ;*  34          5            6
                                                ;*  32          6            7
                                                ;*  36          7            7
                                                ;*
                                                ;*
                                                ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                                ;;*****************************************************************

                                        ;  TEST 15
                                        ;--------------
003045  016222  012737  000015  001226  TST15:  MOV     #15,TSTNO
003046  016230  012737  017166  001216          MOV     #TST16,NEXT
003047  016236  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
003048  016242  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
003049  016250  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
003050  016252  004737  016340                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
003051  016256  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
003052  016262  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
003053  016270  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
003054  016272  004737  016340                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
003055  016276  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
003056  016302  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
003057  016310  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
003058  016312  004737  016340                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
003059  016316  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
003060  016322  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
003061  016330  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
003062  016332  004737  016340                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
003063  016336  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
003064  016340                          105$:                           ;TEST ENTRANCE.
003065  016340  012737  016604  001220          MOV     #12$,LOCK       ;LOCK ON LINE RETURN
003066  016346  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
003067  016350  012705  023560                  MOV     #TXTAB,R5       ;LOAD
003068  016354  012704  030160                  MOV     #RXTAB,R4       ;
003069  016360  012701  004000                  MOV     #4000,R1        ;ALL CNTRL BYTES
003070  016364  112725  000002          1$:     MOVB    #BIT1,(R5)+     ;WITH "SND/DLE"
003071  016370  112724  000010          2$:     MOVB    #BIT3,(R4)+     ;WITH "INCL/BCC"
003072  016374  005301                          DEC     R1              ;
003073  016376  001372                          BNE     1$              ;
003074  016400  004537  021706                  PERFORM .SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
003075  016404  012702  000004          11$:    MOV     #4,R2           ;SET FOR 4 LINE GROUP
```

```
3076  016410  113705  001236                  MOVB    STAT,R5         ;CLEAR
3077  016414  042705  177400                  BIC     #^C<377>,R5     ;SYNC
3078  016420  012704  023560                  MOV     #TXTAB,R4       ;ENTRY
3079  016424  060504                          ADD     R5,R4           ;IN
3080  016426  105014                          CLRB    (R4)            ;CONTROL TABLE
3081  016430  112737  000040  023575          MOVB    #BIT5,TXTAB+15
3082  016436  112737  000100  024176          MOVB    #BIT6,TXTAB+BIT8+16
3083  016444  112737  000140  024601          MOVB    #BIT6+BIT5,TXTAB+BIT9+21
3084  016452  112737  000200  025203          MOVB    #BIT7,TXTAB+BIT9+BIT8+23
3085  016460  112737  000240  025605          MOVB    #BIT7+BIT5,TXTAB+BIT10+25
3086  016466  112737  000300  026167          MOVB    #BIT7+BIT6,TXTAB+BIT10+BIT8+7
3087  016474  112737  000340  026614          MOVB    #BIT7+BIT6+BIT5,TXTAB+BIT10+BIT9+34
3088  016502  112737  000340  027212          MOVB    #BIT7+BIT6+BIT5,TXTAB+BIT10+BIT9+BIT8+32
3089  016510  112737  000340  027216          MOVB    #BIT7+BIT6+BIT5,TXTAB+BIT10+BIT9+BIT8+36
3090
3091  016516  112737  000040  030175          MOVB    #BIT5,RXTAB+15
3092  016524  112737  000100  030576          MOVB    #BIT6,RXTAB+BIT8+16
3093  016532  112737  000140  031201          MOVB    #BIT6+BIT5,RXTAB+BIT9+21
3094  016540  112737  000200  031603          MOVB    #BIT7,RXTAB+BIT9+BIT8+23
3095  016546  112737  000240  032205          MOVB    #BIT7+BIT5,RXTAB+BIT10+25
3096  016554  112737  000300  032567          MOVB    #BIT7+BIT6,RXTAB+BIT10+BIT8+7
3097  016562  112737  000340  033214          MOVB    #BIT7+BIT6+BIT5,RXTAB+BIT10+BIT9+34
3098  016570  112737  000340  033612          MOVB    #BIT7+BIT6+BIT5,RXTAB+BIT10+BIT9+BIT8+32
3099  016576  112737  000340  033616          MOVB    #BIT7+BIT6+BIT5,RXTAB+BIT10+BIT9+BIT8+36
3100  016604  012705  027560          12$:    MOV     #RXBA,R5        ;SET RX POINTER
3101  016610  005025                          CLR     (R5)+           ;Z
3102  016612  005025                          CLR     (R5)+           ; E
3103  016614  005025                          CLR     (R5)+           ;  R
3104  016616  005025                          CLR     (R5)+           ;   O
3105  016620  005025                          CLR     (R5)+           ;BUFFER!
3106  016622  012705  022560                  MOV     #TXBAP,R5       ;L
3107  016626  012725                          MOV     (PC)+,(R5)+     ; O
3108  016630     015     016                  .BYTE   15,16           ;  A
3109  016632  012725                          MOV     (PC)+,(R5)+     ;   D
3110  016634     021     023                  .BYTE   21,23           ;T
3111  016636  012725                          MOV     (PC)+,(R5)+     ; R
3112  016640     025     007                  .BYTE   25,7            ;  A
3113  016642  012725                          MOV     (PC)+,(R5)+     ;   N
3114  016644     034     032                  .BYTE   34,32           ;    S
3115  016646  112725  000036                  MOVB    #36,(R5)+       ;BUFFER
3116  016652  010077  162514                  MOV     R0,@DVSRS       ;LOAD LINE NO.
3117  016656  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
3118  016664  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
3119  016666  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
3120  016672     000     001                  .BYTE   000,001         ;#REGISTERS
3121  016674  022560                          TXBAP                   ;#LOAD FOR ASYNC
3122  016676  177767                          -9.                     ;#LOAD FOR ASYNC
3123  016700  000405                          BR      81$             ;#CONTINUE TEST
3124  016702  004537  022120          80$:    PERFORM ,SETREG         ;
3125  016706     000     001                  .BYTE   000,001         ;PRINCIPLE BA, BC
3126  016710  022556                          SYNC                    ;
3127  016712  177765                          -11.                    ;
3128  016714  004537  022120          81$:    PERFORM ,SETREG         ;
3129  016720     004     005                  .BYTE   004,005         ;RX BA, BC
3130  016722  027560                          RXBA            :
3131  016724  177767                          -9.                     ;
```

```
3132  016726  004537  022120                    PERFORM ,SETREG         ;
3133  016732     010     011                    .BYTE   010,011         ;TX TABLE, RX TAB
3134  016734  023560                            TXTAB                   ;
3135  016736  030160                            RXTAB                   ;
3136  016740  004537  022120                    PERFORM ,SETREG         ;
3137  016744     012     013                    .BYTE   012,013         ;LINE PROTOCOL, LINE STATE
3138  016746  014400                            31*400                  ;31 IN HIGH BYTE
3139  016750  000004                            BIT2                    ;TX GO
3140  016752  032737  004000  001236            BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
3141  016760  001412                            BEQ     60$             ;#BR IF NO.
3142  016762  004537  022164                    PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
3143  016766  020000                            BIT13                   ;#RECEIVER ENABLE
3144  016770  004537  022164                    PERFORM ,LOAD.MODE      ;#
3145  016774  015000                            (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
3146  016776  004537  022164                    PERFORM ,LOAD.MODE      ;#
3147  017002  072000                            (BIT14+BIT13+BIT12)+BIT10
3148                                                                    ;#9600 BAUD.
3149  017004  000403                            BR      61$
3150  017006  004537  022164          60$:      PERFORM ,LOAD.MODE      ;LOAD
3151  017012  034000                            BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
3152  017014  005277  162342          61$:      INC     @DVSCR          ;SET MICRO CPU GO
3153  017020  105777  162336                    TSTB    @DVSCR          ;WAIT FOR
3154  017024  100375                            BPL     .-4             ;DVSCR07=1
3155  017026  012701  022560                    MOV     #TXBAP,R1       ;SET TX POINTER
3156  017032  012703  027560                    MOV     #RXBA,R3        ;SET RX POINTER
3157  017036  012737  000011  001246            MOV     #9.,TEMP1       ;CHECK 9. CHAR
3158  017044  005005                            CLR     R5              ;
3159  017046  005004                            CLR     R4              ;
3160  017050  112105          3$:               MOVB    (R1)+,R5        ;SET EXPECTED
3161  017052  112304                            MOVB    (R3)+,R4        ;SET FOUND
3162  017054  020504                            CMP     R5,R4           ;GOOD?
3163  017056  001401                            BEQ     4$              ;
3164  017060  104001                            HLT     1               ;DATA COMPARE ERPOR (IS IT IDLE)?
3165  017062  005337  001246          4$:       DEC     TEMP1           ;ALL CHARS DONE?
3166  017066  001370                            BNE     3$              ;BR IF NO
3167  017070  005005                            CLR     R5              ;
3168  017072  112777  000007  162274            MOVB    #7,@DVSRSH      ;SEL RX BCC REG
3169  017100  017704  162272                    MOV     @DVSRA,R4       ;READ IT
3170  017104  001401                            BEQ     5$              ;IF RX WENT TO GOOD CNTRL BYTE:
3171  017106  104001                            HLT     1               ;RX BCC S/B=0
3172  017110  012705  000007          5$:       MOV     #7,R5           ;SET MODE=0
3173  017114  112777  000014  162252            MOVB    #14,@DVSRSH     ;SEL TX MODE REG
3174  017122  017704  162250                    MOV     @DVSRA,R4       ;READ TX MODE REG
3175  017126  020504                            CMP     R5,R4           ;
3176  017130  001401                            BEQ     6$              ;
3177  017132  104001                            HLT     1               ;TX MODE NOT=7!
3178  017134  105277  162234          6$:       INCB    @DVSRSH         ;SEL RX MODE REG
3179  017140  017704  162232                    MOV     @DVSRA,R4       ;READ IT
3180  017144  020504                            CMP     R5,R4           ;
3181  017146  001401                            BEQ     7$              ;
3182  017150  104001                            HLT     1               ;RX MODE NOT=7!
3183  017152  104412          7$:               MSTCLR                  ;INIT DV11
3184  017154  104401                            SCOP1                   ;LOCK ON CURRENT LINE.
3185  017156  005200                            INC     R0              ;INC LINE POINTER
3186  017160  005302                            DEC     R2              ;4 LINE GROUP DONE?
3187  017162  001210                            BNE     12$             ;BR IF NO
```

```
017164  000207                  RTS     PC              ;EXIT FOR NEXT GROUP OF LINES

                        ;*********************** TEST 16 ******************************
                        ;*TEST OF RECEIVER AND TRANSMITTER MULTIPLE FUNCTIONS.
                        ;*TEST OF REC'V BCC AND TRANS BCC.
                        ;*CHAR          RX FUNC.                TX FUNC.
                        ;*  0           INC/BCC                 INC/BCC
                        ;*  1           INC/BCC/DSCARD          INC/BCC
                        ;*  2           INC/BCC                 INC/BCC/SYNC CLE
                        ;*  3           INC/BCC                 INC/BCC
                        ;*  4           NO FUNC                 SND/BCC
                        ;*  5           INC/BCC/DSCARD          INC/BCC
                        ;*  6           INC/BCC/EXP BCC         INC/BCC/SND/BCC
                        ;*              NEXT MODE =7            NEXT MODE =7
                        ;*
                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                        ;*************************************************************

                        ;  TEST 16
                        ;--------------
017166  012737  000016  001226  TST16:  MOV     #16.,TSTNO
017174  012737  017216  001216          MOV     #TST16.,NEXT
017202  010046                         MOV     R0,-(SP)        ;PLACE LINE NUMBER INTO R0
017204  016746  001416  001236          MOV     LCD.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
017212  100402                         BMI     10$             ;BR IF LINE CARD NOT TO BE TESTED
017214  004737  017304                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
017220  000000                 10$:    MOV     #0,R0           ;PLACE LINE NUMBER INTO R0
017222  016746  001420  001236          MOV     LCD.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
017230  100402                         BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
017232  004737  017304                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
017236  012700  000010          101$:  MOV     #8.,R0          ;LOAD LINE NUMBER
017242  016746  001422  001236          MOV     LCD.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
017250  100402                         BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
017252  004737  017304                 JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
017256  012700  000014          102$:  MOV     #12.,R0         ;LOAD LINE NO.
017262  016746  001424  001236          MOV     LCD.15,STAT     ;LOAD LINE CARD STATUS
017270  100402                         BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
017272  004737  017304                 JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
017276  104400                 103$:   SCOPE                   ;SCOPE THIS TEST.
017300                         105$:                           ;TEST ENTRANCE.
017300  012737  017504  001220          MOV     #3$,LOOK        ;RETURN IF SW09=1
017306  032737  001400  001336          BIT     #BIT9+BIT8,STAT ;"9 BITS PER CHAR ??
017314  001401                         BEQ     .+4             ;BR IF YES
017316  000207                         RTS     PC              ;EXIT TEST FOR THIS LINE CARD!
017320  104413                         RAMCLR                  ;CLEAR ALL SEC REGISTERS
017322  012705  023560                 MOV     #TXTAB,R5       ;CLEAR
017326  012703  030160                 MOV     #RXTAB,R3       ;TRANSMITTER
017332  005004                         CLR     R4              ;AND
017334  005025                 1$:     CLR     (R5)+           ;RECEIVER
017336  005023                         CLR     (R3)+           ;CONTROL
017340  105204                         INCB    R4              ;TABLES
017342  100374                         BPL     1$              ;
017344  112705  000010                 MOVB    #BIT3,R5        ;INC/BCC IS IN R5
017350  110537  023560                 MOVB    R5,TXTAB        ;INC BCC
017354  110537  030160                 MOVB    R5,TXTAB+1      ;INC BCC
017360  110537  030161                 MOVB    R5,TXTAB+2      ;INC BCC
```

```
                                                BISB    #BIT1,TXTAB+2   ;       SND DLE
                                                MOVB    R5,TXTAB+3      ;INC BCC
                                                MOVB    #BIT1,TXTAB+4   ;SND DLE
                                                MOVB    R5,TXTAB+5      ;INC BCC
                                                MOVB    R5,TXTAB+6      ;INC BCC
                                                BIS     #BIT7+BIT6+BIT5+BIT2,TXTAB+6    ;INC BCC SND BCC MODE7
                                                MOVB    R5,RXTAB        ;INC BCC
                                                MOVB    R5,RXTAB+1      ;INC BCC
                                                BISB    #BIT4,RXTAB+1   ;       DSCARD
                                                MOVB    R5,RXTAB+2      ;INC BCC
                                                MOVB    R5,RXTAB+3      ;INC BCC
                                                CLRB    RXTAB+4         ;NO FUNC.
                                                MOVB    R5,RXTAB+5      ;INC BCC
                                                BISB    #BIT4,RXTAB+5   ;       DSCARD
                                                MOVB    #BIT7+BIT6+BIT5+BIT3+BIT2,RXTAB+6       ;INC BCC E/P BCC MODE=7
                                                MOV     #4,R2           ;SET FOR 4 LINE GROUP
                                        3$:     CLR     RXBA            ;ZERO
                                                CLR     RXBA+2          ;RX
                                                CLR     RXBA+4          ;BUFFER
                                                CLR     RXBA+6          ;AREA
                                                MOV     RO,DEVSRS       ;LOAD LINE NO.
                                                BIT     #ASYNC.STAT     ;#IS THIS AN ASYNC LINE CARD?
                                                BEQ     80$             ;#BR IF NOT ASYNC.
                                                PERFORM .SETREG         ;#ADJUST FOR ASYNC LINE CARD
                                                .BYTE   000,001         ;#REGISTERS
                                                RXBAP                   ;#LOAD FOR ASYNC
                                                -1.                     ;#LOAD FOR ASYNC
                                                BR      91$             ;#CONTINUE TEST
                                        80$:    PERFORM .SETREG         ;
                                                .BYTE   000,001         ;PRINCIPLE BA, BC
                                                SYNC                    ;
                                                -9.                     ;
                                        91$:    PERFORM .SETREG         ;
                                                .BYTE   004,005         ;RX BA, BC
                                                RXBA                    ;
                                                -10.                    ;
                                                PERFORM .SETREG         ;
                                                .BYTE   010,011         ;TX TAB, RXTAB
                                                TXTAB                   ;
                                                RXTAB                   ;
                                                PERFORM .SETREG         ;
                                                .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
                                                BIT2                    ;TX GO
                                                <20+400+BIT4+BIT3+BIT0  ;DLE,20 HIGH BYTE),CRC,CCITT, IDLE MARK
                                                BIT     #ASYNC.STAT     ;#IS THIS ASYNC LINE CARD?
                                                BEQ     60$             ;#BR IF NO.
                                                PERFORM .LOAD.MODE      ;#LOAD PARAMETERS.
                                                BIT13                   ;#RECEIVER ENABLE
                                                PERFORM .LOAD.MODE      ;#
                                                BIT12+BIT11+BIT9        ;#9 BITS PER CHAR
                                                PERFORM .LOAD.MODE      ;#
                                                BIT14+BIT13+BIT12+BIT10
                                                                        ;#9600 BAUD.
                                                BR      4$
                                        60$:    PERFORM .LOAD.MODE      ;LOAD
                                                BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
```

```
                                                PERFORM  SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
                                        4$:     CLR      R4             ;LOAD
                                                MOV      #TXBAP,R5      ;TX
                                        5$:     MOVB     R4,@R5)+       ;DATA
                                                INC      R4             ;
                                                CMPB     R4,#7          ;
                                                BNE      5$             ;
                                                MOV      #DVSCR         ;SET MICRO CODE GO
                                                TSTB     @DVSCR         ;WAIT FOR
                                                BPL      .-4            ;DVSCRC7=1
                                                MOV      #RXBA,R1       ;GET RX POINTER
                                                MOV      #50$,R3        ;GET DATA EXPECTED POINTER
                                                MOV      #4,@#TEMP3     ;CHECK 7 CHARS
                                        6$:     MOVB     (R1)+,R4       ;GET RECEIVED CHAR
                                                MOVB     (R3)+,R5       ;GET EXPECTED CHAR
                                                CMP      R5,R4          ;OK?
                                                BEQ      7$             ;YES
                                                HLT      1              ;DATA IS WRONG!!
                                        7$:     DEC      @#TEMP3        ;ALL CHARS DONE?
                                                BNE      6$             ;BR IF NO
                                                MOVB     #14,@#DVSRSH   ;GET TX MODE REG.
                                                MOV      @#DVSRA,R4     ;
                                                BIC      #^C<BIT2+BIT1+BIT0>,R4  ;CLEAR JUNK
                                                MOV      #7,R5          ;SET EXPECTED=7
                                                CMP      R5,R4          ;
                                                BEQ      8$             ;
                                                HLT      1              ;TX MODE REG NOT=7
                                        8$:     INCB     @#DVSRSH       ;RX MODE REG
                                                MOV      @#DVSRA,R4     ;
                                                BIC      #^C<BIT2+BIT1+BIT0>,R4          ;
                                                CMP      R5,R4          ;
                                                BEQ      9$             ;
                                                HLT      1              ;RX MODE REG NOT=7
                                        9$:     MOVB     #6,@#DVSRSH    ;TX BCC REG
                                                MOV      @#DVSRA,R4     ;
                                                BEQ      10$            ;
                                                CLR      R5             ;
                                                HLT      1              ;TX BCC REG S B=0
                                        10$:    INCB     @#DVSRSH       ;RXBCC
                                                MOV      @#DVSRA,R4     ;
                                                BEQ      11$            ;
                                                CLR      R5             ;
                                                HLT      1              ;RX BCC REG S B=0
                                        11$:    MOV      R0,R5          ;LOAD LINE NO.
                                                SWAB     R5             ;PUT IN HIGH BYTE
                                                BIS      #BIT14+BIT12,R5 ;SET BCC COMPLETE
                                                MOV      @#DVRIC,R4     ;READ RIC
                                                CMP      R5,R4          ;
                                                BEQ      12$            ;
                                                HLT      1              ;DVRIC INCORRECT
                                        12$:    RAMCLR                  ;CLEAR ALL SEC REGS
                                                SCOPI                   ;RETURN WITH SAME LINE
                                                INC      R0             ;UPDATE LINE POINTER
                                                DEC      R2             ;4 LINES DONE?
                                                BEQ      .+6            ;BR IF NO
                                                JMP      3$             ;JMP IF YES
```

```
                                        RTS     PC              ;EXIT
                                SC$:    .BYTE   0,20
                                        .BYTE   2,3
                                        .BYTE   20,4
                                        .BYTE   6,0

                                ;************************ TEST 17 ******************************
                                ;*TEST OF RECEIVER RESYNC
                                ;*TEST TO TRANSMITT A BLOCK OD
                                ;*DATA (SYN,SYN,1,2,3,4,5)
                                ;*HAVING CHAR "1" BEING A "SPECIAL CHAR" TO THE RECEIVER
                                ;*AT WHICH TIME A "RE-SYNC " PULSE WILL BE ISSUED
                                ;*AND A RESTART CHAR PROC. (DVSCR09=1) WILL BE DONE.
                                ;*WHEN THE TRANSMITTER IS DONE (DVSCR15=1) A SECOND
                                ;*BLOCK OF DATA (SYN,SYN,SYN,SYN,6,7,10)
                                ;*WILL BE SENT EXPECTING THAT THE NEXT TIME DVSCR07=1
                                ;*THAT THE DVRIC WILL HAVE:
                                ;*14=1      11:08=LINE NO.   07:00= "10"
                                ;*RXBUFFER (CORE) 5,8= 1,6,7,10.
                                ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                ;:*************************************************************

                                ;  TEST 17
                                ;-------------
000144  012737  000017  001226  TST17:  MOV     #17,TSTNO
000152  012737  000042  001216         MOV     #TST20,NEXT
000160  010046                         MOV     R0,-(SP)        ;PLACE LINE NUMBER INTO R0
000162  013700  001416  001236         MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
000170  100402                         BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
000172  004737  020262                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
000176  012700  000004         100$:   MOV     #4,R0           ;PLACE LINE NUMBER INTO R0
000202  013700  001420  001236         MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
000210  100402                         BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
000212  004737  020262                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
000216  012700  000010         101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
000222  013700  001422  001236         MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
000230  100402                         BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
000232  004737  020262                 JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
000236  012700  000014         102$:   MOV     #12.,R0         ;LOAD LINE NO.
000242  013700  001424  001236         MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
000250  100402                         BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
000252  004737  020262                 JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
000256  104400                 103$:   SCOPE                   ;SCOPE THIS TEST.
                                105$:                           ;TEST ENTRANCE.
000260  012737  020314  001220         MOV     #15,LOOK        ;SET RETURN
000266  104413                         RAMCLR                  ;CLEAR ALL SEC. REGS
000270  112737  000001  030161         MOVB    #BIT0,RXTAB+1   ;SET "SPECIAL CHAR" CNTRL BYTE
000276  005037  030166                 CLR     RXTAB+6         ;CLEAR
000302  005037  030170                 CLR     RXTAB+10        ;OTHER CNTRL BITES
000306  012702  000004                 MOV     #4,R2           ;SET FOR 4 LINE GROUP
000312  013777  161052  177000         MOV     RQ.3DVSRS       ;LOAD LINE NUMBER
000320  032737  004000  001236         BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
000326  001406                         BEQ     SC$             ;#BR IF NOT ASYNC.
000330  004537  022120                 PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
000334  000  001                      .BYTE   000,001         ;#REGISTERS
000336  022660                         TXBAP                   ;#LOAD FOR ASYNC
```

```
                                                -5                      ;#LOAD FOR ASYNC
                                                BR      81$             ;#CONTINUE TEST
                                        80$:    PERFORM .SETREG         ;
                                                .BYTE   000.001         ;RX BA P, RX BC P
                                                SYNC                    ;
                                                -3                      ;
                                        81$:    PERFORM .SETREG         ;
                                                .BYTE   004.005         ;RA BA  RX BC
                                                RXBA                    ;
                                                -4                      ;
                                                PERFORM .SETREG         ;
                                                .BYTE   010.011         ;RX CNTRL TAB, RX CNTRL TAB
                                                RXTAB                   ;
                                                PERFORM .SETREG         ;
                                                .BYTE   013.012         ;LINE STATE, LINE PROTOCOL PARAMS.
                                                BIT2                    ;TX GO
                                                BIT6+BIT3               ;TX DCOMP, IDLE MARK
                                                BIT     #ASYNC.STAT     ;IS THIS ASYNC LINE CARD?
                                                BEQ     60$             ;BR IF NO.
                                                PERFORM .LOAD.MODE      ;LOAD PARAMETERS.
                                                BIT13                   ;RECEIVER ENABLE
                                                PERFORM .LOAD.MODE      ;
                                                BIT12+BIT11+BIT9        ;8 BITS/PER CHAR
                                                PERFORM .LOAD.MODE      ;
                                                BIT14+BIT13+BIT12+BIT10 ;
                                                                        ;9600 BAUD.
                                                BR      61$             ;
                                        60$:    PERFORM .LOAD.MODE      ;LOAD
                                                BIT13+BIT12+BIT11       ;MODE + RX ENABLE
                                        61$:    CLR     RXBA            ;CLEAR
                                                CLR     RXBA+2          ;RX BUFFER
                                                MOV     #TXBAP,R5       ;SET TX POINTER
                                                CLR     R4              ;LOAD
                                        33$:    INC     R4              ;DATA
                                                MOVB    R4,(R5)+        ;INTO
                                                CMP     #5,R4           ;TX BUFFER
                                                BNE     2$              ;(1-5)
                                                PERFORM .SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
                                                INC     @DVSCR          ;SET UCPU GO
                                                CLR     R5              ;SET COUNTER TO 0
                                                TSTB    @DVSCR          ;WAIT FOR DVSCR0=1
                                                BMI     .+12            ;BR IF SET.
                                                DELAY                   ;STALL TIME
                                                INC     R5              ;UPDATE
                                                BNE     .-12            ;WAIT
                                                HLT                     ;DVSCR07 NOT SET.
                                                CLR     R5              ;SET COUNTER TO 0
                                                TST     @DVSCR          ;TX DONE?
                                                BMI     .+12            ;BR IF DVSCR15=1
                                                DELAY                   ;STALL TIME
                                                INC     R5              ;UPDATE
                                                BNE     .-12            ;
                                                HLT                     ;DVSCR15 NOT SET.
                                                MOV     #TXBAP,R5       ;SET TX POINTER
                                                MOVB    STAT,(R5)+      ;SYNC
```

```
                                                MOVB    STAT,(R5)+      ;SYNC
                                                MOV     #6,R4           ;SET 1ST DATA TO 6
                                        3$:     MOVB    R4,(R5)+        ;LOAD
                                                INC     R4              ;DATA
                                                CMP     #11,R4          ;ALL DONE?
                                                BNE     3$              ;BR IF NO
004000  001236                                  BIT     #ASYNC.STAT     ;#IS THIS AN ASYNC LINE CARD?
                                                BEQ     82$             ;#BR IF NOT ASYNC.
022160                                          PERFORM .SETREG         ;#ADJUST FOR ASYNC LINE CARD
    001                                         .BYTE   000,001         ;#REGISTERS
                                                TXBAP+2                 ;#LOAD FOR ASYNC
                                                -3                      ;#LOAD FOR ASYNC
                                                BR      83$             ;#CONTINUE TEST
                                                                        ;
022160                                  82$:    PERFORM .SETREG         ;
    001                                         .BYTE   000,001         ;TX 3A P, TX BC P
                                                SYNC                    ;
                                                -1                      ;
004000  001236                          83$:    BIT     #ASYNC.STAT     ;#ASYNC LINE CARD?
                                                BEQ     .+10            ;#BR IF NO
022164                                          PERFORM .LOAD.MODE      ;#CLEAR RX ENABLE
                                                                        ;#
000013  160552                                  MOVB    #13,@DVSRSH     ;LINE STATE
000200  160432                                  BIC     #BIT7,@DVSRA    ;CLEAR "USE SEC TABLES"
000100  160432                                  BIS     #BIT1,@DVSRA    ;SET RE-SYNC
000014  160552                                  MOVB    #12,@DVSRSH     ;SEL LINE PROTOCOL PARAM.
000002  160432                                  BIS     #BIT1,@DVSRA    ;SET STRIP LEADING SYNC
006000  000732                                  MOV     #6000,R4$       ;GIVE UCPU TIME
                                                DEC     (PC)+           ;TO RESYNC SILO
                                        6-5:    0
                                                BNE     .-4
004000  001236                                  BIT     #ASYNC.STAT     ;#ASYNC LINE CARD?
                                                BEQ     .+10            ;#BR IF NOT ASYNC LINE CARD.
022164                                          PERFORM .LOAD.MODE      ;#SET RX ENABLE FOR ASYNC LINE CARD
                                                BIT     #13             ;#RX ENABLE
000013  160412                                  MOVB    #13,@DVSRSH     ;SEL LINE STATE.
000004  160432                                  BIS     #BIT2,@DVSRA    ;SET TX GO.
000400  160364                                  BIS     #BIT8,@DVSCR    ;RESTART CPU
                                                CLR     R4              ;SET FOR TIME OUT.
160356                                          TSTB    @DVSCR          ;RX DONE?
                                                BMI     .+12            ;BR IF YES
                                                DELAY                   ;WASTE TIME
                                                INC     R4              ;LOOP DONE?
                                                BNE     .-12            ;BR IF NO
                                                HLT                     ;DVSCR07 NOT SET AFTER RESYNC.
160344                                          MOV     @DVRIC,R4       ;READ D.RIC
                                                MOV     R0,R5           ;LOAD LINE NO
                                                SWAB    R5              ;PLACE IN HIGH BYTE
040010                                          BIS     #BIT14+10,R5    ;SET BC WARNING + CHAR 10
                                                CMP     R5,R4           ;RIC OK
                                                BEQ     4$              ;
                                                HLT     1               ;DVRIC WRONG
027560                                  4$:     MOV     #RXBA,R3        ;CHECK RX DATA
                                                MOVB    (R3)+,R4        ;
000001                                          MOV     #1,R5           ;
                                                CMP     R5,R4           ;
                                                BEQ     5$              ;
```

```
                                                55:     MOV     #1,R0           ;1ST CHAR NOT "1"!
                                                        MOVB    (R3)+,R4        ;
                                    000006              CMP     #6,R5           ;
                                                        CMPB    R5,R4           ;
                                                        BEQ     5$              ;
                                                        MOV     #1,R0           ;2ND CHAR NOT "6"!
                                                65:     MOVB    (R3)+,R4        ;
                                    000007              CMP     #7,R5           ;
                                                        CMPB    R5,R4           ;
                                                        BEQ     7$              ;
                                                        MOV     #1,R0           ;3RD CHAR NOT "7"!
                                                75:     MOV     R0,-(SP)        ;
                                                        MOVB    (R3)+,R4        ;
                                                        CMPB    R5,R4           ;
                                                        BEQ     9$              ;
                                                        MOV     #1,R0           ;4TH CHAR NOT "10"!
                                                99:     MTSTCLR                 ;RESET DV11
                                                        MTSTSP1                 ;LOCK ON CURRENT LINE?
                                                        INC     R0              ;UPDATE LINE NO.
                                                        CMP     R0,#4           ;4 LINES DONE
                                                        BEQ     .+6             ;BR IF YES
                                    000314              JMP     1$              ;JMP IF NO
                                                        RTS     PC              ;EXIT FOR NEXT 4 LINE GROUP

                                                ;********************** TEST 20 ******************************
                                                ;*TEST OF RECEIVER OVERRUN.
                                                ;*TEST TO TXMIT 134. CHARS AND RECV 129
                                                ;*SERVICEING THE FIRST CHAR AS A SPECIAL CHAR
                                                ;*AND STOPING THE CHAR PROCESSOR.
                                                ;*WHEN THE TRANSMITTER FINISHES ALL 134. CHARS
                                                ;*THE RECEIVER IS RESTARTED AND THE NEXT ENTRY
                                                ;*IN THE RIC REG S/B OVER RUN ON CHAR 202(8).
                                                ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                                ;**************************************************************

                                                ;  TEST 20
                                                ;--------------
021142  012737  000020  001226  $ST20:  MOV     #20,TSTNO
021150  012737  002436  001216          MOV     #.EOP,NEXT
021156  012700  000000                  MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
021162  113737  001406  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
021170  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
021176  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
021200  004737  021310                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
021204  012700  000004          100$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
021210  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
021216  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
021224  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
021226  004737  021310                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
021232  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
021236  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
021244  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
021252  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
021254  004737  021310                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
021260  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
021264  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASK
```

```
 3580  021272  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
 3581  021300  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
 3582  021302  004737  021310                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
 3583  021306  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
 3584  021310                          105$:                           ;TEST ENTRANCE.
 3585  021310  012737  021346  001220          MOV     #1$,LOOK        ;RETURN FOR SW09
 3586  021316  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
 3587  021320  005004                          CLR     R4              ;CLEAR
 3588  021322  012705  030160                  MOV     #RXTAB,R5       ;THE
 3589  021326  005025                          CLR     (R5)+           ;RECEIVER
 3590  021330  105204                          INCB    R4              ;CONTROL
 3591  021332  100375                          BPL     .-4             ;TABLE
 3592  021334  112737  000001  030161          MOVB    #BIT0,RXTAB+1   ;SET "SPECIAL CHAR"(1)
 3593  021342  012702  000004                  MOV     #4,R2           ;4 LINE GROUP
 3594  021346  010077  160220          1$:     MOV     R0,@DVSRS       ;LOAD LINE NO.
 3595  021352  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 3596  021360  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
 3597  021362  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
 3598  021366     000     001                  .BYTE   000,001         ;#REGISTERS
 3599  021370  022560                          TXBAP                   ;#LOAD FOR ASYNC
 3600  021372  177573                          -133.                   ;#LOAD FOR ASYNC
 3601  021374  000405                          BR      81$             ;#CONTINUE TEST
 3602  021376  004537  022120          80$:    PERFORM ,SETREG         ;
 3603  021402     000     001                  .BYTE   000,001         ;TX BA P, TX BC P
 3604  021404  022556                          SYNC                    ;
 3605  021406  177572                          -134.                   ;
 3606  021410                          81$:                            ;
 3607  021410  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 3608  021416  001406                          BEQ     82$             ;#BR IF NOT ASYNC.
 3609  021420  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
 3610  021424     004     005                  .BYTE   004,005         ;#REGISTERS
 3611  021426  027560                          RXBA                    ;#LOAD FOR ASYNC
 3612  021430  177576                          -130.                   ;#LOAD FOR ASYNC
 3613  021432  000405                          BR      83$             ;#CONTINUE TEST
 3614  021434  004537  022120          82$:    PERFORM ,SETREG         ;
 3615  021440     004     005                  .BYTE   004,005         ;RX BA, RX BC
 3616  021442  027560                          RXBA                    ;
 3617  021444  177577                          -129.                   ;
 3618  021446  004537  022120          83$:    PERFORM ,SETREG         ;
 3619  021452     010     011                  .BYTE   010,011         ;TX TAB, RX TAB
 3620  021454  023560                          TXTAB                   ;
 3621  021456  030160                          RXTAB                   ;
 3622  021460  004537  022120                  PERFORM ,SETREG         ;
 3623  021464     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL PARAM
 3624  021466  000004                          BIT2                    ;TX GO
 3625  021470  000101                          BIT6+BIT0               ;TX DDCMP + IDLE MARK
 3626  021472  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
 3627  021500  001412                          BEQ     60$             ;#BR IF NO.
 3628  021502  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
 3629  021506  020000                          BIT13                   ;#RECEIVER ENABLE
 3630  021510  004537  022164                  PERFORM ,LOAD.MODE      ;#
 3631  021514  015000                          (BIT12+BIT11)+BIT9      ;#9 BITS PER CHAR
 3632  021516  004537  022164                  PERFORM ,LOAD.MODE      ;#
 3633  021522  072000                          (BIT14+BIT13+BIT12)+BIT10
 3634                                                                  ;#9600 BAUD.
 3635  021524  000403                          BR      61$
```

```
 3636  021526  004537  022164          6C$:    PERFORM ,LOAD.MODE      ;LOAD
 3637  021532  034000                          BIT13+BIT12+BIT11       ;MODE
 3638  021534  012705  022560          61$:    MOV     #TXBAP,R5       ;LOAD
 3639  021540  005004                          CLR     R4              ;TX
 3640  021542  105214                  2$:     INCB    R4              ;DATA
 3641  021544  001402                          BEQ     3$              ;BUFFER
 3642  021546  110425                          MOVB    R4, R5)+        ;
 3643  021550  000774                          BR      2$              ;
 3644  021552  004537  021706          3$:     PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
 3645  021556  005277  157600                  INC     @DVSCR          ;SET UCPU GO
 3646  021562  105777  157574                  TSTB    @DVSCR          ;DVSCR07=1?
 3647  021566  100375                          BPL     .-4             ;BR IF NO
 3648  021570  005777  157566                  TST     @DVSCR          ;DVSCR15=1?
 3649  021574  100375                          BPL     .-4             ;BR IF NO
 3650  021576  112777  000012  157570          MOVB    #12,@DVSRSH     ;LINE PROTOCOL PARAM.
 3651  021604  052777  000040  157564          BIS     #BIT5,@DVSRA    ;SET RX DDCMP
 3652  021612  052777  000400  157542          BIS     #BIT8,@DVSCR    ;RESTART
 3653  021620  105777  157536                  TSTB    @DVSCR          ;DVSCR07=1?
 3654  021624  100375                          BPL     .-4             ;BR IF NO
 3655  021626  017704  157534                  MOV     @DVRIC,R4       ;READ RIC
 3656  021632  010005                          MOV     R0,R5           ;LINE
 3657  021634  000305                          SWAB    R5              ;HIGH BYTE
 3658  021636  052705  020202                  BIS     #BIT13+202,R5   ;130.
 3659  021642  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 3660  021650  001401                          BEQ     .+4             ;#BR IF NOT ASYNC
 3661  021652  005205                          INC     R5              ;#ADJUST FOR ASYNC. DOUBLE BUFFER CAUSES
 3662                                                                  ;#CHAR TO BE ONE MORE THAN SYNC LINE CARD.
 3663  021654  143705  001244                  BICB    MASKX,R5        ;CLEAR UNUSED BITS
 3664  021660  020504                          CMP     R5,R4           ;RIC OK?
 3665  021662  001401                          BEQ     3$              ;
 3666  021664  104001                          HLT     1               ;NO OVER-RUN; CR ON WRONG CHAR!
 3667  021666  104412                  3$:     MSTCLR                  ;RESET DVA
 3668  021670  104401                          SCOPI                   ;LOCK ON CURRENT LINE
 3669  021672  005200                          INC     R0              ;UPDATE LINE NO.
 3670  021674  005302                          DEC     R2              ;4 LINES DONE
 3671  021676  001402                          BEQ     .+6             ;BR IF YES
 3672  021700  000137  02:346                 JMP     1$              ;JMP IF YES
 3673  021704  000207                          RTS     PC              ;EXIT
 3674
 3675  021706                          SETSYNC:
 3676  021706  113737  001236  022556          MOVB    STAT,SYNC       ;SET SYNC FOR THIS LINE.
 3677  021714  113737  022556  022557          MOVB    SYNC,SYNC+1     ;PLACE SYNC IN HIGH BYTE
 3678  021722  032737  010000  001236          BIT     #TWOSYN,STAT    ;ONE SYNC OR TWO?
 3679  021730  001402                          BEQ     1$              ;BR IF JUMPERED FOR TWO.
 3680  021732  105037  022556                  CLRB    SYNC            ;SET FIRST SYNC TO NON-SYNC
 3681  021736  000205                  1$:     EXIT
 3682  021740  010046                  SIMBCC: MOV     R0,-(SP)
 3683  021742  010146                          MOV     R1,-(SP)
 3684  021744  010246                          MOV     R2,-(SP)
 3685  021746  012537  001246                  MOV     (R5)+,TEMP1
 3686  021752  012537  001250                  MOV     (R5)+,TEMP2
 3687  021756  012537  001252                  MOV     (R5)+,TEMP3
 3688  021762  005037  022114          1$:     CLR     BCCFBK
 3689  021766  013700  001252                  MOV     TEMP3,R0
 3690  021772  006037  001250                  ROR     TEMP2
 3691  021776  005500                          ADC     R0
```

```
 3692  022300  032700  000001                        BIT     #BIT0,R0
 3693  022304  001402                                BEQ     2$
 3694  022306  005137  022114                        COM     BCCFBK
 3695  022312  013700  022112              2$:       MOV     XPOLY,R0
 3696  022316  005100                                COM     R0
 3697  022320  040037  022114                        BIC     R0,BCCFBK
 3698  022324  000241                                CLC
 3699  022326  006037  001252                        ROR     TEMP3
 3700  022332  013700  022114                        MOV     BCCFBK,R0
 3701  022336  013701  001252                        MOV     TEMP3,R1
 3702  022342  010102                                MOV     R1,R2
 3703  022344  040100                                BIC     R1,R0
 3704  022346  043702  022114                        BIC     BCCFBK,R2
 3705  022352  050200                                BIS     R2,R0
 3706  022354  043737  022112  001252                BIC     XPOLY,TEMP3
 3707  022362  050037  001252                        BIS     R0,TEMP3
 3708  022366  005337  001246                        DEC     TEMP1
 3709  022372  001333                                BNE     1$
 3710  022374  013737  001252  022116                MOV     TEMP3,CALBCC
 3711  022402  012602                                MOV     (SP)+,R2
 3712  022404  012601                                MOV     (SP)+,R1
 3713  022406  012600                                MOV     (SP)+,R0
 3714  022410  000205                                RTS     R5
 3715  022412  000000                      XPOLY:    0
 3716  022414  000000                      BCCFBK:   0
 3717  022416  000000                      CALBCC:   0
 3718          000200                      LRC8=200
 3719          120001                      CRC16=120001
 3720          102010                      CRC.CCITT=102010
 3721
 3722
 3723  022420  010046                      SETREG:   MOV     R0,-(SP)
 3724  022422  010146                                MOV     R1,-(SP)
 3725  022424  112500                                MOVB    (R5)+,R0
 3726  022426  112501                                MOVB    (R5)+,R1
 3727  022430  110077  157240                        MOVB    R0,@DVSRSH
 3728  022434  012577  157236                        MOV     (R5)+,@DVSRA
 3729  022440  042777  000060  157214                BIC     #BIT5+BIT4,@DVSCR
 3730  022446  110177  157222                        MOVB    R1,@DVSRSH
 3731  022452  012577  157220                        MOV     (R5)+,@DVSRA
 3732  022456  012601                                MOV     (SP)+,R1
 3733  022460  012600                                MOV     (SP)+,R0
 3734  022462  000205                                EXIT
 3735
 3736  022464                              LOAD.MODE:
 3737  022464  012577  157200                        MOV     (R5)+,@DVLCR
 3738  022470  052777  100000  157172                BIS     #BIT15,@DVLCR
 3739  022476  010046                                MOV     R0,-(SP)
 3740  022500  005000                                CLR     R0
 3741  022502  005777  157162              1$:       TST     @DVLCR
 3742  022506  100004                                BPL     2$
 3743  022510  104414                                DELAY
 3744  022512  005200                                INC     R0
 3745  022514  001372                                BNE     1$
 3746  022516  104000                                HLT     0                       ;BIT 15 FAILED TO CLEAR
 3747  022520  012600                      2$:       MOV     (SP)+,R0
```

```
                                                EXIT

                                                ;SUBROUTINE.
                                                ;CORE TABLES ALREAY SET UP
                                                ;XMIT 3 CHARS 2SYNC+ 1 DATA
                                                ;RCV    1 CHAR
 3754  022224  010077  157142          DV11CN: MOV     R0,@DVSRS
 3755  022230  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 3756  022236  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
 3757  022240  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
 3758  022244     000     001                  .BYTE   000,001         ;#REGISTERS
 3759  022246  022560                          TXBAP                   ;#LOAD FOR ASYNC
 3760  022250  177777                          -1                      ;#LOAD FOR ASYNC
 3761  022252  000405                          BR      81$             ;#CONTINUE TEST
 3762  022254  004537  022120          80$:    PERFORM ,SETREG
 3763  022260     000     001                  .BYTE   000,001
 3764  022262  022556                          SYNC
 3765  022264  177775                          -3
 3766  022266  004537  022120          81$:    PERFORM ,SETREG
 3767  022272     004     005                  .BYTE   004,005
 3768  022274  027560                          RXBA
 3769  022276  177777                          -1
 3770  022300  004537  022120                  PERFORM ,SETREG
 3771  022304     010     011                  .BYTE   010,011
 3772  022306  023560                          TXTAB
 3773  022310  030160                          RXTAB
 3774  022312  004537  022120                  PERFORM ,SETREG
 3775  022316     013     012                  .BYTE   013,012
 3776  022320  000004                          BIT2
 3777  022322  000001                          BIT0
 3778  022324  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
 3779  022332  001412                          BEQ     60$             ;#BR IF NO.
 3780  022334  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
 3781  022340  020000                          BIT13                   ;#RECEIVER ENABLE
 3782  022342  004537  022164                  PERFORM ,LOAD.MODE      ;#
 3783  022346  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
 3784  022350  004537  022164                  PERFORM ,LOAD.MODE      ;#
 3785  022354  072000                          (BIT14+BIT13+BIT12)+BIT10
 3786                                                                  ;#9600 BAUD.
 3787  022356  000405                          BR      61$
 3788  022360  004537  022164          60$:    PERFORM ,LOAD.MODE
 3789  022364  034000                          BIT13+BIT12+BIT11
 3790  022366  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
 3791  022372  000207                  61$:    RTS     PC
 3792
 3793
 3794  022374                          SETSCAN:
 3795  022374  010346                          MOV     R3,-(SP)
 3796  022376  052777  000010  156756          BIS     #BIT3,@DVSCR
 3797  022404  012503                          MOV     (R5)+,R3
 3798  022406  001414                          BEQ     2$
 3799  022410  012777  050102  156762  1$:     MOV     #BIT14+BIT12+BIT6+BIT1,@DVSFR
 3800  022416  104415                          ROMCLK
 3801  022420  005201                          INC     R1
 3802  022422  012777  050102  156750          MOV     #BIT14+BIT12+BIT6+BIT1,@DVSFR
 3803  022430  104415                          ROMCLK
```

```
3804  022432  005201                          INC     R1
3805  022434  005303                          DEC     R3
3806  022436  001364                          BNE     1$
3807  022440  012603                  2$:     MOV     (SP)+,R3
3808  022442  010100                          MOV     R1,R0
3809  022444  000241                          CLC
3810  022446  006000                          ROR     R0
3811  022450  000205                          EXIT
3812
3813  022452  000042                  REGBUF: .BLKW   34.
3814  022556  000001                  SYNC:   .BLKW   1
3815  022560  000400                  TXBAP:  .BLKB   400
3816  023160  000400                  TXBAS:  .BLKB   400
3817  023560  000400                  TXTAB:  .BLKB   400
3818  024160  000400                          .BLKB   400
3819  024560  000400                          .BLKB   400
3820  025160  000400                          .BLKB   400
3821  025560  000400                          .BLKB   400
3822  026160  000400                          .BLKB   400
3823  026560  000400                          .BLKB   400
3824  027160  000400                          .BLKB   400
3825  027560  000400                  RXBA:   .BLKB   400
3826  030160  000400                  RXTAB:  .BLKB   400
3827  030560  000400                          .BLKB   400
3828  031160  000400                          .BLKB   400
3829  031560  000400                          .BLKB   400
3830  032160  000400                          .BLKB   400
3831  032560  000400                          .BLKB   400
3832  033160  000400                          .BLKB   400
3833  033560  000400                          .BLKB   400
3834  034160  000000                  DATA:   0
```

```
 3835  034162  043377  042522  020105  EM1:    .ASCIZ  <377>/FREE RUNNING ROM TESTS/
       034212  051377  041505  044505  EM2:    .ASCIZ <377>/RECEIVER CONTROL BYTE TEST./
       034247     377  051124  047101  EM3:    .ASCIZ <377>/TRANSMITTER CONTROL BYTE TEST./
       034307     377  042522  042503  EM4:    .ASCIZ <377>/RECEIVER BCC ERROR/
       034333     377  054105  042520  DH1:    .ASCIZ  <377> EXPECTED  FOUND   LINE<8>/
                                              .EVEN
       034366  000003                  DT1:    3
 3836  034370     006     004                  .BYTE   6,4
 3837  034372  001272                          SAVR5
 3838  034374     006     002                  .BYTE   6.2
 3839  034376  001270                          SAVR4
 3840  034400     002     001                  .BYTE   2.1
 3841  034402  001260                          SAVR0
 3842
 3843  034404                          .ERRTAB:
 3844  034404  000000                          0
 3845  034406  000000                          0
 3846  034410  000000                          0
 3847  034412  034162                          EM1
 3848  034414  034333                          DH1     ;HALT   1
 3849  034416  034366                          DT1
 3850  034420  034212                          EM2
 3851  034422  034333                          DH1     ;HALT 2
 3852  034424  034366                          DT1
 3853  034426  034247                          EM3
 3854  034430  034333                          DH1     ;HALT 3
 3855  034432  034366                          DT1
 3856  034434  034307                          EM4
 3857  034436  034333                          DH1     ;HALT 4
 3858  034440  034366                          DT1
 3859
 3860  034442                          ;;*****************************************************************
 3861          000001                  CORMAX:
                                       .END
```

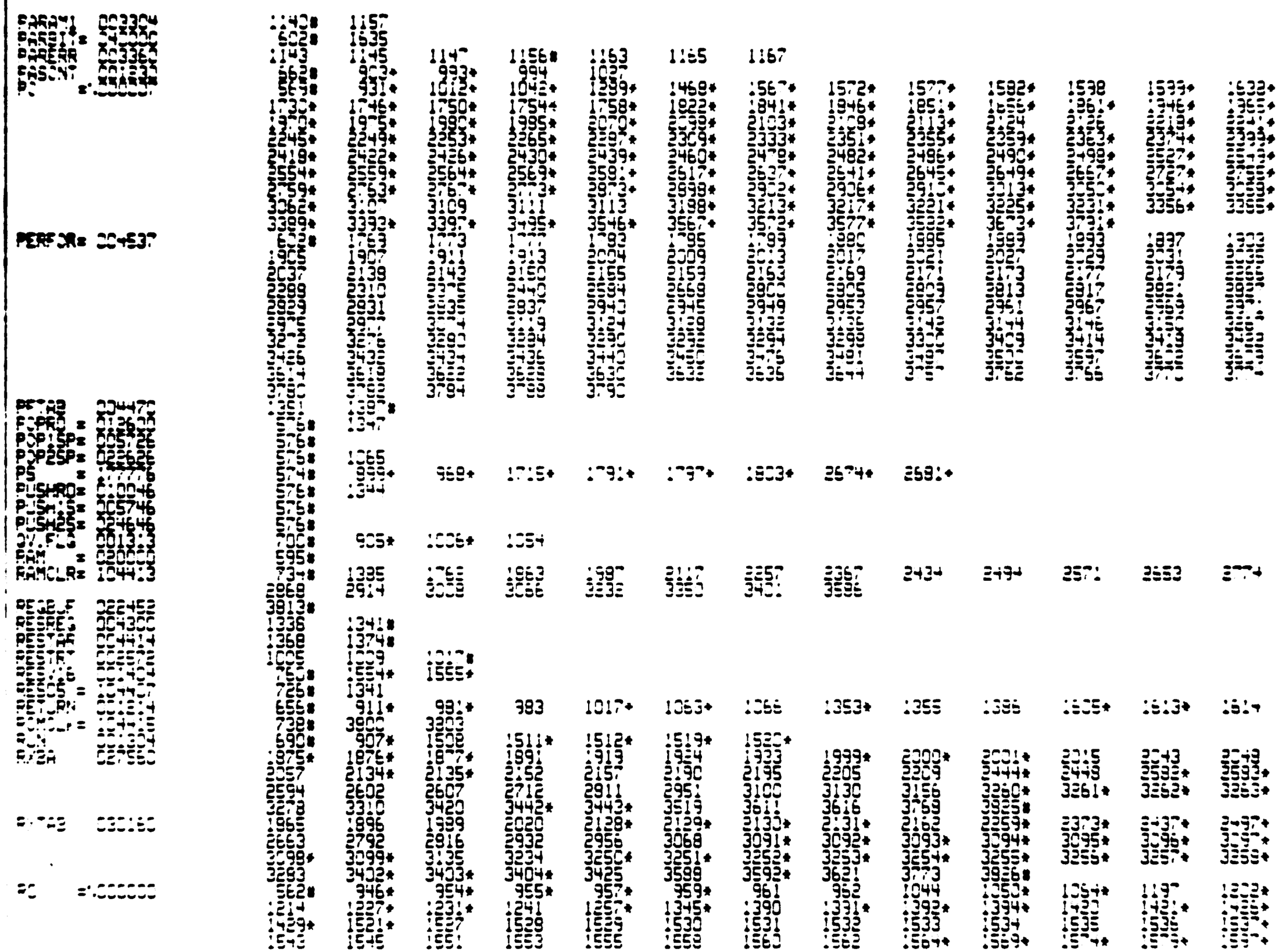
```
[illegible] MACY11 [illegible]  [illegible]-SEP-75  11:06  PAGE 80
[illegible].P11       CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible] = [illegible]          730#   997    999    1001   1003   1323   1325   1391   1439
[illegible] = [illegible]          728#   937    1339
[illegible]   [illegible]          3560#  3851
[illegible]   [illegible]          [illegible]  [illegible]#
[illegible] = [illegible]          [illegible]  [illegible]#
[illegible]   [illegible]          692#   [illegible]+  1513+  1514   1516+  1521   1522+  1523   1526+
[illegible]   [illegible]          931    [illegible]#
[illegible]   [illegible]          991    1017   1018   1503#
[illegible]   [illegible]          3834#
[illegible]   [illegible]          1312+  1315   1337   1340#
[illegible] = [illegible]          [illegible]#
[illegible]   [illegible]          1311+  1333   1336#
[illegible] = [illegible]          736#   1796   2194   2682   3455   3462   3509   3743
[illegible]   [illegible]          1136+  1171   1181#
[illegible]   [illegible]          3835#  3849   3851   3854   3857
[illegible]   [illegible]          3835#  3849   3852   3855   3859
[illegible]   [illegible]          686#   953+   954    1503   1509   1682+  1688+  1689+  1693   1712
[illegible]   [illegible]          802#
[illegible]   [illegible]          813#
[illegible]   [illegible]          824#
[illegible]   [illegible]          835#
[illegible]   [illegible]          846#
[illegible]   [illegible]          857#
[illegible]   [illegible]          868#
[illegible]   [illegible]          879#
[illegible]   [illegible]          [illegible]#  1422+  1423   1542+  1543+  1544   3737+  3738+  3741
[illegible]   [illegible]          759#   1552+  1553+  1554
[illegible]   [illegible]          687#   902    1007   1554+  1675+  1676   1683   1685
[illegible]   [illegible]          753#   1540+  1541+  1542   2690   2709   2841   2981   3346   3512   3655
[illegible]   [illegible]          749#   1557+  1558+  1559   2676+
[illegible]   [illegible]          747#   1024   1529+  1557   2675+
[illegible]   [illegible]          751#   1021   1299+  1412+  1416+  1527+  1539   1794+  1802+  1914+  1915   2038+  2039
                                   2180+  2182   2270+  2271   2292+  2293   2314+  2315   2379+  2390   2445+  2446   [illegible]+
                                   2503   2590+  2591   2677+  2694+  [illegible]+  [illegible]  [illegible]+  2939   [illegible]+  [illegible]  [illegible]+  [illegible]
                                   3307+  3308   3451+  3453   3460   3504+  3506   3645+  3646   3648   3652+  3653   3729+
                                   3796+
[illegible]   001364               752#   1538+  1539+  1540
[illegible]   001400               758#   1550+  1551+  1552   3799+  3802+
[illegible]   001376               757#   1403   1548+  1549+  1550   1806   2274   2296   2318   2393   2455+  2500+  2527
                                   2511   2515   2519   2599+  2673+  2849   2955   2961   2965   2999   2995   3001   3005
                                   3169   3174   3179   3321   3328   3334   3339   3490+  3491+  3493+  3503+  3551+  3729+
                                   3731+
D.SRS         001372               755#   1402   1544+  1545+  1546   1768+  1874+  1998+  2133+  2264+  2286+  2309+  2797+
                                   2937+  3116+  3264+  3406+  3594+  3754+
D.SRSH        001374               756#   1546+  1547+  1548   1805+  2273+  2295+  2317+  2392+  2454+  2499+  2506+  2510+
                                   2514+  2518+  2598+  2672+  2848+  2954+  2960+  2964+  2359+  2994+  [illegible]+  [illegible]+  3169+
                                   3173+  3178+  3320+  3327+  3333+  3339+  3499+  3492+  3502+  3550+  3727+  3730+
[illegible]   001360               750#   1561+  1562+  1793+
[illegible]   [illegible]          803#
[illegible]   [illegible]          814#
[illegible]   001526               825#
[illegible]   001552               836#
[illegible]   001576               847#
[illegible]   001622               858#
[illegible]   001646               869#
[illegible]   001672               880#
[illegible]   001716               [illegible]#
```

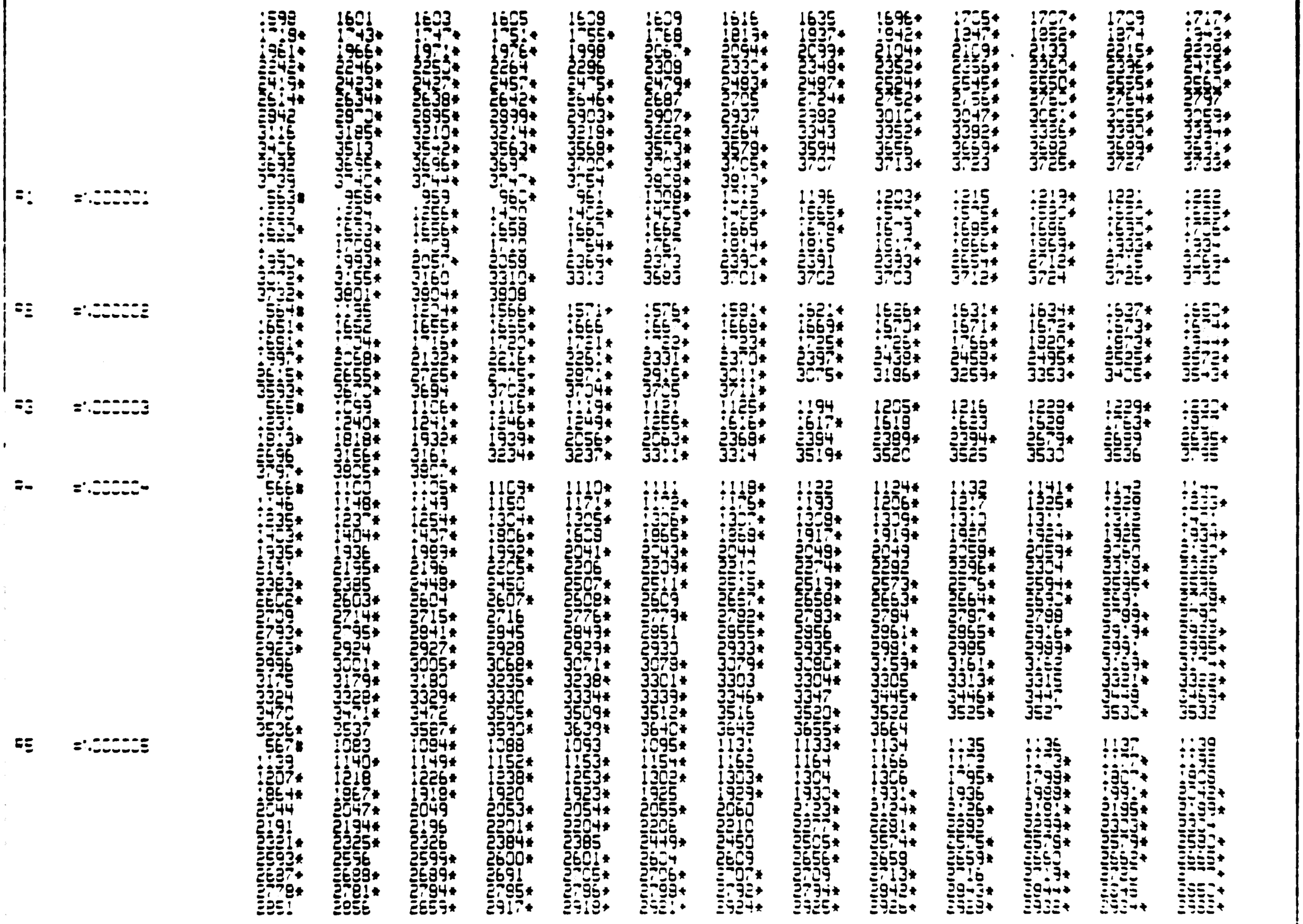
[illegible]	[illegible]	749#	1559*	1560*	1561	1792*			
[illegible]	[illegible]	[illegible]#	1514	1523	1652				
[illegible]	[illegible]	692	901#	906	933	1516	1526	1650	1655	1704
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	[illegible]#							
[illegible]	[illegible]	876#							
[illegible]	[illegible]	881#							
[illegible]	[illegible]	893#							
[illegible]	[illegible]	895#							
[illegible]	[illegible]	887#							
[illegible]	[illegible]	2265	2287	2309	2374	2439	2498	2591	2667	3754#
[illegible]	[illegible]	3835#	3847						
[illegible]	[illegible]	3835#	3850						
[illegible]	[illegible]	3835#	3853						
[illegible]	[illegible]	3835#	3856						
[illegible]	[illegible]	663#	908*	1030	1348*				
[illegible]	[illegible]	699#	904*	992*	1059*	1300*	1313	1327*	1392*
[illegible]	[illegible]	1310*	1328	1331#					
[illegible]	[illegible]	1325	1357#						
[illegible] =	[illegible]	602#	3691	3734	3748	3811			
[illegible]	[illegible]	1343	1348#						
[illegible]	[illegible]	1567	1572	1577	1582	1616#			
[illegible]	[illegible]	1296	1342#						
[illegible]	003436	1135*	1162	1180#					
[illegible]	[illegible]	659#	1057	1062*					
[illegible]	[illegible]	1105	1141	1489#					
[illegible]	[illegible]	697#	913	929*					
[illegible] =	[illegible]	720#	1156						
[illegible] =	[illegible]	718#	1599						
[illegible]	[illegible]	1112	1124#						
[illegible]	[illegible]	631#	923						

E07

[illegible] MACY11 27(732) 17-SEP-76 11:06 PAGE 92
[illegible].P11 CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]	001200	642#	923*	994*								
[illegible]	[illegible]	1151	1152#									
[illegible]	[illegible]	1483	1485									
[illegible]	002164	1793	1795	1799	1903	1905	1907	1911	2027	2029	2031	2035	2169	2171
		[illegible]	[illegible]	2927	2929	2931	2935	2967	2969	2971	2505	3142	3144	3146
		[illegible]	3290	3292	3294	3298	3432	3434	3436	3440	3487	3500	3528	3530
		3632	3636	3736#	3790	3792	3794	3788						
[illegible]	002442	1137*	1166	1182#	1183									
[illegible]	[illegible]	669#	1061*	1075	1077	1319	1761*	1862*	1386*	2116*	2256*	2366*	2423*	2433*
[illegible]	[illegible]	2570*	2652*	2770*	2913*	3065*	3229*	3400*	3585*					
[illegible]	002562	629	1011#											
[illegible]	[illegible]	699#												
[illegible]	[illegible]	1134*	1164	1179#										
[illegible]	[illegible]	660#	1056*	1057	1060*									
[illegible]	[illegible]	2215	3715#											
[illegible] ERR	001234	664#	909*	991*	1043*	1297	1299*	1393*						
[illegible].03	001416	[illegible]#	1529*	1564	1744	1939	1963	2096	2239	2349	2416	2476	2547	2635
		2753	2896	3049	3211	3383	3565							
[illegible]04.07	001420	[illegible]#	1531*	1569	1748	1944	1968	2101	2243	2353	2420	2480	2552	2639
		2757	2900	3052	3215	3387	3570							
[illegible]08.11	001422	[illegible]9#	1533*	1574	1752	1949	1973	2106	2247	2357	2424	2494	2557	2643
		2761	2904	3056	3219	3391	3575							
[illegible]12.15	001424	[illegible]9#	1535*	1579	1756	1954	1979	2111	2251	2361	2429	2489	2562	2647
		2765	2908	3060	3223	3395	3580							
MASK	001244	672#	1839*	1843*	1848*	1953*	1931	1962*	1967*	1972*	1977*	2055	2095*	2100*
		2105*	2110*	2204	2546*	2551*	2556*	2561*	2601	3564*	3569*	3574*	3579*	3663
[illegible]A	001406	766#	1565	1839	1962	2095	2546	3564						
[illegible]	[illegible]	767#	[illegible]	1843	1967	2100	2551	3569						
[illegible]	[illegible]	768#	[illegible]	1848	1972	2105	2556	3574						
[illegible]	[illegible]	769#	1580	1853	1977	2110	2561	3579						
[illegible]	[illegible]	[illegible]	1479#											
[illegible]	[illegible]	[illegible]	1213	1317	1319	1326	1467	1479#	599	1606				
[illegible]RX	[illegible]	996	1479#											
[illegible]	[illegible]	1240	1250	1492#										
[illegible]PASS	[illegible]	995	1479#											
[illegible]	[illegible]	1324	1479#											
[illegible]RX	[illegible]	1000	1479#											
[illegible]ERR2	[illegible]	1479#	1505	1695										
[illegible]ERR3	[illegible]	950	1479#											
[illegible]CK	[illegible]	974	1479#											
[illegible]EW	[illegible]	945	1479#											
[illegible]PASSX	[illegible]	1000	1479#											
[illegible]	[illegible]	1350	1479#											
[illegible]	[illegible]	1100	1479#	1611										
[illegible]	[illegible]	982	1479#											
[illegible]RESET=	[illegible]	602#	1399	1412										
[illegible]STCLR=	104412	732#	1394	1811	1941	2065	2213	2263	2295	2307	2399	2453	2522	2612
		2722	3193	3540	3667									
[illegible]E	[illegible]	640#	927											
[illegible]	002366	1322	1479#	1590										
[illegible]PC	[illegible]	1479#												
[illegible]	002336	998	1479#											
[illegible]	001216	657#	1063	1353	1742*	1936*	1960*	2093*	2237*	2347*	2414*	2474*	2544*	2633*
		2751*	2894*	3046*	3209*	3381*	3562*							
[illegible]=	****** U	592												
[illegible] =	[illegible]	[illegible]#												
[illegible] =	[illegible]	[illegible]22#	1591											





H07


```
                         2983*  2984*  2985   2990*  2991   2996   2999*  3067*  3070*  [illegible] [illegible] [illegible] [illegible]
                         [illegible] 3102* 3103* 3104* 3105* 3106* 3107* 3109* 3111* [illegible] 3115* [illegible] [illegible]
                         3162   3167*  3172*  3175   3180   3233*  3236*  3240*  3241   [illegible] 3243 3245 [illegible]
                         3248   3250   3251   3253   3254   3255   3302*  3303*  3314*  [illegible] 3323* 3324 3330
                         3335*  3341*  3343*  3344*  3345*  3347   3444*  3447*  3452*  3456* 3459* 3463* 3466*
                         3467*  3469*  3470*  3513*  3514*  3515*  3516   3521*  3522   [illegible] 3527 3531* 3533
                         3535*  3537   3588*  3589*  3639*  3642*  3655*  3657*  3658*  3661* 3663* 3664 3695
                         3696   3687   3714*  3725   3726   3728   3731   3737   3797
[illegible]  [illegible]  659#    948   1693*
[illegible]  [illegible]  689#    902*  1004*  1007*  1696*
[illegible]  [illegible]  695#   1198*  1359
[illegible]  [illegible]  679#   1197*  1202   3841
[illegible]  [illegible]  679#   1196*  1203
[illegible]  [illegible]  690#   1195*  1204
[illegible]  [illegible]  691#   1194*  1205
[illegible]  [illegible]  692#   1193*  1206   3839
[illegible]  [illegible]  693#   1192*  1207   3937
[illegible]  [illegible]  694#
[illegible] = 104406      724#   1301
[illegible] = 1044[illegible] 712#  1753  1857  1931  2114  2254  2364  2431  2491  2565  2650  2759  2911
                         3063   2226   3398   3593
SCOP1 = 104401            714#   1812   1942   2066   2214   2329   2395   2456   2523   2613   2723   2969   3003
                         3184   3351   3541   3669
[illegible]  004640      1042   1289   1433#  1434
[illegible]  022120      1769   1773   1777   1890   1885   1989   1993   1997   2004   2009   2013   2017   2021
                         2138   2143   2150   2155   2159   2163   2266   2299   2310   2375   2440   2594   2663
                         2800   2805   2909   2813   2917   2921   2940   2945   2949   2953   2957   2961   3119
                         3124   3129   3132   3136   3267   3272   3276   3290   3294   3409   3414   3419   [illegible]
                         3426   3476   3491   3597   3602   3609   3614   3619   3622   3723#  3757   3762   3766
                         3770   3774
[illegible]  022374      3794#
[illegible]  [illegible] 1913  2037   2179   2837   2977   3074   3300   3450   3644   3675#  3790
[illegible]  [illegible] 2277  2299   2321   3692#
SP  =:000006              569#    900*   915*   916*   922    925    926    969*  1038*  1039*  1040   1044*  1054
                         1077*  1083*  1084   1095*  1095   1099*  1100*  1101   1102*  1119   1119   1121*  1122*
                         1124   1125   1131*  1132*  1133   1139*  [illegible] [illegible] 1198 [illegible] 1215* [illegible] [illegible]
                         1216*  1219   1220*  1253   1254   1255   1256   1257   1270*  1271*  1272*  1273*  [illegible]
                         1275*  1276*  1277   1295*  1296*  1287   1297   1299   1302   1345   1354*  1376*  1390*
                         1394   1400*  1401*  1407   1409   1420*  1429   1442*  1443*  1444   1449   1455   1457
                         1459*  1460   1463*  1464*  1465   1699*  1725   1727   1728*  1801   1804   2686   2699*
                         2701*  3682*  3683*  3684*  3711   3712   3713   3723*  3724*  3732   3733   3739*  [illegible]
                         3795*  3807
[illegible] = 003745     1223*  1244   1247*  1261#
[illegible]  [illegible]  633#    924
[illegible] = [illegible] 575#    900    969   1354   1376
[illegible]  001236       669#   1744*  1749*  1752*  1755*  1791   1839*  1844*  1949*  1954*  1959   1979   1901
                         1929   1963*  1968*  1973*  1978*  1983   2002   2025   2096*  2101*  2106*  2111*  2135
                         2148   2167   2199   2239*  2243*  2247*  2251*  2349*  2353*  2357*  2361*  [illegible] [illegible]
                         2424*  2428*  2476*  2480*  2484*  2498*  2547*  2552*  2557*  2562*  2567   2575   2579
                         2590   2593   2635*  2639*  2643*  2647*  2753*  2757*  2761*  2765*  2771   2792   2799
                         2925   2896*  2900*  2904*  2908*  2922   2939   2965   3048*  3052*  3056*  3060*  [illegible]
                         3117   3140   3211*  3215*  3219*  3223*  3229   3265   3289   3393*  3397*  3391*  3395*
                         3407   3430   3457   3468   3474   3495   3499   3565*  3570*  3575*  3590*  3595   3607
                         3626   3659   3676   3678   3755   3778
[illegible]  003452      1192#
[illegible]  001202       644#    919    924*   929    943    948    953    972   1036   1045   1052   1073   1095
```

```
                                   1283    1290    1295    1342    1349    1351    1435    1436*   1446*   1451*   1452*   1453*   1460*
                                   1553
[illegible]  = 000001              555#    943
[illegible]  = 000002              554#    1093
[illegible]  = 000004              553#
[illegible]  = 000010              552#
[illegible]  = 000020              551#
[illegible]  = 000040              550#
[illegible]  = 000100              549#
[illegible]  = 000200              548#
[illegible]  = 000400              547#    1349
[illegible]  = 001000              546#    1073
[illegible]  = 002000              545#    1351
[illegible]  = 004000              544#    1052
[illegible]  = 010000              543#    1096    1290
[illegible]  = 020000              542#    1295
[illegible]  = 040000              541#
[illegible]  = 100000              540#
SYNA00   001506                    805#
SYNA01   001532                    816#
SYNA02   001556                    827#
SYNA03   001602                    838#
SYNA04   001626                    849#
SYNA05   001652                    860#
SYNA06   001676                    871#
SYNA07   001722                    892#
SYNB00   001512                    807#
SYNB01   001536                    918#
SYNB02   001562                    829#
SYNB03   001606                    840#
SYNB04   001632                    851#
SYNB05   001656                    962#
SYNB06   001702                    873#
SYNB07   001726                    984#
SYNC     022555                    1887    2011    2145    2907    2947    3126    3274    3416    3483    3504    3576*   3577*   3580*
                                   3764    3914#
SYNCX    001240                    670#
SYNC00   001516                    809#
SYNC01   001542                    820#
SYNC02   001566                    831#
SYNC03   001612                    842#
SYNC04   001636                    853#
SYNC05   001662                    864#
SYNC06   001706                    875#
SYNC07   001732                    895#
SYNC2A   001426                    791#    1530*
SYNC2B   001430                    782#    1532*
SYNC2C   001432                    783#    1534*
SYNC2D   001434                    784#    1536*
SYND00   001522                    811#
SYND01   001546                    822#
SYND02   001572                    833#
SYND03   001616                    844#
SYND04   001642                    855#
SYND05   001666                    966#
SYND06   001712                    977#
```

DZDVD-B MACY11 27(732) 17-SEP-76 11:06 PAGE 87
DZDVDB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

SYNDAT	001736	898#												
S. =	060000	599#												
TEMP	005562	1227	1377*	1379*	1490#									
TEMP1	001246	673#	933*	934	939*	1481	1712*	1713*	3157*	3165*	3635*	3703*		
TEMP2	001250	674#	934*	935	1493	3686*	3690*							
TEMP3	001252	675#	3312*	3318*	3687*	3689	3699*	3701	3706*	3707*	3710			
TEMP4	001254	676#												
TEMP5	001256	677#												
TKCSR	001204	648#	1048	1107	1433	1440	1461							
TKDBR	001206	649#	1038	1050	1109	1115	1295	1442	1463					
TLAST =	021142	1609	3835#											
TPCSR	001210	650#	1091	1113	1292	1447								
TPDBR	001212	651#	1093*	1115*	1294*	1449*								
TRPCK	003762	1273#												
TSTNO	001226	661#	910*	1362	1389	1594	1601	1603	1741*	1835*	1959*	2092*	2236*	2346*
		2413*	2473*	2543*	2632*	2750*	2893*	3045*	3208*	3390*	3561*			
TST1	007256	1597	1613	1741#										
TST10	013244	2414	2473#											
TST11	013554	2474	2543#											
TST12	014166	2544	2632#											
TST13	014650	2633	2750#											
TST14	015442	2751	2893#											
TST15	016222	2894	3045#											
TST16	017166	3046	3208#											
TST17	020144	3209	3390#											
TST2	007564	1742	1835#											
TST20	021142	3391	3561#	3835										
TST21 =	******	3562												
TST3	010430	1836	1959#											
TST4	011174	1960	2092#											
TST5	012004	2093	2236#											
TST6	012512	2237	2346#											
TST7	012772	2347	2413#											
TTST	002702	975*	976*	978*	979*	1046#								
TXCSYN=	010000	602#	3678											
TXBAP	022560	1765*	1771	1871*	1872*	1882	1995*	1996*	2006	2123	2140	2260*	2371*	2436*
		2501*	2574	2657	2786	2902	2926	2942	3106	3121	3155	3269	3302	3411
		3444	3466	3479	3599	3639	3759	3815#						
TXBAS	023160	3816#												
TXTAB	023560	1767*	1776	1864	1895	1989	2019	2118*	2119*	2120*	2121*	2122*	2161	2259*
		2372*	2435*	2496*	2497	2777	2791	2815	2917	2921	2955	3067	3079	3081*
		3082*	3083*	3084*	3085*	3086*	3087*	3088*	3089*	3134	3233	3241*	3242*	3243*
		3244*	3245*	3246*	3247*	3248*	3249*	3292	3424	3620	3772	3817#		
TYPDAT	004266	1316	1334	1337#										
TYPE =	104402	716#	927	932	945	950	974	982	995	996	998	1000	1002	1030
		1103	1120	1213	1250	1317	1319	1321	1322	1324	1326	1330	1335	1390
		1437	1439	1467	1505	1589	1606	1611	1695					
TYPMSG	004166	1314	1317#											
VECMAP	007102	1694	1702#											
WRCONT	003742	1221*	1251*	1259#										
WRKBUF	004254	1329	1332#											
XBX	004060	1291	1293	1295#										
XCSR	002604	997	1019#											
XERR	002626	1003	1029#											
XFR =	030000	596#												
XHEAD	005461	932	1479#											

```
DZDVD-B MACY11 27(732)  17-SEP-76  11:06  PAGE 99
DZDVCB.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

XPASS    002620        1001   1025*
XPOLY    002112        2276*  2298*  2320*  3695   3706   3715*
XSTATO   005506         938   1479*
XTSTN    004374        1323   1360*
XVEC     002612         999   1022*
$CRAP  = 177777           1*  1733*  1737*  1825*  1831*  1949*  1955*  2073*  2089*  2221*  2232*  2336*  2342*
                       2402*  2409*  2463*  2469*  2530*  2539*  2620*  2628*  2731*  2746*  2876*  2889*  3016*
                       3041*  3190*  3204*  3362*  3376*  3548*  3557*
$E     = 000022           1*  1742   1743*  1836   1837*  1960   1961*  2093   2094*  2237   2238*  2347   2348*
                       2414   2415*  2474   2475*  2544   2545*  2633   2634*  2751   2752*  2894   2895*  3046
                       3047*  3209   3210*  3381   3382*  3562   3563*
$N     = 000020           1*  1733   1739   1743*  1825   1833   1837*  1949   1957   1961*  2073   2090   2094*
                       2221   2234   2239*  2336   2344   2349*  2402   2411   2415*  2463   2471   2475*  2530
                       2541   2545*  2620   2630   2634*  2731   2748   2752*  2876   2891   2895*  3016   3043
                       3047*  3190   3206   3210*  3362   3378   3392*  3548   3559   3563*  3835*
$Y     = 000017           1*   703*   712    714*   716*   719*   720*   722*   724*   726*   728*   730*   732*
                        734*   736*   739*   740*   742*
.      = 034442         613*   614    617*   624*   625*   626*   627*   630*   632*   635*   639*   641*   636*
                        687*   689*   689*   690*   691*   800*   802*   803*   804*   805*   806*   807*   808*
                        809*   810*   811*   813*   814*   815*   816*   817*   818*   819*   820*   821*   822*
                        824*   825*   826*   827*   828*   829*   830*   831*   832*   833*   835*   836*   837*
                        838*   839*   840*   841*   842*   843*   844*   846*   847*   848*   849*   850*   851*
                        852*   853*   854*   855*   857*   858*   859*   860*   861*   862*   863*   864*   865*
                        866*   868*   869*   870*   871*   872*   873*   874*   875*   876*   877*   879*   880*
                        881*   882*   883*   884*   885*   886*   887*   888*   952   1041   1289   1370   1373
                       1393   1431*  1441   1448   1462   1489*  1491*  1493*  1507   1698   1719   1960   1915
                       1984   2040   2283   2305   2327   2381   2447   2504   2508   2568   2592   2684   2704
                       2772   2840   2980   3154   3230   3309   3354   3454   3457   3461   3464   3486   3497
                       3499   3507   3510   3544   3591   3647   3649   3654   3660   3671   3913*  3914*  3915*
                       3816*  3817*  3918*  3919*  3920*  3821*  3822*  3923*  3824*  3925*  3926*  3927*  3928*
                       3829*  3930*  3931*  3832*  3933*
.BEGIN   002332         969*
.CNVRT   003542         731   1214*
.CONVR   003536         729   1213*
.DATAC   004576         741   1419*
.DELAY   004476         737   1390*
.EOP     002436         990*  2562
.ERRTA   034404        1309   3843*
.HLT     004002         620   1282*
.INSTE   003224         721   1120*
.INSTR   003120         719   1099*
.INSTI   003140        1103*  1123
.MSG     003142        1101*  1104*
.MSTCL   004556         733   1411*
.PARAM   003244         723   1131*
.PFAIL   004402         618    901   1367*  1375
.RAMCL   004516         735   1398*
.RESOS   003504         727   1202*
.ROMCL   004566         739   1415*
.SAVOS   003444         725   1198*
.SCOPE   002634         713   1035*
.SCOP1   003020         715   1073*
.START   001742         636    899*   911
.TRPSR   003750         622   1270*
.TRPTA   001314         711*  1275
.TYPE    003044         717   1083*
```

```
DVEND       1#    994
DVFRNT      1#    522
HLT       576#   1428   1800   1810   1922   1927   1939   2046   2051   2062   2187   2193   2198   2208   2212
         2294    2326   2329   2387   2452   2509   2513   2517   2521   2598   2606   2611   2685   2693   2711
         2718    2847   2853   2859   2863   2957   2987   2993   2998   3003   3007   3164   3171   3177   3182
         3217    3326   3332   3337   3342   3349   3458   3465   3511   3519   3524   3529   3534   3539   3556
         3746
$ACIUS    522#   1879   2002   2136   2149   2798   2938   3117   3265   3407   3474   3595   3607   3755
$BREAK    522#   2263   2295   2307
$BUFFE      1#   1495
$CKIS       1#
$CKISD      1#
$CLR.T      1#
$CTOLE      1#   1494
$EOP        1#    994
$FINI       1#   3835
$GETFL      1#
$GETPA      1#   1595
$HEADE      1#    522
$LC16     522#   1732
$LC16A    522#   1824   1948
$LC17     522#   2072
$LC18     522#   2220
$LC19     522#   2462
$LC20     522#   2529
$LC21     522#   2619
$LC22     522#   2730   2875
$LC30     522#   3015
$LC31     522#   3190
$LC32     522#   3361
$LC33     522#   3547
$MSG        1#   1479
$PFAIL      1#   1363
$RAMCL      1#   1390
$RXSHI      1#
$SCOPE      1#   1031
$SETAS    522#   1781   1901   2025   2167   2825   2965   3140   3292   3430   3626   3778
$SETLI      1#   1739   1833   1957   2090   2234   2344   2411   2471   2541   2630   2748   2991   3043   3206
         3378    3559
$SETSC      1#   3793
$SETSY      1#   3675
$SET.T      1#
$SILOI      1#
$SIMBC      1#   3682
$TRPDE      1#    712    714    716    718    720    722    724    726    728    730    732    734    736    738
          740
$TSTN       1#   1739   1833   1957   2090   2234   2344   2411   2471   2541   2630   2748   2991   3043   3206
         3378    3559
$TXSHI      1#
$VARIA      1#    638
$XZ         1#   1733   1737   1825   1831   1949   1955   2073   2088   2221   2232   2336   2342   2402   2409
         2463    2469   2530   2539   2620   2628   2731   2746   2876   2899   3016   3041   3190   3204   3362
         3376    3548   3557
```

CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
ADC     2691
ADCB    1512  1520
ADD      939  1095  1102  1173  1220  1230  1275  1306  1309  1405  1513  1562  1543  1545  1551
        1553  1555  1558  1560  1562  1678  1723  1814  2390  2784  2924  3079
ASL     1152  1153  1154  1273  1305  1307
BCC     1425  1714
BCS     1454
BED      936   944   973  1009  1037  1046  1055  1074  1076  1112  1143  1151  1245  1284  1291
        1298  1314  1320  1329  1334  1338  1352  1445  1584  1636  1677  1684  1782  1809  1816
        1860  1879  1902  1921  1926  1937  1984  2003  2026  2045  2050  2061  2137  2149  2168
        2192  2197  2207  2211  2283  2305  2327  2386  2392  2451  2508  2512  2568  2597  2605
        2610  2692  2697  2710  2717  2772  2799  2826  2846  2852  2857  2962  2866  2939  2966
        2985  2992  2997  3002  3006  3118  3141  3163  3170  3176  3181  3230  3266  3289  3316
        3325  3331  3335  3340  3348  3354  3408  3431  3475  3486  3499  3517  3523  3528  3533
        3538  3544  3596  3608  3627  3641  3660  3665  3671  3679  3693  3756  3779  3798
BGT     1147  1458
BHI     1163
BIC      955  1039  1229  1274  1286  1308  1443  1459  1464  1617  1721  1726  1802  1930  1935
        2054  2059  2595  2600  2603  2608  2700  2783  2923  3077  3322  3329  3490  3697  3703
        3704  3706  3729
BICB    1110  1148  1931  2055  2204  2601  3663
BIS     1416  1422  1460  1667  1668  1669  1670  1671  1672  1673  1674  1720  1725  1794  2500
        2673  2677  2689  2694  2707  2844  2984  3249  3345  3491  3493  3503  3504  3515  3651
        3652  3658  3705  3707  3738  3796
BISB    1149  3244  3252  3257
BIT      943   972  1045  1052  1073  1086  1290  1295  1349  1351  1433  1583  1635  1781  1859
        1978  1901  1983  2002  2025  2136  2148  2167  2199  2567  2771  2798  2825  2938  2965
        3117  3140  3229  3265  3288  3407  3430  3474  3495  3498  3595  3607  3626  3659  3678
        3692  3755  3778
BITB    1166  1508
BLO     1165
BLOS     949  1711
BLT     1145  1456
BMI      930  1745  1749  1753  1757  1840  1845  1850  1855  1964  1969  1974  1979  2097  2102
        2107  2112  2183  2240  2244  2248  2252  2350  2354  2358  2362  2417  2421  2425  2429
        2477  2481  2485  2489  2548  2553  2558  2563  2636  2640  2644  2648  2754  2758  2762
        2766  2897  2901  2905  2909  3049  3053  3057  3061  3212  3216  3220  3224  3384  3388
        3392  3396  3454  3461  3507  3566  3571  3576  3581
BNE      914   942   963   971  1005  1041  1053  1058  1087  1094  1117  1167  1175  1239  1243
        1248  1252  1288  1296  1316  1350  1379  1393  1406  1427  1434  1466  1504  1509  1515
        1525  1587  1600  1602  1604  1610  1619  1624  1629  1653  1659  1661  1663  1680  1691
        1719  1799  1821  1940  1945  2064  2069  2186  2200  2217  2332  2398  2459  2516  2520
        2526  2577  2616  2661  2666  2684  2721  2726  2780  2791  2796  2872  2920  2931  2936
        3012  3073  3166  3187  3306  3319  3449  3457  3464  3473  3497  3510  3709  3745  3806
BPL     1049  1089  1092  1108  1114  1293  1343  1441  1448  1462  1870  1916  1994  2040  2272
        2294  2316  2381  2447  2504  2592  2704  2840  2980  3154  3239  3309  3591  3647  3649
        3654  3742
BR       921   940   952   977  1047  1051  1123  1155  1157  1370  1507  1517  1607  1612  1622
        1627  1632  1698  1724  1788  1884  1910  2008  2034  2142  2154  2176  2804  2934  2944
        2974  3123  3149  3271  3297  3413  3439  3480  3601  3613  3635  3643  3761  3787
CLC     1232  1234  1236  1450  1510  1518  1687  3698  3809
CLR      903   908   909   917   946   960   991  1043  1060  1061  1140  1377  1393  1404  1421
        1446  1651  1696  1715  1717  1722  1763  1764  1795  1797  1803  1817  1918  1966  1967
        1868  1875  1876  1877  1917  1990  1991  1992  1999  2000  2001  2041  2134  2135  2191
        2275  2297  2319  2368  2369  2393  2394  2444  2455  2505  2582  2583  2654  2656  2679
        2680  2691  2713  2714  2787  2859  2927  2999  3101  3102  3103  3104  3105  3159  3159
```

CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

[illegible] 557 604 638 691 984 1032 1732

[illegible]

ERRORS DETECTED: 0
[illegible] GLOBALS GENERATED: 0

[illegible]