DV11

FREE RUNNING ROM TESTS 2

MD-11-DZDVD-B

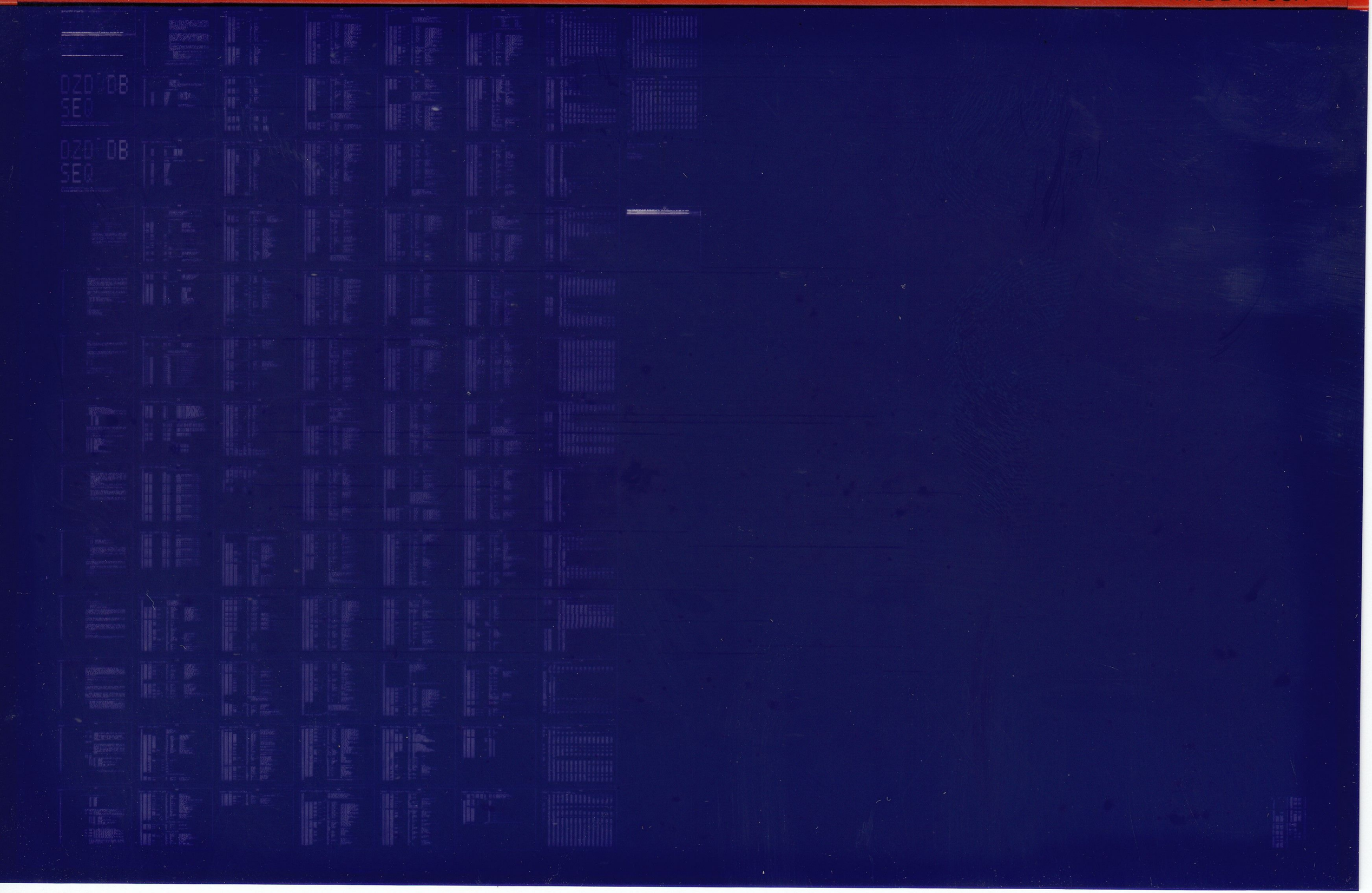
EP-DZDVD-B-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN USA



B01

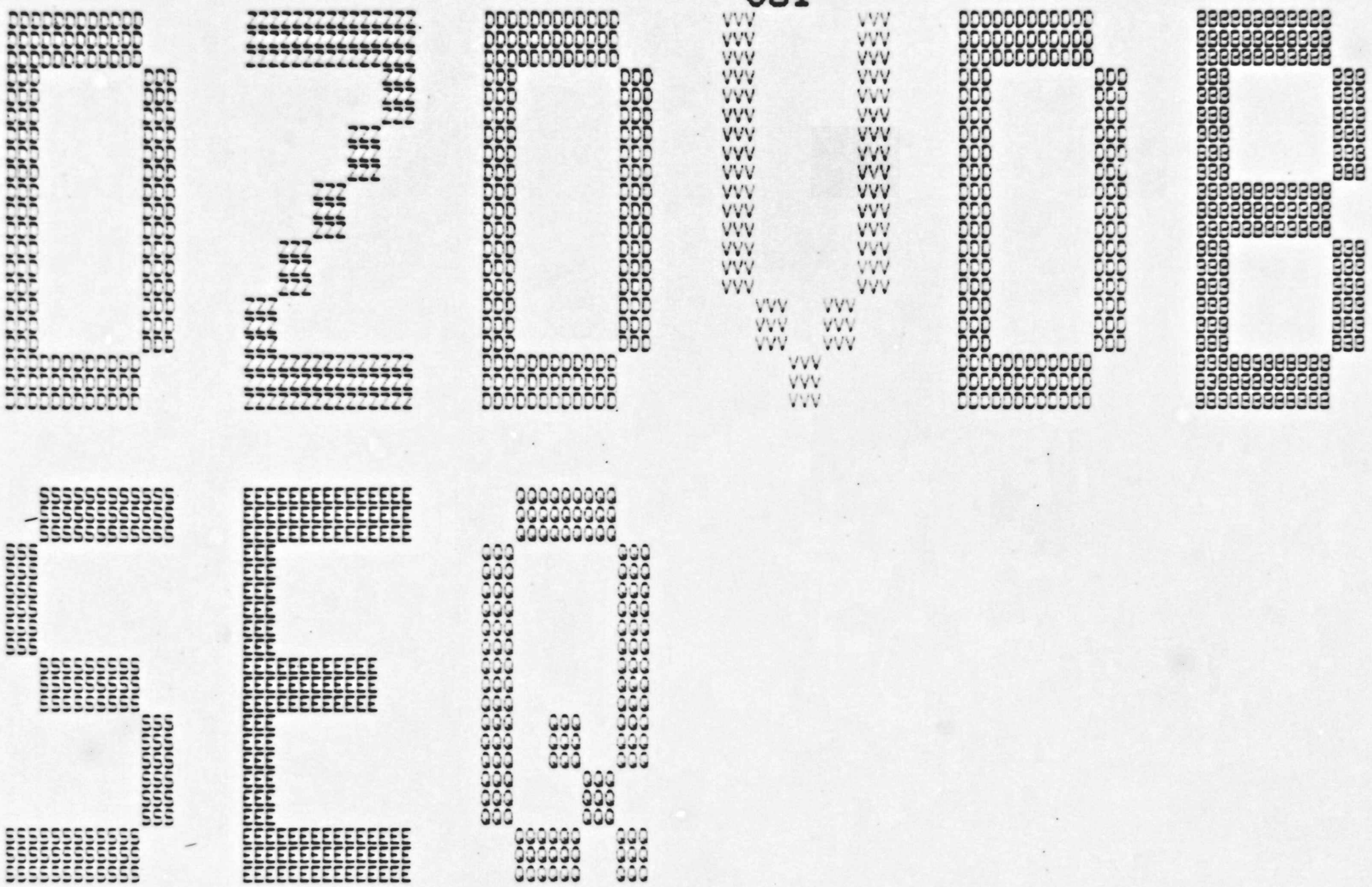
```
$PSE789S123456789312345678912345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012LPT
[BSTART*ABar DAVIES,TOMII4OEEZE41 3565 DZDVDB SIIIT31 Date 13MOctM76 15:20:58 Monitor IPC-D 5078 [1A3] *START*
D   D   A   A  V   V   I   E   S          T    O   O  MM MM
D   D   A   A  V   V   I   E   S          T    O   O  M M M
D   D   A   A  V   V   I   EEEE  SSS      T    O   O  M   M
D   D   AAAAA  V   V   I   E        S     T    O   O  M   M
D   D   A   A   V V    I   E        S  .. T    O   O  M   M
DDDD    A   A    V    III  EEEEE SSSS   : T     OOO   M   M

XTO:ML21-4:DAVIES2-- distribution to ML21-4, slot 134    1    333   4  4   >
MM MM  L      2    11              4  4         <   11   3   3  4  4    >
M M M  L       2    1              4  4        <     1       3  4  4     >
M   M  L      2     1      -----   44444      <      1      3   44444     >
M   M  L     2      1                 4        <     1       3     4     >
M   M  L    2       1                 4         <    1   3   3     4    >
M   M  LLLLL 22222 111                4          <  111   333      4   >

/BOTNB2S-WeDAVDSIES,TOM(4900;2804)eJMb21DEDVDBeSe&3431 Date 13-Oct-76 15:20:58 Monitor IPC-D 5078 [1A3] #START#
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223331
38867890A829867T29OT8045628982888567898823V8679801273587890183058729D183056289012345678901239562890023456789012345678901234567890 12 *S
D   D   A   A  V   V   I   E   S          T    O   O  MM MM
D   D   A   A  V   V   I   E   S          T    O   O  M M M
D   D   A   A  V   V   I   EEEE  SSS      T    O   O  M   M
D   D   AAAAA  V   V   I   E        S     T    O   O  M   M
D   D   A   A   V V    I   E        S  .. T    O   O  M   M
DDDD    A   A    V    III  EEEEE SSSS   : T     OOO   M   M

XTO:ML21-4:DAVIES2-- distribution to ML21-4, slot 134    1    333   4  4   >
MM MM  L      2    11              4  4         <   11   3   3  4  4    >
M M M  L       2    1              4  4        <     1       3  4  4     >
M   M  L      2     1      -----   44444      <      1      3   44444     >
M   M  L     2      1                 4        <     1       3     4     >
M   M  L    2       1                 4         <    1   3   3     4    >
M   M  LLLLL 22222 111                4          <  111   333      4   >

/BOTNB2S-WeDAVDSIES,TOM(4900;2804)eJMb21DEDVDBeSe&3431 Date 13-Oct-76 15:20:58 Monitor IPC-D 5078 [1A3] #START#
```



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 5078 (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

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

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                                .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:210). ALL QUESTIONS SHOULD BE ANSWERED AND THEN EACH DIAGNOSTIC WILL "OVERLAY" THESE PARAMETERS WHICH ARE STORED IN THE "STATUS TABLE" (SEE SECTION 8.4A). THE ALTERNATIVE TO "TRIAL" PROGRAM IS "AUTO SIZING" (SEE SECTION 8.5).

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 8K 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 INTERMITTEMT 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 MUST 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 ACTUAL 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 SOON 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) 1302/0000000001000000 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) 1276/0000000000011111 MEANS THAT DV11 NO. 00,01,02,03,04 WILL BE TESTED. EXAMPLE: (DVACTV) 1276/0000000000010001 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.

8.5 *** METHOD OF AUTO SIZING ***

8.5.1 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.

8.5.2 FINDING THE VECTOR

THE VECTOR AREA (ADDRESS 300-776) IS FILLED WITH THE INSTRUCTION IOT 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-SETUP 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.

8.5.3 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 HANG (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 BITIS 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 8.4A FOR GRETER DETAIL.
$

```
;*MAINDEC-11-DZDVD-B/(377)/"FREE RUNNING" TEST PART 2
;*COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
;*-------------------------------------------------------------
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```
                                        ;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 ERROR.
        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                  ;LOCK ON TEST SELECT
        000002                  SW01=2                  ;RESTART PROGRAM AT SELECTED TEST
        000001                  SW00=1                  ;RESELECT DV11 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

                                ;---------------------------------
010000                          ALU=BIT12
020000                          RAM=BIT13
030000                          XFR=BIT13+BIT12
040000                          NPR=BIT14
050000                          S.C=BIT14+BIT12
060000                          BCC=BIT14+BIT13
070000                          BRB=BIT14+BIT13+BIT12
                                ;---------------------------------
```

```
                                        ;;*****************************************************************************
                                        ;-----------------------------------------------------------------------------
                                                ;TRAPCATCAER FOR ILLEGAL 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  000001                                .BLKW 1                 ;SAVE FOR ACT-11 OR DDP2
 000042  000001                                .BLKW 1                 ;RETURN ADDRESS IF UNDER ACT-11 OR DDP2
 000044  000001                                .BLKW 1                 ;SAVE FOR ACT-11 OR DDP2
 000046  002560                                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  005377  040515  047111 MTITLE: .ASCIZ  <377><12>/MAINDEC-11-DZDVD-B/<377>/"FREE RUNNING" TEST PART 2/<377>

                 001200                 .=1200
 001200                         LIGHTS:
 001200  177570                        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


```
001222  000003          ICOUNT: 3               ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
001224  000000          LPCNT:  0               ;NUMBER OF ITEREATIONS COMPLETED
001226  000000          TSTNO:  0               ;NUMBER OF TEST IN PROGRESS
001230  000000          PASCNT: 0               ;NUMBER OF PASSES COMPLETED
001232  000000          ERRCNT: 0               ;TOTAL NUMBER OF ERRORS
001234  000000          LSTERR: 0               ;PC OF LAST ERROR CALL


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

001236  000000          STAT:   0               ;DV STATUS WORD STORAGE
001240  000000          SYNCX:  0
001242  000000          CLKX:   0
001244  000000          MASKX:  0
001246  000000          TEMP1:  0               ;TEMPORARY STORAGE
001250  000000          TEMP2:  0               ;TEMPORARY STORAGE
001252  000000          TEMP3:  0               ;TEMPORARY STORAGE
001254  000000          TEMP4:  0               ;TEMPORARY STORAGE
001256  000000          TEMP5:  0               ;TEMPORARY STORAGE
001260  000000          SAVR0:  0               ;R0 STORAGE
001262  000000          SAVR1:  0               ;R1 STORAGE
001264  000000          SAVR2:  0               ;R2 STORAGE
001266  000000          SAVR3:  0               ;R3 STORAGE
001270  000000          SAVR4:  0               ;R4 STORAGE
001272  000000          SAVR5:  0               ;R5 STORAGE
001274  000000          SAVSP:  0               ;STACK POINTER STORAGE
001276  000000          SAVPC:  0               ;PROGRAM COUNTER STORAGE
001300  000001          DVACTV: .BLKB 1         ;DV11'S SELECTED ACTIVE.
001301  000001          DVNUM:  .BLKB 1         ;OCTAL NUMBER OF DV11'S.
001302  000001          SAVACT: .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.
```

```
DZDVD-B MACY11 27(732)  17-SEP-75  11:06  PAGE 18
DZDVDB.P11      PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.


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

001310  000          INIFLG: .BYTE   0          ;PROGRAM INITIALIZATION FLAG
001311  000          ERRFLG: .BYTE   0          ;ERROR OCCURED FLAG
001312  000          LOKFLG: .BYTE   0          ;LOCK ON CURRENT TEST FLAG
001313  000          QV.FLG: .BYTE   0          ;QUICK VERIFY FLAG.
                                                ;ON FIRST PASS OF EACH DV11 ITERATIONS WILL BE SUPPRESSE

                     .EVEN
        000000       $Y=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       SAVO5=TRAP+6               ;CALL TO REGISTER SAVE ROUTINE
001330  003444               .SAVO5
        104407       RESO5=TRAP+7               ;CALL TO REGISTER RESTORE ROUTINE
001332  003504               .RESO5
        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+15            ;CALL TO CLK DATA
001350  004576               .DATACLK


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

H02


```
                                        ;DV11 VECTOR AND REGISTER INDIRECT POINTERS

001352  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$:    CMP     (SP)+,(SP)+             ;
002106  012737  000174  001200          MOV     #LIGHT,LIGHTS           ;
002114  012737  000176  001202          MOV     #SSWR,SWR               ;
002122  012637  000006          91$:    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
```

```
 947  002244  000000                          HALT                    ;WAIT FOR USER TO TELL WHAT DEVICES TO RUN
 948  002246  127737  176730  001302          CMPB    @SWR,SAVACT     ;IS THE NUMBER VALID?
 949  002254  101404                          BLOS    2$              ;BR IF NUMBER IS OK.
 950  002256  104402  005243                  TYPE    ,MERR3          ;TELL USER OF INVALID NUMBER.
 951  002262  000000                          HALT                    ;STOP EVERY THING.
 952  002264  000776                          BR      .-2             ;RESTART THE PROGRAM AGAIN.
 953  002266  117737  176710  001300  2$:     MOVB    @SWR,DVACTV     ;GET NEW DEVICE PATTERN
 954  002274  113700  001300                  MOVB    DVACTV,R0       ;SHOW THE USER WHAT HE SELECTED.
 955  002300  042700  177400                  BIC     #^C<377>,R0     ;USE ONLY LOW BYTE.
 956  002304  000000                          HALT                    ;CONTINUE DYNAMIC SWITCHES.
 957  002306  012700  000300          3$:     MOV     #300,R0         ;PREPARE TO CLEAR THE FLOATING
 958  002312  012701  000302                  MOV     #302,R1         ;VECTOR AREA. 300-776
 959  002316  010120                  4$:     MOV     R1,(R0)+        ;START PUTTING "PC+2 - HALT"
 960  002320  005021                          CLR     (R1)+           ;IN VECTOR AREA.
 961  002322  022021                          CMP     (R0)+,(R1)+     ;POP POINTERS
 962  002324  022700  001000                  CMP     #1000,R0        ;ALL DONE??
 963  002330  001372                          BNE     4$              ;BR IF NO.
 964
 965                                          ;TEST START AND RESTART
 966                                          ;----------------------
 967
 968  002332  012737  000340  177776  .BEGIN: MOV     #340,PS         ;LOCK OUT INTERRUPTS
 969  002340  012706  001200                  MOV     #STACK,SP       ;SET UP STACK
 970  002344  005737  000042                  TST     @#42            ;IS PROGRAM UNDER MONITOR CONTROL
 971  002350  001023                          BNE     3$              ;BR IF YES
 972  002352  032777  000004  176622          BIT     #BIT2,@SWR      ;CHECK FOR LOCK ON TEST
 973  002360  001411                          BEQ     1$              ;BR IF NO LOCK DESIRED.
 974  002362  104402  005301                  TYPE    ,MLOCK          ;TYPE LOCK SELECTED.
 975  002366  012737  000240  002702          MOV     #NOP,TTST       ;ADJUST SCOPE ROUTINE.
 976  002374  012737  000240  002704          MOV     #NOP,TTST+2     ;SET UP TO LOCK
 977  002402  000406                          BR      2$              ;CONTINUE ALONG.
 978  002404  013737  003014  002702  1$:     MOV     BRW,TTST        ;PREPARE NORMAL SCOPE ROUTINE
 979  002412  013737  003016  002704          MOV     BRX,TTST+2      ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
 980  002420                          2$:
 981  002420  012737  005666  001214  3$:     MOV     #CYCLE,RETURN   ;START AT "CYCLE" FIND WHICH DEVICE TO TEST
 982  002426  104402  005171          4$:     TYPE    ,MR             ;TYPE R
 983  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
```

B03


```
003116 000002                                RTI                         ;GO HOME
                                             ;---------------------------


003120 010346                        .INSTR: MOV     R3,-(SP)            ;SAVE R3 ON STACK
003122 010446                                MOV     R4,-(SP)            ;SAVE R4 ON STACK
003124 017637  000004  003142                MOV     @4(SP),.MSG
003132 062766  000002  000004                ADD     #2,4(SP)
003140 104402                        .INST1: TYPE
003142 000000                        .MSG:   0
003144 012704  005520                        MOV     #INBUF,R4
003150 012703  000007                        MOV     #7,R3
003154 105777  176024                1$:     TSTB    @TKCSR
003160 100375                                BPL     1$
003162 117714  176020                        MOVB    @TKDBR,(R4)
003166 142714  000200                        BICB    #200,(R4)
003172 122427  000015                        CMPB    (R4)+,#15
003176 001417                                BEQ     INSTR2
003200 105777  176004                2$:     TSTB    @TPCSR
003204 100375                                BPL     2$
003206 017777  175774  175776                MOV     @TKDBR,@TPDBR
003214 005303                                DEC     R3
003216 001356                                BNE     1$
003220 012604                                MOV     (SP)+,R4
003222 012603                                MOV     (SP)+,R3
003224 104402  005100                .INSTE: TYPE    ,MGM
003230 010346                                MOV     R3,-(SP)
003232 010446                                MOV     R4,-(SP)
003234 000741                                BR      .INST1
003236 012604                        INSTR2: MOV     (SP)+,R4            ;RESTORE R4
003240 012603                                MOV     (SP)+,R3            ;RESTORE R3
003242 000002                                RTI

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

003244 010546                        .PARAM: MOV     R5,-(SP)
003246 010446                                MOV     R4,-(SP)
003250 016605  000004                        MOV     4(SP),R5
003254 012537  003434                        MOV     (R5)+,LOLIM
003260 012537  003436                        MOV     (R5)+,HILIM
003264 012537  003440                        MOV     (R5)+,DEVADR
003270 112537  003442                        MOVB    (R5)+,LOBITS
003274 112537  003443                        MOVB    (R5)+,ADRCNT
003300 010566  000004                        MOV     R5,4(SP)
003304 005005                        PARAM1: CLR     R5
003306 012704  005520                        MOV     #INBUF,R4
003312 122714  000015                        CMPB    #15,(R4)
003316 001420                                BEQ     PARERR
003320 121427  000060                1$:     CMPB    (R4),#60
003324 002415                                BLT     PARERR
003326 121427  000067                        CMPB    (R4),#67
003332 003012                                BGT     PARERR
003334 142714  000060                        BICB    #60,(R4)
003340 152405                                BISB    (R4)+,R5
003342 122714  000015                        CMPB    #15,(R4)
003346 001406                                BEQ     LIMITS
```

```
                                                ASL     R5
                                                ASL     R5
                                                ASL     R5
                                                BR      1$
                                        PARERR: INSTER
                                                BR      PARAM1

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

                                        LIMITS: CMP     R5,HILIM
                                                BHI     PARERR
                                                CMP     R5,LOLIM
                                                BLO     PARERR
                                                BITB    LOBITS,R5
                                                BNE     PARERR

                                                ;STORE NUMBER AT SPECIFIED ADDRESS

                                                MOV     DEVADR,R4
                                        1$:     MOV     R5,(R4)+
                                                ADD     #2,R5
                                                DECB    ADRCNT
                                                BNE     1$
                                                MOV     (SP)+,R4
                                                MOV     (SP)+,R5
                                                RTI
                                        LOLIM:  0
                                        HILIM:  0
                                        DEVADR: 0
                                        LOBITS: 0
                                        ADRCNT=LOBITS+1

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

                                        .SAVOS: MOV     4(SP),SAVPC     ;SAVE R7 (PC)

                                                ;SAVE R0-R5

                                        SVOS:   MOV     R5,SAVR5        ;SAVE R5
                                                MOV     R4,SAVR4        ;SAVE R4
                                                MOV     R3,SAVR3        ;SAVE R3
                                                MOV     R2,SAVR2        ;SAVE R2
                                                MOV     R1,SAVR1        ;SAVE R1
                                                MOV     R0,SAVR0        ;SAVE R0
                                                RTI                     ;LEAVE.

                                                ;RESTORE R0-R5

                                        .RESOS: MOV     SAVR0,R0        ;RESTORE R0
                                                MOV     SAVR1,R1        ;RESTORE R1
                                                MOV     SAVR2,R2        ;RESTORE R2
                                                MOV     SAVR3,R3        ;RESTORE R3
                                                MOV     SAVR4,R4        ;RESTORE R4
                                                MOV     SAVR5,R5        ;RESTORE R5
```

```
 1208  003534  000002                          RTI                     ;LEAVE
 1209
 1210                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
 1211                                          ;-----------------------------------------------------
 1212
 1213  003536  104402  005104          .CONVR: TYPE    ,CRLF
 1214  003542  010046                  .CNVRT: MOV     R0,-(SP)
 1215  003544  010146                          MOV     R1,-(SP)
 1216  003546  010346                          MOV     R3,-(SP)
 1217  003550  010446                          MOV     R4,-(SP)
 1218  003552  010546                          MOV     R5,-(SP)
 1219  003554  017601  000012                  MOV     @12(SP),R1
 1220  003560  062766  000002  000012          ADD     #2,12(SP)
 1221  003566  012137  003742                  MOV     (R1)+,WRDCNT
 1222  003572  112137  003744          1$:     MOVB    (R1)+,CHRCNT
 1223  003576  112137  003745                  MOVB    (R1)+,SPACNT
 1224  003602  013137  003746                  MOV     @(R1)+,BINWRD
 1225  003606  013704  003746          2$:     MOV     BINWRD,R4
 1226  003612  113705  003744                  MOVB    CHRCNT,R5
 1227  003616  012700  005562                  MOV     #TEMP,R0
 1228  003622  010403                  3$:     MOV     R4,R3
 1229  003624  042703  177770                  BIC     #177770,R3
 1230  003630  062703  000060                  ADD     #060,R3
 1231  003634  110320                          MOVB    R3,(R0)+
 1232  003636  000241                          CLC
 1233  003640  006004                          ROR     R4
 1234  003642  000241                          CLC
 1235  003644  006004                          ROR     R4
 1236  003646  000241                          CLC
 1237  003650  006004                          ROR     R4
 1238  003652  005305                          DEC     R5
 1239  003654  001362                          BNE     3$
 1240  003656  012703  005624                  MOV     #MDATA,R3
 1241  003662  114023                  4$:     MOVB    -(R0),(R3)+
 1242  003664  105337  003744                  DECB    CHRCNT
 1243  003670  001374                          BNE     4$
 1244  003672  105737  003745                  TSTB    SPACNT
 1245  003676  001405                          BEQ     6$
 1246  003700  112723  000040          5$:     MOVB    #040,(R3)+
 1247  003704  105337  003745                  DECB    SPACNT
 1248  003710  001373                          BNE     5$
 1249  003712  105013                  6$:     CLRB    (R3)
 1250  003714  104402  005624                  TYPE    ,MDATA
 1251  003720  005337  003742                  DEC     WRDCNT
 1252  003724  001322                          BNE     1$
 1253  003726  012605                          MOV     (SP)+,R5
 1254  003730  012604                          MOV     (SP)+,R4
 1255  003732  012603                          MOV     (SP)+,R3
 1256  003734  012601                          MOV     (SP)+,R1
 1257  003736  012600                          MOV     (SP)+,R0
 1258  003740  000002                          RTI
 1259  003742  000000                  WRDCNT: 0
 1260  003744  000000                  CHRCNT: 0
 1261                  003745                  SPACNT=CHRCNT+1
 1262  003746  000000                  BINWRD: 0
 1263
```

```
                                                ;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


```
1320  004202  001402                        BEQ     1$
1321  004204  104402  005400                TYPE    .MASTEK
1322  004210  104402  005366        1$:     TYPE    .MTSTN
1323  004214  104411  004374                CNVRT   .XISIN          ;SHOW II
1324  004220  104402  005454                TYPE    .MERRPC         ;TYPE PC.
1325  004224  104411  004366                CNVRT   .ERTABO         ;SHOW IT
1326  004230  104402  005104                TYPE    .MCRLF          ;GIVE A CR/LF
1327  004234  112737  177777  001311        MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
1328  004242  005737  004252                TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
1329  004246  001402                        BEQ     WRKO.FM         ;BR IF NO.
1330  004250  104402                        TYPE                    ;TYPE
1331  004252  000000        ERRMSG: 0                               ;    ERROR MESSAGE
1332  004254                WRKO.FM:                                ;
1333  004254  005737  004264                TST     DATAHD          ;DATA HEADER?
1334  004260  001402                        BEQ     TYPDAT          ;BR IF NO
1335  004262  104402                        TYPE                    ;TYPE
1336  004264  000000        DATAHD: 0                               ;    DATA HEADER
1337  004266  005737  004276        TYPDAT: TST     DATABP          ;DATA TABLE?
1338  004272  001402                        BEQ     RESREG          ;BR IF NO.
1339  004274  104410                        CONVRT                  ;SHOW
1340  004276  000000        DATABP: 0                               ;    DATA TABLE
1341  004300  104407        RESREG: RESOS                           ;RESTORE PROC REGISTERS
1342  004302  005777  174674        HALTS:  TST     @SWR            ;HALT ON ERROR?
1343  004306  100005                        BPL     EXITER          ;BR IF NO HALT ON ERROR
1344  004310  010046                        PUSHRO                  ;SAVE RO
1345  004312  016600  000002                MOV     2(SP),RO        ;SHOW ERROR PC IN DATA LIGHTS
1346  004316  000000                        HALT                    ;HALT
1347  004320  012600                        POPRO                   ;GET RO
1348  004322  005237  001232        EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
1349  004326  032777  000400  174646        BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
1350  004334  001007                        BNE     1$              ;BR IF YES
1351  004336  032777  002000  174636        BIT     #SW10,@SWR      ;GOTO NEXT TEST?
1352  004344  001407                        BEQ     2$              ;BR IF NO
1353  004346  013737  001216  001214        MOV     NEXT,RETURN     ;SET FOR NEXT TEST
1354  004354  012706  001200        1$:     MOV     #STACK,SP       ;RESET SP
1355  004360  000177  174630                JMP     @RETURN         ;GOTO SPECIFIED TEST
1356  004364  000002        2$:     RTI                             ;RETURN
1357  004366  000001        ERTABO: 1
1358  004370     006     002                .BYTE   6,2
1359  004372  001276                        SAVPC
1360  004374  000001        XTSTN:  1
1361  004376     003     002                .BYTE   3,2
1362  004400  001226                        TSTNO
1363                                        ;ENTER HERE ON POWER FAILURE
1364                                        ;--------------------------
1365
1366
1367  004402                .PFAIL:
1368  004402  012737  004414  000024        MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
1369  004410  000000                        HALT                            ;HALT ON POWER DOWN NORMAL
1370  004412  000777                        BR      .
1371
1372                                        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
1373
1374  004414                RESTAR:
1375  004414  012737  004402  000024        MOV     #.PFAIL,24      ;SET UP FOR POWER FAILURE
```

```
1376   004422  012706  001200                  MOV     #STACK,SP       ;RESET THE STACK POINTER
1377   004426  005037  005562                  CLR     TEMP            ;READY FOR TIMMER
1378   004432  005237  005562                  INC     TEMP            ;PLUS ONE TO THE TIMER!
1379   004436  001375                          BNE     .-4             ;BR IF MORE TO GO
1380   004440  104402  005107                  TYPE    ,MPFAIL         ;TYPE THE MESSAGE
1381   004444  104411  004470                  CNVRT   ,PFTAB          ;TELL WHAT TEST TO RETURN TO.
1382   004450  105037  001311                  CLRB    ERRFLG          ;START CLEAN
1383   004454  005037  001234                  CLR     LSTERR          ;
1384   004460  104412                          MSTCLR                  ;START CLEAN UP OF DEVICE
1385   004462  104413                          RAMCLR                  ;CLEAR IT ALL!
1386   004464  000177  174524                  JMP     @RETURN         ;START DOING THAT TEST AGAIN.
1387   004470  000001                  PFTAB:  1
1388   004472      003     002          .BYTE   3,2
1389   004474  001226                          TSTNO
1390   004476  010046                  .DELAY: MOV     R0,-(SP)
1391   004500  013700  004514                  MOV     1$,R0
1392   004504  005300                          DEC     R0
1393   004506  001376                          BNE     .-2
1394   004510  012600                          MOV     (SP)+,R0
1395   004512  000002                          RTI
1396   004514  000036                  1$:     30.
1397
1398   004516                          .RAMCLR:
1399   004516  012777  004000  174636          MOV     #MRESET,@DVSCR  ;ISSUE A MASTER CLEAR
1400   004524  010146                          MOV     R1,-(SP)        ;SAVE R1 ON THE STACK
1401   004526  010446                          MOV     R4,-(SP)        ;SAVE R4 ON THE STACK
1402   004530  013701  001372                  MOV     DVSRS,R1        ;GET SECONDARY SEL. REG.
1403   004534  013704  001376                  MOV     DVSRA,R4        ;GET SECONDARY REGISTER ACCESS REG.
1404   004540  005014                  1$:     CLR     (R4)            ;ZERO THE SECONDARY REGISTER.
1405   004542  062711  170361                  ADD     #^C<BIT11+BIT10+BIT9+BIT8+BIT3+BIT2+BIT1+BIT0>+BIT0,(R1)
1406   004546  001374                          BNE     1$
1407   004550  012604                          MOV     (SP)+,R4        ;RESTORE R4
1408   004552  012601                          MOV     (SP)+,R1        ;RESTORE R1
1409   004554  000002                          RTI
1410
1411   004556                          .MSTCLR:
1412   004556  012777  004000  174576          MOV     #MRESET,@DVSCR  ;ISSUE MASTER CLEAR.
1413   004564  000002                          RTI
1414
1415   004566                          .ROMCLK:
1416   004566  052777  000002  174566          BIS     #BIT1,@DVSCR
1417   004574  000002                          RTI
1418
1419   004576                          .DATACLK:
1420   004576  010046                          MOV     R0,-(SP)
1421   004600  005000                          CLR     R0
1422   004602  052777  000400  174560          BIS     #BIT8,@DVLCR
1423   004610  017737  174554  004636  1$:     MOV     @DVLCR,3$
1424   004616  106037  004637                  RORB    3$+1
1425   004622  103003                          BCC     2$
1426   004624  005200                          INC     R0
1427   004626  001370                          BNE     1$
1428   004630  104000                          HLT     0
1429   004632  012600                  2$:     MOV     (SP)+,R0
1430   004634  000002                          RTI
1431   004636  000001                  3$:     .BLKW 1
```

```
1432
1433  004640  032777  004000  174336  SERV.G: BIT     #4000,@TKCSR    ;RX BUSY?
1434  004646  001374                  BNE     SERV.G          ;BR IF YES
1435  004650  017737  174326  005072  MOV     @SWR,90$        ;SAVE (SWR).
1436  004656  013777  005072  174316  1$:     MOV     90$,@SWR        ;
1437  004664  104402  005052          TYPE    ,89$            ;
1438  004670  104411  005064          CNVRT   ,88$            ;
1439  004674  104402  005074          TYPE    ,91$            ;
1440  004700  105777  174300          TSTB    @TKCSR          ;WAIT FOR DONE.
1441  004704  100375                  BPL     .-4             ;
1442  004706  017746  174274          MOV     @TKDBR,-(SP)    ;
1443  004712  042716  000200          BIC     #BIT7,(SP)      ;
1444  004716  122726  000015          CMPB    #15.,(SP)+      ;
1445  004722  001450                  BEQ     5$              ;
1446  004724  005077  174252          CLR     @SWR            ;
1447  004730  105777  174254          2$:     TSTB    @TPCSR          ;
1448  004734  100375                  BPL     .-4             ;
1449  004736  016677  177776  174246  MOV     -2(SP),@TPDBR   ;
1450  004744  000241                  CLC                     ;
1451  004746  006177  174230          ROL     @SWR            ;
1452  004752  006177  174224          ROL     @SWR            ;
1453  004756  006177  174220          ROL     @SWR            ;
1454  004762  103735                  BCS     1$              ;ERROR
1455  004764  026627  177776  000060  CMP     -2(SP),#60      ;
1456  004772  002731                  BLT     1$              ;
1457  004774  026627  177776  000067  CMP     -2(SP),#67      ;
1458  005002  003325                  BGT     1$              ;
1459  005004  042766  177770  177776  BIC     #^C<7>,-2(SP)   ;
1460  005012  056677  177776  174162  BIS     -2(SP),@SWR     ;
1461  005020  105777  174160          TSTB    @TKCSR          ;
1462  005024  100375                  BPL     .-4             ;
1463  005026  017746  174154          MOV     @TKDBR,-(SP)
1464  005032  042716  000200          BIC     #BIT7,(SP)
1465  005036  122726  000015          CMPB    #15.,(SP)+
1466  005042  001332                  BNE     2$              ;
1467  005044  104402  005104          5$:     TYPE    ,MCRLF          ;
1468  005050  000207                  RTS     PC
1469
1470  005052  020377  051450  051127  89$:    .ASCIZ  <377>? (SWR)=/?
1471  005060  036451  000057
1472                                  .EVEN
1473  005064  000001                  88$:    1
1474  005066      006       000               .BYTE   6,0
1475  005070  005072                  90$
1476  005072  000000                  90$:    .WORD   0
1477  005074  036457  000057          91$:    .ASCIZ  ?/=/?
1478                                  .EVEN
1479  005100  020040  000077          MQM:    .ASCIZ  /  ?/
 (2)  005104  005015      000          MCRLF:  .ASCIZ  <15><12>
 (2)  005107     377  053520  020122  MPFAIL: .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
 (2)  005145     377  047105  020104  MEPASS: .ASCIZ  <377>/END PASS DZDVD-B  /
 (2)  005171     377  000122          MR:     .ASCIZ  <377>/R/
 (2)  005174  050377  047522  051107  MERR2:  .ASCIZ  <377>/PROGRAM INDICATES NO DEVICES PRESENT./
 (2)  005243     377  047111  052523  MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
 (2)  005267     377  042524  052123  MTSTPC: .ASCIZ  <377>/TEST PC-/
 (2)  005301     377  047514  045503  MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST/
```

```
(2)  005330  051503  035122  000040  MCSRX:   .ASCIZ   /CSR: /
(2)  005336  042526  035103  000040  MVECX:   .ASCIZ  /VEC: /
(2)  005344  040520  051523  051505  MPASSX:  .ASCIZ  /PASSES: /
(2)  005355     105  051122  051117  MERRX:   .ASCIZ  /ERRORS: /
(2)  005366  042524  052123  047040  MTSTN:   .ASCIZ  /TEST NO: /
(2)  005400  000052                  MASTEK:  .ASCIZ  /*/
(2)  005402  051777  052105  051440  MNEW:    .ASCIZ  <377>/SET SWITCH REG TO DV11'S DESIRED ACTIVE./
(2)  005454  041520  020072     000  MERRPC:  .ASCIZ  /PC: /
(2)  005461     377  040515  020120  XHEAD:   .ASCIZ  <377>/MAP OF DV11 STATUS/<377>
(2)                                  .EVEN
(2)  005506  000002                  XSTATQ: 2
     005510     006     003                   .BYTE   6,3
     005512  001246                           TEMP1
     005514     006     002                   .BYTE   6,2
     005516  001250                           TEMP2
                                     .EVEN

                                              ;BUFFERS FOR INPUT-OUTPUT

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

```
1494
1495
1496                                                    ;
1497                                                    ;ROUTINE USED TO "CYCLE" THROUGH UP TO EIGHT DV11'S
1498                                                    ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
1499                                                    ;AND RUNS THE SPECIFIED DV11'S.   THIS ROUTINE *MUST*
1500                                                    ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
1501                                                    ;SETUP NECESSARY.
1502                                                    ;
1503  005666  105737  001300          CYCLE:  TSTB    DVACTV          ;ARE ANY DV11'S TO BE TESTED?
1504  005672  001004                          BNE     1$              ;BR IF OK.
1505  005674  104402  005174                  TYPE    .MERR2          ;NO DV11'S SELECTED!!
1506  005730  000000                          HALT                    ;STOP THE SHOW.
1507  005702  000776                          BR      .-2             ;DISQUALIFY CONT. SW.
1508  005704  133737  001304  001300  1$:     BITB    RUN,DVACTV      ;IS THIS ONE "ACTIVE"
1509  005712  001020                          BNE     2$              ;BR IF GOOD ONE FOUND.
1510  005714  000241                          CLC                     ;CLEAR PROC. CARRY BIT.
1511  005716  106137  001304                  ROLB    RUN             ;UPDATE POINTER
1512  005722  105537  001304                  ADCB    RUN             ;CATCH CARRY FROM RUN
1513  005726  062737  000024  001306          ADD     #24.,CREAM      ;UPDATE ADDRESS POINTER.
1514  005734  022737  001740  001306          CMP     #DV.END,CREAM
1515  005742  001360                          BNE     1$
                                                                      ;KEEP GOING; NOT ALL TESTED FOR.
1516  005744  012737  001500  001306          MOV     #DV.MAP,CREAM   ;RESET ADDRESS POINTER.
1517  005752  000754                          BR      1$              ;KEEP LOOKING FOR ACTIVE DV11
1518  005754  000241                  2$:     CLC                     ;CLEAR PROC. CARRY.
1519  005756  106137  001304                  ROLB    RUN             ;UPDATE POINTER.
1520  005762  105537  001304                  ADCB    RUN             ;CATCH CARRY.
1521  005766  013700  001306                  MOV     CREAM,R0        ;GET ADDRESS POINTER.
1522  005772  062737  000024  001306          ADD     #24.,CREAM      ;UPDATE.
1523  006000  022737  001740  001306          CMP     #DV.END,CREAM
1524                                                                  ;ALL DONE?
1525  006006  001003                          BNE     3$              ;BR IF NO.
1526  006010  012737  001500  001306          MOV     #DV.MAP,CREAM   ;RESTORE POINTER.
1527  006016  012037  001362          3$:     MOV     (R0)+,DVSCR     ;LOAD SYSTEM CTRL. REG
1528  006022  012037  001352                  MOV     (R0)+,DVRVEC    ;LOAD VECTOR
1529  006026  012037  001416                  MOV     (R0)+,L00.03    ;GET LINE PARAMETERS. 00-03
1530  006032  012037  001426                  MOV     (R0)+,SYNC2A    ;
1531  006036  012037  001420                  MOV     (R0)+,L04.07    ;                     04-07
1532  006042  012037  001430                  MOV     (R0)+,SYNC2B    ;
1533  006046  012037  001422                  MOV     (R0)+,L08.11    ;                     08-11
1534  006052  012037  001432                  MOV     (R0)+,SYNC2C    ;
1535  006056  012037  001424                  MOV     (R0)+,L12.15    ;                     12-15
1536  006062  012037  001434                  MOV     (R0)+,SYNC2D    ;
1537  006066  012700  000002                  MOV     #2,R0           ;SAVE CORE THIS WAY!
1538  006072  013737  001362  001364          MOV     DVSCR,DVSCRH    ;GET SYS CTRL. REG HIGH BYTE.
1539  006100  005237  001364                  INC     DVSCRH          ;GOT IT.
1540  006104  013737  001364  001366          MOV     DVSCRH,DVRIC    ;GET NXT REC. CHAR REG.
1541  006112  005237  001366                  INC     DVRIC           ;GOT IT
1542  006116  013737  001366  001370          MOV     DVRIC,DVLCR     ;GET LN. PAR.REG.
1543  006124  060037  001370                  ADD     R0,DVLCR        ;GOT IT
1544  006130  013737  001370  001372          MOV     DVLCR,DVSRS     ;GET SEC. REG. SEL. REG.
1545  006136  060037  001372                  ADD     R0,DVSRS        ;GOT IT
1546  006142  013737  001372  001374          MOV     DVSRS,DVSRSH    ;GET HIGH BYTE.
1547  006150  005237  001374                  INC     DVSRSH          ;GOT IT
1548  006154  013737  001374  001376          MOV     DVSRSH,DVSRA    ;SEC. REG. ACCESS.
1549  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$:     MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
1614  006512  000177  172476          9$:     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
```

```
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+BIT6,@(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$:     BIS     (SP),2(R2)      ;GET VECTOR ADDRESS
 1726  007236  042762  000007  000002          BIC     #7,2(R2)        ;CLEAR JUNK
 1727  007244  022626                          CMP     (SP)+,(SP)+     ;POP IOT JUNK OFF STACK
 1728  007246  012716  007212                  MOV     #3$,(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
                                ;--------------
007656  012737  000001  001226  TST1:   MOV     #1,ISTNO
007664  012737  007664  001216          MOV     #TST2,NEXT
007672  012700  000000                  MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
007676  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
007704  100402                        BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
007706  004737  007374                JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
007712  012700  000004          100$:  MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
007716  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
007724  100402                        BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
007726  004737  007374                JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
007732  012700  000010          101$:  MOV     #8,,R0          ;LOAD LINE NUMBER
007736  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
007744  100402                        BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
007746  004737  007374                JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
007752  012700  000014          102$:  MOV     #12.,R0         ;LOAD LINE NO.
007756  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
007764  100402                        BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
007766  004737  007374                JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
007772  104400                  103$:  SCOPE                   ;SCOPE THIS TEST.
007774                          105$:                          ;TEST ENTRANCE.
007774  012737  007422  001220          MOV     #1$,LOCK        ;SET IF SW09=1 (LOCK)
007802  104413                        RAMCLR                  ;CLEAR ALL SEC REGISTERS
007804  005003                        CLR     R3              ;SET IMAGE EXPECTED MODE=0
007806  005001                        CLR     R1              ;SET IMAGE "NEXT MODE"=0
007810  112737  000025  022560          MOVB    #25,TXBAP       ;SET TX DATA CHAR
007816  012702  000004                MOV     #4,R2           ;SET FOR 4 LINE GROUP
007822  110137  023605            1$:  MOVB    R1,TXTAB+25     ;LOAD CONTROL BYTE(MODE)
007826  010077  171740                MOV     R0,@DVSRS       ;LOAD LINE NUMBER
007832  004537  022120                PERFORM ,SETREG         ;
007836     000     001                .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
007840  022560                        TXBAP                   ;
007842  177777                        -1                      ;
007844  004537  022120                PERFORM ,SETREG         ;
007850     013     010                .BYTE   013,010         ;LINE STATE, CNTRL TABLE
007852  000004                        BIT2                    ;TXGO
007854  023560                        TXTAB                   ;
007856  004537  022120                PERFORM ,SETREG         ;
007862     014     014                .BYTE   014,014         ;TX MODE REG
007864  000000                        0                       ;MAKE
007866  000000                        0                       ;IT=0
007870  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
007876  001407                        BEQ     60$             ;#BR IF NO.
007900  004537  022164                PERFORM ,LOAD.MODE      ;#
007904  015000                        (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
007906  004537  022164                PERFORM ,LOAD.MODE      ;#
007912  072000                        (BIT14+BIT13+BIT12)+BIT10
                                                            ;#9600 BAUD.
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 1788  007514  000403                        BR      61$
 1789  007516  004537  022164          60$:  PERFORM  LOAD.MODE          ;LOAD
 1790  007522  014000                        BIT12+BIT11                 ;MODE
 1791  007524  012737  000340  177776  61$:  MOV     #340,PS             ;LOCK OUT INTERUPTS
 1792  007532  012777  007574  171616        MOV     #3$,@DVTVEC         ;SET TRANS VECTOR
 1793  007540  012777  000340  171612        MOV     #340,@DVTLVL        ;LOAD PRIO.
 1794  007546  052777  020001  171606        BIS     #BIT13+BIT0,@DVSCR      ;SET STATUS IE AND UCPU GO.
 1795  007554  005005                        CLR     R5                  ;WAIT
 1796  007556  104414                  2$:   DELAY                       ;STALL FOR TIME
 1797  007560  005037  177776              CLR     PS                  ;ALLOW ITERUPTS (NSR ENTRY)
 1798  007564  005205                        INC     R5                  ;ENTRY
 1799  007566  001373                        BNE     2$                  ;
 1800  007570  104000                        HLT                         ;NO SILO ENTRY (DVSCR IS NOT=1)
 1801  007572  024646                        CMP     -(SP),-(SP)         ;FAKE INTERUPT BECAUSE NO REAL ONE HAPPENED.
 1802  007574  042777  020000  171560  3$:   BIC     #BIT13,@DVSCR       ;CLR IE
 1803  007602  005037  177776              CLR     PS                  ;ZERO PSW
 1804  007606  022626                        CMP     (SP)+,(SP)+         ;FAKE AN RTI
 1805  007610  112777  000014  171556        MOVB    #14,@DVSRSH         ;SEL TX MODE REGISTER
 1806  007616  017704  171554                MOV     @DVSRA,R4           ;READ MODE REG.
 1807  007622  010305                        MOV     R3,R5               ;SET EXPECTED
 1808  007624  020504                        CMP     R5,R4               ;WAS "NEXT MODE" LOADED CORRECTLY?
 1809  007626  001401                        BEQ     4$                  ;BR IF YES
 1810  007630  104003                        HLT     3                   ;TX MODE REGISTER WRONG
 1811  007632  104412                  4$:   MSTCLR                      ;INIT DV11
 1812  007634  104401                        SCOPI                       ;LOCK ON MODE, LOCK ON LINE?
 1813  007636  005203                        INC     R3                  ;UPDATE EXPECTED MODE
 1814  007640  062701  000040              ADD     #BIT5,R1            ;UPDATE CNTRL BYTE IMAGE
 1815  007644  105701                        TSTB    R1                  ;ALL DONE??
 1816  007646  001665                        BEQ     1$                  ;BR IF NO
 1817  007650  005001                        CLR     R1                  ;ZERO EXPECTE MODE
 1818  007652  005003                        CLR     R3                  ;ZERO CNTRL BYTE MODE
 1819  007654  005200                        INC     R0                  ;UPDATE LINE NO POINTER
 1820  007656  005302                        DEC     R2                  ;4 LINES DONE
 1821  007660  001260                        BNE     1$                  ;BR IF YES
 1822  007662  000207                        RTS     PC                  ;EXIT FOR NEXT GROUP OF LINES
 1823
 1824
 1825                                  ;************************ TEST 2 *******************************
 1826                                  ;*TEST OF TRANSMITTER IDLE FUNCTIONS.
 1827                                  ;*TEST THAT THE TRANSMITTER WILL IDLE
 1828                                  ;*SYNC (IDLE) CHARS WHEN BIT 0 OF
 1829                                  ;*DLE/PROTOCOL REGISTER IS CLEARED.
 1830                                  ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
 1831                                  ;;*************************************************************
 1832
 1833                            ;  TEST 2
 1834                            ;--------------
 1835  007664  012737  000002  001226  TST2:   MOV     #2,TSTNO
 1836  007672  012737  010430  001216          MOV     #TST3,NEXT
 1837  007700  012700  000000                  MOV     #0.,R0              ;PLACE LINE NUMBER INTO R0
 1838  007704  113737  001406  001244          MOVB    MASK.A,MASKX        ;PLACE "MASK"FOR CHARS INTO MASKX
 1839  007712  013737  001416  001236          MOV     L00.03,STAT         ;LOAD LINE CARD STATUS INTO STAT
 1840  007720  100402                          BMI     100$                ;BR IF LINE CARD NOT TO BE TESTED
 1841  007722  004737  010032                  JSR     PC,105$             ;GO DO THE TEST FOR LINE CARD 1
 1842  007726  012700  000004          100$:   MOV     #4.,R0              ;PLACE LINE NUMBER INTO R0
 1843  007732  113737  001407  001244          MOVB    MASK.B,MASKX        ;GET MASK
```

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 1844  007740  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
 1845  007746  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
 1846  007750  004737  010032                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
 1847  007754  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
 1848  007760  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
 1849  007766  013737  001422  001236          MOV     L09.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
 1850  007774  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
 1851  007776  004737  010032                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
 1852  010002  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
 1853  010006  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASK
 1854  010014  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
 1855  010022  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
 1856  010024  004737  010032                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
 1857  010030  104400          103$:   SCOPE                           ;SCOPE THIS TEST.
 1858  010032                  105$:                                   ;TEST ENTRANCE.
 1859  010032  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 1860  010040  001401                          BEQ     .+4             ;#BR IF NOT ASYNC.
 1861  010042  000207                          RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
 1862  010044  012737  010116  001220          MOV     #3$,LOCK        ;SET FOR RETURN IF SW09=1
 1863  010052  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
 1864  010054  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
 1865  010060  012704  030160                  MOV     #RXTAB,R4       ;RECEIVER
 1866  010064  005001                          CLR     R1              ;AND
 1867  010066  005025          1$:     CLR     (R5)+                   ;TRANSMITTER
 1868  010070  005024                  CLR     (R4)+                   ;CONTROL
 1869  010072  105201                  INCB    R1                      ;TABLES
 1870  010074  100374                  BPL     1$                      ;
 1871  010076  012737  000001  022560          MOV     #1,TXBAP        ;LOAD TX
 1872  010104  112737  000015  022561          MOVB    #15,TXBAP+1     ;DTA
 1873  010112  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
 1874  010116  010077  171250          3$:     MOV     R0,@DVSRS       ;LOAD LINE NUMBER
 1875  010122  005037  027560                  CLR     RXBA            ;CLEAR
 1876  010126  005037  027562                  CLR     RXBA+2          ;RECEIVER
 1877  010132  005037  027564                  CLR     RXBA+4          ;BUFFER
 1878  010136  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 1879  010144  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
 1880  010146  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
 1881  010152     000     001                  .BYTE   000,001         ;#REGISTERS
 1882  010154  022560                          TXBAP                   ;#LOAD FOR ASYNC
 1883  010156  177776                          -2                      ;#LOAD FOR ASYNC
 1884  010160  000405                          BR      91$             ;#CONTINUE TEST
 1885  010162  004537  022120          80$:    PERFORM ,SETREG         ;
 1886  010166     000     001                  .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
 1887  010170  022556                          SYNC                    ;
 1888  010172  177774                          -4                      ;
 1889  010174  004537  022120          91$:    PERFORM ,SETREG         ;
 1890  010200     004     005                  .BYTE   004,005         ;RX BA, RX BC
 1891  010202  027560                          RXBA                    ;
 1892  010204  177772                          -6                      ;
 1893  010206  004537  022120                  PERFORM ,SETREG         ;
 1894  010212     010     011                  .BYTE   010,011         ;TX TABLE, RXTABLE
 1895  010214  023560                          TXTAB                   ;
 1896  010216  030160                          RXTAB                   ;
 1897  010220  004537  022120                  PERFORM ,SETREG         ;
 1898  010224     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
 1899  010226  000004                          BIT2                    ;TX GOOD
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 1900  010230  000000                          0                       ;DEFAULT-IDLE SYNC
 1901  010232  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
 1902  010240  001412                          BEQ     60$             ;#BR IF NO.
 1903  010242  004537  022164                  PERFORM .LOAD.MODE      ;#LOAD PARAMETERS.
 1904  010246  020000                          BIT13                   ;#RECEIVER ENABLE
 1905  010250  004537  022164                  PERFORM ,LOAD.MODE      ;#
 1906  010254  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
 1907  010256  004537  022164                  PERFORM ,LOAD.MODE      ;#
 1908  010262  072000                          (BIT14+BIT13+BIT12)+BIT10
 1909                                                                  ;#9600 BAUD.
 1910  010264  000405                          BR      4$
 1911  010266  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
 1912  010272  034000                          BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
 1913  010274  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
 1914  010300  005277  171056          4$:     INC     @DVSCR          ;SET MICRO CPU GO
 1915  010304  105777  171052                  TSTB    @DVSCR          ;WAIT FOR
 1916  010310  100375                          BPL     .-4             ;DVSCR07=1
 1917  010312  005004                          CLR     R4              ;
 1918  010314  012705  000001                  MOV     #1,R5           ;SET EXPECTED
 1919  010320  113704  027560                  MOVB    RXBA,R4         ;READ 1ST CHAR
 1920  010324  020504                          CMP     R5,R4           ;OK?
 1921  010326  001401                          BEQ     5$              ;
 1922  010330  104001                          HLT     1               ;1ST CHAR S/B=1!
 1923  010332  112705  000015          5$:     MOVB    #15,R5          ;SET EXPECTED
 1924  010336  113704  027561                  MOVB    RXBA+1,R4       ;GET 2ND CHAR
 1925  010342  020504                          CMP     R5,R4           ;
 1926  010344  001401                          BEQ     6$              ;
 1927  010346  104001                          HLT     1               ;2ND CHAR S/B=15
 1928  010350                          6$:
 1929  010350  113705  001236                  MOVB    STAT,R5         ;SET EXPECTED=SYNC CHAR
 1930  010354  042705  177400                  BIC     #^C(377),R5     ;CLEAR HIGH BYTE
 1931  010360  143705  001244                  BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
 1932  010364  012703  000004                  MOV     #4,R3           ;SET TO LOOK AT 4 CHARS
 1933  010370  012701  027562                  MOV     #RXBA+2,R1      ;GET RX DATA POINTER
 1934  010374  112104                  7$:     MOVB    (R1)+,R4        ;GET FOUND DATA
 1935  010376  042704  177400                  BIC     #^C(377),R4     ;CLEAN HIGH BYTE
 1936  010402  020504                          CMP     R5,R4           ;
 1937  010404  001401                          BEQ     8$              ;
 1938  010406  104001                          HLT     1               ;TRANSMITTER IDLED WRONG
 1939  010410  005303                  8$:     DEC     R3              ;4 CHARS CHECKED?
 1940  010412  001370                          BNE     7$              ;BR IF NO
 1941  010414  104412                          MSTCLR                  ;INIT DV11
 1942  010416  104401                          SCOPI                   ;LOCK ON LINE?
 1943  010420  005200                          INC     R0              ;UPDATE LINE POINTER
 1944  010422  005302                          DEC     R2              ;4 LINE GROUP DONE?
 1945  010424  001234                          BNE     3$              ;BR IF NO
 1946  010426  000207                          RTS     PC              ;EXIT FOR NEXT GROUP
 1947
 1948
 1949                                  ;********************** TEST 3 ******************************
 1950                                  ;*TEST OF TRANSMITTER IDLE FUNCTIONS.
 1951                                  ;*TEST THAT THE TRANSMITTER WILL IDLE
 1952                                  ;*MARK STATE (377) WHEN BIT0 IS
 1953                                  ;*SET IN THE DLE/PROTOCOL REGISTER.
 1954                                  ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
 1955                                  ;;************************************************************
```

F04


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                                        ;  TEST 3
                                        ;-------------
010430  012737  000003  001226  TST3:   MOV     #3,TSTNO
010436  012737  011174  001216          MOV     #TST4,NEXT
010444  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
010450  113737  001406  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
010456  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
010464  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
010466  004737  010576                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
010472  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
010476  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
010534  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
010512  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
010514  004737  010576                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
010520  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
010524  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
010532  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
010540  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
010542  004737  010576                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
010546  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
010552  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
010560  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
010566  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
010570  004737  010576                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
010574  104400          103$:   SCOPE                           ;SCOPE THIS TEST.
010576          105$:                   ;TEST ENTRANCE.
010576  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
010604  001401                          BEQ     .+4             ;#BR IF NOT ASYNC.
010606  000207                          RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
010610  012737  010662  001220          MOV     #3$,LOCK        ;SET FOR RETURN IF SW09=1
010616  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
010620  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
010624  012704  030160                  MOV     #RXTAB,R4       ;RECEIVER
010630  005001                          CLR     R1              ;AND
010632  005025          1$:     CLR     (R5)+                   ;TRANSMITTER
010634  005024                  CLR     (R4)+                   ;CONTROL
010636  105201                  INCB    R1                      ;TABLES
010640  100374                  BPL     1$                      ;
010642  012737  000001  022560          MOV     #1,TXBAP        ;LOAD TX
010650  112737  000015  022561          MOVB    #13,TXBAP+1     ;DTA
010656  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
010662  010077  170504          3$:     MOV     R0,@DVSRS       ;LOAD LINE NUMBER
010666  005037  027560                  CLR     RXBA            ;CLEAR
010672  005037  027562                  CLR     RXBA+2          ;RECEIVER
010676  005037  027564                  CLR     RXBA+4          ;BUFFER
010702  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
010710  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
010712  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
010716     000     001                  .BYTE   000,001         ;#REGISTERS
010720  022560                          TXBAP                   ;#LOAD FOR ASYNC
010722  177776                          -2                      ;#LOAD FOR ASYNC
010724  000405                          BR      81$             ;#CONTINUE TEST
010726  004537  022120          80$:    PERFORM ,SETREG         ;
010732     000     001                  .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
010734  022556                          SYNC                    ;
```

```
                                                -4                      ;
                                81$:    PERFORM ,SETREG                 ;
                                        .BYTE   004,005                 ;RX BA, RX BC
                                        RXBA                            ;
                                        -6                              ;
                                        PERFORM ,SETREG                 ;
                                        .BYTE   010,011                 ;TX TABLE, RXTABLE
                                        TXTAB                           ;
                                        RXTAB                           ;
                                        PERFORM ,SETREG                 ;
                                        .BYTE   013,012                 ;LINE STATE, LINE PROTOCOL
                                        BIT2                            ;TX GOOD
                                        BIT0                            ;IDLE MARK ON BYTE CNT=0
                                        BIT     #ASYNC.STAT             ;#IS THIS ASYNC LINE CARD?
                                        BEQ     60$                     ;#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$:    PERFORM ,LOAD.MODE              ;LOAD
                                        BIT13+BIT12+BIT11               ;MODE AND RX ENABLE
                                        PERFORM ,SETSYNC                ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
                                4$:     INC     @DVSCR                  ;SET MICRO CPU GO
                                        TSTB    @DVSCR                  ;WAIT FOR
                                        BPL     .-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$:
                                        MOV     #377,R5                 ;SET EXPECTED=MARK CHAR
                                        BIC     #^C<377>,R5             ;CLEAR HIGH BYTE
                                        BICB    MASKX,R5                ;CLEAR BITS/PER/CHAR MASK.
                                        MOV     #4,R3                   ;SET TO LOOK AT 4 CHARS
                                        MOV     #RXBA+2,R1              ;GET RX DATA POINTER
                                7$:     MOVB    (R1)+,R4                ;GET FOUND DATA
                                        BIC     #^C<377>,R4             ;CLEAN 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
                                        SCOP1                           ;LOCK ON LINE?
                                        INC     R0                      ;UPDATE LINE POINTER
```

```
                                                DEC     R2              ;4 LINE GROUP DONE?
                                                BNE     3$              ;BR IF NO
                                                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  001226  TST4:   MOV     #4,TSTNO
011202  012737  012004  001216          MOV     #TST5,NEXT
011210  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
011214  113737  001406  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     100$            ;BR IF LINE CARD NOT TO BE TESTED
011232  004737  011342                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
011236  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
011242  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
011250  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
011256  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
011260  004737  011342                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
011264  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
011270  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
011276  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
011304  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
011306  004737  011342                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
011312  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
011316  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
011324  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
011332  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
011334  004737  011342                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
011340  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
011342                          105$:                           ;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  022560                  MOV     #TXBAP,R5       ;LOAD
```

```
2124  011402  012725                          MOV     (PC)+,(R5)+     ;TRANSMITTER
2125  011404      025      023                .BYTE   25,23           ;DATA
2126  011406  012715                          MOV     (PC)+,(R5)      ;CHARS
2127  011410      031      032                .BYTE   31,32           ;
2128  011412  112737  000020  030203          MOVB    #BIT4,RXTAB+23  ;DSCARD
2129  011420  112737  000020  030212          MOVB    #BIT4,RXTAB+32  ;DSCARD
2130  011426  105037  030205                  CLRB    RXTAB+25        ;DEFAULT-STORE
2131  011432  105037  030211                  CLRB    RXTAB+31        ;DEFAULT-STORE
2132  011436  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
2133  011442  010077  167724          1$:     MOV     R0,@DVSRS       ;LOAD LINE NO.
2134  011446  005037  027560                  CLR     RXBA            ;MAKE SURE
2135  011452  005037  027562                  CLR     RXBA+2          ;RX BUFFER=0
2136  011456  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2137  011464  001405                          BEQ     80$             ;#BR IF NOT ASYNC.
2138  011466  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2139  011472      000      001                .BYTE   000,001         ;#REGISTERS
2140  011474  022560                          TXBAP                   ;#LOAD FOR ASYNC
2141  011476  177774                          -4                      ;#LOAD FOR ASYNC
2142  011500  000405                          BR      81$             ;#CONTINUE TEST
2143  011502  004537  022120          80$:    PERFORM ,SETREG         ;
2144  011506      000      001                .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
2145  011510  022556                          SYNC                    ;SYNC CHAR
2146  011512  177772                          -6                      ;2 SYNC, 4 DATA=6
2147  011514                          81$:
2148  011514  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2149  011522  001406                          BEQ     82$             ;#BR IF NOT ASYNC.
2150  011524  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2151  011530      004      005                .BYTE   004,005         ;#REGISTERS
2152  011532  027560                          RXBA                    ;#LOAD FOR ASYNC
2153  011534  177776                          -2                      ;#LOAD FOR ASYNC
2154  011536  000405                          BR      83$             ;#CONTINUE TEST
2155  011540  004537  022120          82$:    PERFORM ,SETREG         ;
2156  011544      004      005                .BYTE   004,005         ;RXBA, RXBC
2157  011546  027560                          RXBA                    ;
2158  011550  177774                          -4                      ;
2159  011552  004537  022120          83$:    PERFORM ,SETREG         ;
2160  011556      010      011                .BYTE   010,011         ;TX TABLE, RX TABLE
2161  011560  023560                          TXTAB                   ;
2162  011562  030160                          RXTAB                   ;
2163  011564  004537  022120                  PERFORM ,SETREG         ;
2164  011570      013      012                .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
2165  011572  000004                          BIT2                    ;TX GO
2166  011574  000001                          BIT0                    ;IDLE MARK ON BYTE COUNTS=0
2167  011576  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
2168  011604  001412                          BEQ     60$             ;#BR IF NO.
2169  011606  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
2170  011612  020000                          BIT13                   ;#RECEIVER ENABLE
2171  011614  004537  022164                  PERFORM ,LOAD.MODE      ;#
2172  011620  015000                          <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
2173  011622  004537  022164                  PERFORM ,LOAD.MODE      ;#
2174  011626  072000                          <BIT14+BIT13+BIT12>+BIT10
2175                                                                  ;#9600 BAUD.
2176  011630  000405                          BR      2$
2177  011632  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
2178  011636  034000                          BIT13+BIT12+BIT11       ;MODE+RX ENABLE
2179  011640  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
```

```
 2180  011644  005277  167512          2$:     INC     @DVSCR          ;SET MICRO CPU GO
 2181  011650  005005                          CLR     R5              ;DELAY
 2182  011652  105777  167504          3$:     TSTB    @DVSCR          ;FOR
 2183  011656  100404                          BMI     4$              ;RX INTERRUPT (BIT 7)
 2184  011660  104414                          DELAY                   ;WASTE TIME
 2185  011662  005205                          INC     R5              ;KEEP COUNTING.
 2186  011664  001372                          BNE     3$              ;BR
 2187  011666  104000                          HLT                     ;BIT 7 OF DVSCR NOT SET!
 2188  011670                          4$:
 2189  011670  012705  000025                  MOV     #25,R5          ;SET EXPECTED
 2190  011674  113704  027560                  MOVB    RXBA,R4         ;GET FOUND
 2191  011700  020504                          CMP     R5,R4           ;OK?
 2192  011702  001401                          BEQ     5$              ;
 2193  011704  104002                          HLT     2               ;'25' NOT FIRST IN RX BUFFER
 2194  011706  012705  000031          5$:     MOV     #31,R5          ;NEXT CHAR S/B '31'
 2195  011712  113704  027561                  MOVB    RXBA+1,R4       ;GET NEXT CHAR
 2196  011716  120504                          CMPB    R5,R4           ;OK
 2197  011720  001401                          BEQ     6$              ;
 2198  011722  104002                          HLT     2               ;'31' NOT SECOND IN RX BUFFER
 2199  011724  032737  004000  001236  6$:     BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 2200  011732  001016                          BNE     8$              ;#BR IF YES.
 2201  011734  112705  000377                  MOVB    #377,R5         ;MARK=377 (NEXT CHAR)
 2202
 2203
 2204  011740  143705  001244                  BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
 2205  011744  113704  027562                  MOVB    RXBA+2,R4       ;GET FOUND
 2206  011750  120504                          CMPB    R5,R4           ;OK
 2207  011752  001401                          BEQ     7$              ;
 2208  011754  104002                          HLT     2               ;EITHER TX NOT AT MARK (377) OR RX WRONG.
 2209  011756  113704  027563          7$:     MOVB    RXBA+3,R4       ;NEXT CHAR
 2210  011762  120504                          CMPB    R5,R4           ;
 2211  011764  001401                          BEQ     8$              ;
 2212  011766  104002                          HLT     2               ;IF ABOVE PASSED; RX WRONG!
 2213  011770  104412                  8$:     MSTCLR                  ;INIT DV11
 2214  011772  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
 2215  011774  005200                          INC R0                  ;UPDATE LINE POINTER
 2216  011776  005302                          DEC     R2              ;4 LINES DONE?
 2217  012000  001220                          BNE     1$              ;BR IF NO
 2218  012002  000207                          RTS     PC              ;EXIT FOR NEXT GROUP
 2219
 2220
 2221                                  ;************************ TEST 5 ******************************
 2222                                  ;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
 2223                                  ;*TEST OF THE "INCLUDE IN BCC  YES/NO FUNCTION"
 2224                                  ;*TEST THAT THE CHAR "031" IS INCLUDED
 2225                                  ;*IN THE BCC WHEN AT:
 2226                                  ;*LRC8
 2227                                  ;*CRC16
 2228                                  ;*CRC.CCITT
 2229                                  ;*THE RECEIVER BCC STARTS AT 0 AND CALCULATES
 2230                                  ;*ONLY ONE CHAR (31).
 2231                                  ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
 2232                                  ;;*************************************************************
 2233
 2234                          ;  TEST 5
 2235                          ;-------------
```

```
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          64$:    MSTCLR                          ;INIT DV11
2264  012160  010077  167206                  MOV     R0,@DVSRS       ;LOAD LINE NO.
2265  012164  004737  022224                  JSR     PC,DV11ON       ;GOSUB DV11ON
2266  012170  004537  022120                  PERFORM ,SETREG         ;
2267  012174     007     012                  .BYTE   007,012         ;RXBCC, LINE PROTOCOL
2268  012176  000000                          0                       ;START BCC AT 0.
2269  012200  000000                          0                       ;POLONOMINAL SELECT
2270  012202  005277  167154                  INC     @DVSCR          ;SET MICRO CPU GO
2271  012206  105777  167150          65$:    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  012230  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.
```

```
                                                ;*TEST OF THE "SEND DLE NEXT" FUNCTION
                                                ;*THE "TRANSMITTER DLE REGISTER" IS LOADED
                                                ;*WITH CHAR "025". THE RECEIVER IS SET TO RECEIVE
                                                ;*ONE CHAR (THE DLE) SO RX BA S/B=25
                                                ;*THE TRANSMITTER DATA CHAR IS "031".
                                                ;:*****************************************************************

                                        ;  TEST 7
                                        ;--------------
013772  012737  000007  001226  TST7:   MOV     #7,TSTNO
013000  012737  013244  001216          MOV     #TST10,NEXT
013006  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
013012  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
013020  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
013022  004737  013110                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
013026  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
013032  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
013040  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
013042  004737  013110                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
013046  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
013052  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
013060  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
013062  004737  013110                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
013066  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
013072  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
013100  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
013102  004737  013110                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
013106  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
013110                          105$:                           ;TEST ENTRANCE.
013110  012737  013144  001220          MOV     #1$,LOCK        ;SET IF SW09=1
013116  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
013120  112737  000002  023611          MOVB    #BIT1,TXTAB+31  ;SET "SND/DLE" IN CNTRL BYTE
013126  112737  000031  022560          MOVB    #31,TXBAP       ;SET TX DATA CHAR
013134  105037  030211                  CLRB    RXTAB+31        ;ZERO RX CNTRL BYTE
013140  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
013144  004737  022224          1$:     JSR     PC,DV11ON       ;SET ROUTINE THING
013150  004537  022120                  PERFORM ,SETREG         ;
013154      012     012                 .BYTE   012,012         ;LINE PROTOCOL REG
013156  012400                          25*400                  ;PUT 25
013160  012400                          25*400                  ;IN HIGH BYTE
013162  005037  027560                  CLR     RXBA            ;ZERO RX BUFFER
013166  005277  166170                  INC     @DVSCR          ;SET MICRO CPU GO
013172  105777  166164                  TSTB    @DVSCR          ;WAIT FOR
013176  100375                          BPL     .-4             ;DVSCR07=1
013200  013704  027560                  MOV     RXBA,R4         ;GET DATA
013204  012705  000025                  MOV     #25,R5          ;LOAD DLE INTO EXPECTED
013210  020504                          CMP     R5,R4           ;
013212  001401                          BEQ     2$              ;
013214  104003                          HLT     3               ;25 (DLE) NOT 1ST IN RX BUFFER
013216  104412                  2$:     MSTCLR                  ;INIT DV11
013220  112777  000012  166146          MOVB    #12,@DVSRSH     ;SEL LINE PROTOCOL
013226  005077  166144                  CLR     @DVSRA          ;ZERO IT.
013232  104401                          SCOP1                   ;LOCK ON SELECTED LINE?
013234  005200                          INC     R0              ;UPDATE LINE POINTER
013236  005302                          DEC     R2              ;4 LINE GROUP DONE?
013240  001341                          BNE     1$              ;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 000010 001226             TST10:  MOV     #10,TSTNO
013252 012737 013554 001216                     MOV     #TST11,NEXT
013260 012700 000000                            MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
013264 013737 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$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
013304 013737 001420 001236                     MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
013312 100402                                   BMI     101$            ;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$:   MOV     #8.,R0          ;LOAD LINE NUMBER
013324 013737 001422 001236                     MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
013332 100402                                   BMI     102$            ;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$:   MOV     #12.,R0         ;LOAD LINE NO.
013344 013737 001424 001236                     MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
013352 100402                                   BMI     103$            ;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$,LOCK        ;SET RETURN IF SW09=1
013370 104413                                   RAMCLR                  ;CLEAR ALL SEC REGISTERS
013372 012702 000004                            MOV     #4,R2           ;SET FOR 4 LINE GROUP
013376 112737 000340 023575                     MOVB    #BIT7+BIT6+BIT5,TXTAB+15
013404 113737 023575 030175                     MOVB    TXTAB+15,RXTAB+15       ;SET RX AND TX NEXT MODE=7
013412 004737 022224                    1$:     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.
```

```
2516  013520  001001                          BNE     4$              ;S/B NOT=0
2517  013522  104000                          HLT     0               ;NOTHING IN BCC!! (TX)
2518  013524  105277  165644          4$:     INCB    @DVSRSH         ;GET RX BCC REG
2519  013530  017704  165642                  MOV     @DVSRA,R4       ;READ INTO R4
2520  013534  001001                          BNE     5$              ;
2521  013536  104000                          HLT     0               ;NOTHING IN RXBCC!!
2522  013540  104412                  5$:     MSTCLR                  ;INIT DV11
2523  013542  104401                          SCOPE                   ;LOCK ON SELECTED LINE?
2524  013544  005200                          INC     R0              ;UPDATE LINE POINTER
2525  013546  005302                          DEC     R2              ;4 LINES DONE?
2526  013550  001320                          BNE     1$              ;BR IF NO
2527  013552  000207                          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
                                      ;--------------
2543  013554  012737  000011  001226  ↑ST11:  MOV     #11,TSTNO
2544  013562  012737  014166  001216          MOV     #TST12,NEXT
2545  013570  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2546  013574  113737  001406  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
2547  013602  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2548  013610  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2549  013612  004737  013722                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2550  013616  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2551  013622  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
2552  013630  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2553  013636  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2554  013640  004737  013722                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2555  013644  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2556  013650  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
2557  013656  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2558  013664  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2559  013666  004737  013722                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2560  013672  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2561  013676  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
2562  013704  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2563  013712  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2564  013714  004737  013722                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2565  013720  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2566  013722                          105$:   ;TEST ENTRANCE.
2567  013722  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2568  013730  001401                          BEQ     .+4             ;#BR IF NOT ASYNC LINE CARD.
2569  013732  000207                          RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
2570  013734  012737  014004  001220          MOV     #2$,LOCK        ;SET RETURN IF SW09=1
2571  013742  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
```

```
                                                MOV     #4,R2           ;4 LINE GROUP
                                                MOV     #8.,R4          ;LOAD TX BUFFER
                                                MOV     #TXBAP,R5       ;WITH
                                1$:             MOVB    STAT,(R5)+      ;8. SYNC
                                                DEC     R4              ;CHARS
                                                BNE     1$              ;
                                                MOVB    #5,(R5)+        ;LOAD "NON-SYNC" CHAR
                                                MOVB    STAT,(R5)+      ;SYNC
                                                MOVB    STAT,(R5)+      ;SYNC
                                2$:             JSR     PC,DV11OM       ;MINOR DETAIL SETUP
                                                CLR     RXBA            ;CLEAR
                                                CLR     RXBA+2          ;RX BUFFER
                                                PERFORM  SETREG         ;
                                                .BYTE   001,005         ;TX PRINCIPLE BC, RX BC
                                                -13.
                                                -3
                                                MOVB    #12,@DVSRSH     ;LINE PROTOCOL REG
                                                MOV     #BIT6+BIT5+BIT1+BIT0,@DVSRA
                                                INC     @DVSCR          ;LP=TX+RX DDCMP, STRIP SYNC, IDLE MARK
                                                TSTB    @DVSCR          ;WAIT FOR
                                                BPL     .-4             ;DVSCR07=1
                                                MOV     #5,R5           ;1ST DATA S/B=15
                                                MOVB    RXBA,R4         ;GET DATA
                                                BIC     #^C(377),R4     ;STRIP HIGH BYTE
                                                CMP     R5,R4           ;OK
                                                BEQ     3$              ;
                                                HLT     1               ;1ST CHAR NOT=15
                                3$:             MOVB    STAT,R5         ;LOAD SYNC INTO EXPECTED
                                                BIC     #^C(377),R5     ;STRIP HIGH BYTE
                                                BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
                                                MOVB    RXBA+1,R4       ;GET 2ND CHAR
                                                BIC     #^C(377),R4     ;STRIP HIGH BYTE
                                                CMP     R5,R4           ;WERE *ONLY* LOADING SYNC STRIPPED?
                                                BEQ     4$              ;
                                                HLT     1               ;JUST *LEADING* SYNCS ARE TO BE STRIPPED
                                4$:             MOVB    RXBA+2,R4       ;GET 3RD CHAR
                                                BIC     #^C(377),R4     ;STRIP HIGH BYTE
                                                CMP     R5,R4           ;OK?
                                                BEQ     5$              ;
                                                HLT     1               ;JUST *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 BIT08 OF DVSCR.
                        ;*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
                                ;--------------
014166  012737  000012  001226  TST12:  MOV     #12,TSTNO
014174  012737  014650  001216          MOV     #TST13,NEXT
014202  012700  000000                  MOV     #0,R0           ;PLACE LINE NUMBER INTO R0
014206  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
014214  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
014216  004737  014304                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
014222  012700  000004          100$:   MOV     #4,R0           ;PLACE LINE NUMBER INTO R0
014226  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
014234  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
014236  004737  014304                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
014242  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
014246  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
014254  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
014256  004737  014304                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
014262  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
014266  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
014274  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
014276  004737  014304                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
014302  104400          103$:   SCOPE                           ;SCOPE THIS TEST.
014304                  105$:                                   ;TEST ENTRANCE.
014304  012737  014362  001220          MOV     #66$,LOCK
014312  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
014314  005001                          CLR     R1              ;
014316  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
014322  005005                          CLR     R5              ;LOAD
014324  012704  022560                  MOV     #TXBAP,R4       ;TX DATA
014330  110524          1$:     MOVB    R5,(R4)+        ;
014332  005205                  INC     R5              ;
014334  022705  000007                  CMP     #7,R5           ;
014340  001373                          BNE     1$              ;
014342  012705  000006                  MOV     #6,R5           ;FILL
014346  012704  030160                  MOV     #RXTAB,R4       ;THE
014352  112724  000001          2$:     MOVB    #BIT0,(R4)+     ;RX CNTRL TABLE
014356  005305                          DEC     R5              ;WITH SPECIAL
014360  001374                          BNE     2$              ;CHAR BITS
014362  004737  022224          66$:    JSR     PC,DV11ON       ;SET UP DV11
014366  004537  022120                  PERFORM  SETREG         ;
014372     001     005                  .BYTE   001,005         ;TX PRINCIPLE BC, RX BC
014374  177770                          -8.                     ;
014376  177772                          -6                      ;
014400  112777  000012  164766          MOVB    #12,@DVSR5H     ;LINE PROTOCOL
014406  052777  000100  164762          BIS     #BIT6,@DVSRA    ;TX DDCMP
014414  012737  000340  177776          MOV     #340,PS         ;LOCK OUT INTERUPTS
014422  012777  014472  164722          MOV     #67$,@DVRVEC    ;SET RX INTER VECTOR,
014430  012777  000340  164716          MOV     #340,@DVRLVL    ;SET PRIO. LEVEL TO 7
014436  052777  000101  164716          BIS     #BIT6+BIT0,@DVSCR
                                                                ;SET RX IE AND UCPU GO.
014444  005003                          CLR     R3              ;DATA IMAGE
014446  005037  014646          3$:     CLR     69$             ;STALL COUNTER
014452  005037  177776                  CLR     PS              ;ENABLE INTERUPTS
014456  104414                          DELAY                   ;WASTE TIME
014460  005237  014646                  INC     69$             ;UPDATE STALL
```

```
 2664  014464  001372                        BNE     .-12            ;BR  BACK
 2665  014466  104000                        HLT                     ;NO INTERUPT OCCURED.
 2666  014470  024646                        CMP     -(SP),-(SP)     ;FAKE AN INTERUPT
 2667  014472  010005                67$:    MOV     R0,R5           ;LOAD LINE NO.
 2668  014474  000305                        SWAB    R5              ;PUT IN HIGH BYTE
 2669  014476  050305                        BIS     R3,R5           ;SET DATA
 2670  014500  017704  164662               MOV     @DVRIC,R4       ;READ FOUND RESULT
 2671  014504  020504                        CMP     R5,R4           ;
 2672  014506  001401                        BEQ     4$              ;
 2673  014510  104001                        HLT     1               ;DVRIC WRONG!
 2674  014512  052777  000400  164642  4$:   BIS     #BIT8,@DVSCR    ;SET "RECEIVER INT RESP COMP"
 2675  014520  005203                        INC     R3              ;UPDATE DATA IMAGE
 2676  014522  022703  000006               CMP     #6,R3           ;ALL DONE?
 2677  014526  001403                        BEQ     70$             ;BR IF YES
 2678  014530  012716  014446               MOV     #3$,(SP)        ;SET RETURN
 2679  014534  000002                        RTI                     ;CONTINUE
 2700  014536  042777  000100  164616  70$:  BIC     #BIT6,@DVSCR    ;NO MORE INTERUPTS.
 2701  014544  012716  014552               MOV     #69$,(SP)       ;SET RETURN
 2702  014550  000002                        RTI                     ;CONT.
 2703  014552  105777  164604          69$:  TSTB    @DVSCR          ;WAIT FOR
 2704  014556  100375                        BPL     .-4             ;DVSCR07=1
 2705  014560  010005                        MOV     R0,R5           ;LOAD LINE NO.
 2706  014562  000305                        SWAB    R5              ;PUT IN HIGH BYTE
 2707  014564  052705  040005               BIS     #BIT14+5,R5     ;"BYTE CNT WARNING + DATA"
 2708  014570  017704  164572               MOV     @DVRIC,R4       ;READ RESULTS
 2709  014574  020504                        CMP     R5,R4           ;
 2710  014576  001401                        BEQ     5$              ;
 2711  014600  104001                        HLT     1               ;DVRIC WRONG!
 2712  014602  012701  027560          5$:   MOV     #RXBA,R1        ;GET RX POINTER
 2713  014606  005005                        CLR     R5              ;
 2714  014610  005004                        CLR     R4              ;
 2715  014612  112104                6$:     MOVB    (R1)+,R4        ;GET RX DATA (INCORE)
 2716  014614  020504                        CMP     R5,R4           ;
 2717  014616  001401                        BEQ     7$              ;
 2718  014620  104001                        HLT     1               ;RECEIVER PLACED DATA IN CORE WRONG
 2719  014622  005205                7$:     INC     R5              ;UPDATE DATA IMAGE
 2720  014624  022705  000006               CMP     #6,R5           ;ALL DONE?
 2721  014630  001370                        BNE     6$              ;BR IF NO
 2722  014632  104412                        MSTCLR                  ;INIT DV11
 2723  014634  104401                        SCOPI                   ;LOOK ON CURRENT LINE?
 2724  014636  005200                        INC     R0              ;UPDATE LINE POINTER
 2725  014640  005302                        DEC     R2              ;4 LINE GROUP DONE?
 2726  014642  001247                        BNE     66$             ;BR IF NO
 2727  014644  000207                        RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
 2728  014646  000000                69$:    0
 2729
 2730
 2731                          ;************************ TEST 13 *******************************
 2732                          ;*TEST OF THE "MARKED BYTE COUNT".
 2733                          ;*TEST THAT WHEN BIT15=0 FOR THE RECEIVER THAT
 2734                          ;*BITS 13,14,15 OF LINE STATE OCCUR IN
 2735                          ;*THE RECEIVER MODE BITS REGISTER.
 2736                          ;*TEST THAT WHEN BIT15=0 FOR THE TRANSMITTER
 2737                          ;*THAT BITS 13,14,15 OF THE LINE PROGRESS REGISTER
 2738                          ;*OCCUR INT THE TRANSMITTER MODE REG.
 2739                          ;*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 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$,LOCK       ;SET RETURN IF SW09=1
014774  032737  001400  001236         BIT     #BIT9+BIT8,STAT ;"8 BITS/PER/CHAR ?"
015002  001401                       BEQ     .+4             ;BR IF YES
015004  000207                       RTS     PC              ;EXIT TEST FOR THIS LINE CARD!
015006  104413                       RAMCLR                  ;CLEAR ALL SECONDARY REGISTERS
015010  012702  000004                 MOV     #4,R2           ;SET FOR 4 LINE GROUP
015014  012704  000012                 MOV     #10.,R4         ;LOAD 10 BYTES
015020  012705  023560                 MOV     #TXTAB,R5       ;WITH
015024  112725  000010           1$:   MOVB    #BIT3,(R5)+     ;INC/BCC
015030  005304                       DEC     R4              ;
015032  001374                       BNE     1$              ;
015034  012705  023560                 MOV     #TXTAB,R5       ;CLEAR
015040  013704  001236                 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  000012                 MOV     #10.,R4         ;10
015104  112725  000010           3$:   MOVB    #BIT3,(R5)+     ;RECEIVER
015110  005304                       DEC     R4              ;CONTROL BYTES
```

```
 2796  015112  001374                          BNE     3$                      ;WITH "INC/BCC"
 2797  015114  010077  164252          65$:    MOV     R0,@DVSRS               ;LOAD LINE NO.
 2798  015120  032737  004000  001236          BIT     #ASYNC,STAT             ;#IS THIS AN ASYNC LINE CARD?
 2799  015126  001406                          BEQ     80$                     ;#BR IF NOT ASYNC.
 2800  015130  004537  022120                  PERFORM ,SETREG                 ;#ADJUST FOR ASYNC LINE CARD
 2801  015134     000     001                  .BYTE   000,001                 ;#REGISTERS
 2802  015136  022560                          TXBAP                           ;#LOAD FOR ASYNC
 2803  015140  077765                          <-10.>-BIT15                    ;#LOAD FOR ASYNC
 2804  015142  000405                          BR      81$                     ;#CONTINUE TEST
 2805  015144  004537  022120          80$:    PERFORM ,SETREG                 ;
 2806  015150     000     001                  .BYTE   000,001                 ;TX PRINCIPLE BA, BC
 2807  015152  022556                          SYNC                            ;
 2808  015154  077764                          <-12.>-BIT15                    ;MARKED BC!
 2809  015156  004537  022120          81$:    PERFORM ,SETREG                 ;
 2810  015162     004     005                  .BYTE   004,005                 ;RX BA, BC
 2811  015164  027560                          RXBA                            ;
 2812  015166  077766                          <-10.>-BIT15                    ;MARKED BC!
 2813  015170  004537  022120                  PERFORM ,SETREG                 ;
 2814  015174     010     011                  .BYTE   010,011                 ;TX TABLE, RX TABLE
 2815  015176  023560                          TXTAB
 2816  015200  030160                          RXTAB
 2817  015202  004537  022120                  PERFORM ,SETREG
 2818  015206     012     013                  .BYTE   012,013                 ;LINE PROTOCOL, LINE STATE
 2819  015210  000031                          BIT4+BIT3+BIT0  ;CRC.CCITT, IDLE MARK
 2820  015212  162004                          BIT15+BIT14+BIT13+BIT10+BIT2
 2821  015214  004537  022120                  PERFORM ,SETREG                 ;MODE 7, , TXGO
 2822  015220     016     017                  .BYTE   016,017                 ;LINE PROGRESS REC, REC CNTR STORE
 2823  015222  162000                          BIT15+BIT14+BIT13+BIT10 ;NEXT MODE=7
 2824  015224  000000                          0                               ;ZERO
 2825  015226  032737  004000  001236          BIT     #ASYNC,STAT             ;#IS THIS ASYNC LINE CARD?
 2826  015234  001412                          BEQ     60$                     ;#BR IF NO.
 2827  015236  004537  022164                  PERFORM ,LOAD.MODE              ;#LOAD PARAMETERS.
 2828  015242  020000                          BIT13                           ;#RECEIVER ENABLE
 2829  015244  004537  022164                  PERFORM ,LOAD.MODE              ;#
 2830  015250  015000                          <BIT12+BIT11>+BIT9              ;#8 BITS/PER/CHAR
 2831  015252  004537  022164                  PERFORM ,LOAD.MODE              ;#
 2832  015256  072000                          <BIT14+BIT13+BIT12>+BIT10
 2833                                                                          ;#9600 BAUD.
 2834  015260  000405                          BR      61$
 2835  015262  004537  022164          60$:    PERFORM ,LOAD.MODE              ;LOAD
 2836  015266  034000                          BIT13+BIT12+BIT11               ;MODE AND RECV ENABLE
 2837  015270  004537  021706                  PERFORM ,SETSYNC                ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
 2838  015274  005277  164062          61$:    INC     @DVSCR                  ;SET MICRO CPU GO
 2839  015300  105777  164056                  TSTB    @DVSCR                  ;WAIT FOR
 2840  015304  100375                          BPL     .-4                     ;DVSCR07=1
 2841  015306  017704  164054                  MOV     @DVRIC,R4               ;READ RESULT
 2842  015312  010005                          MOV     R0,R5                   ;LOAD LINE NUMBER
 2843  015314  000305                          SWAB    R5                      ;PUT IN HIGH BYTE
 2844  015316  052705  050000                  BIS     #BIT14+BIT12,R5         ;SET "BLOCK CHECK COMPLETE"
 2845  015322  020504                          CMP     R5,R4                   ;RIC OK
 2846  015324  001401                          BEQ     4$                      ;
 2847  015326  104001                          HLT     1                       ;DVRIC INCORRECT
 2848  015330  112777  000014  164036  4$:     MOVB    #14,@DVSRSH             ;GET TX MODE REGISTER
 2849  015336  017704  164034                  MOV     @DVSRA,R4               ;
 2850  015342  012705  000007                  MOV     #BIT2+BIT1+BIT0,R5      ;WAS NEXT MODE PICKED UP?
 2851  015346  020504                          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 LRC8 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.
```

```
2908  015542  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2909  015550  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2910  015552  004737  015560                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2911  015556  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2912  015560                          105$:                           ;TEST ENTRANCE.
2913  015560  012737  015674  001220          MOV     #65$,LOCK       ;SET RETURN IF SW09=1
2914  015566  104413                          RAMCLR                  ;CLEAR ALL SECONDARY REGISTERS
2915  015570  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
2916  015574  012704  000012                  MOV     #10.,R4         ;LOAD 10 BYTES
2917  015600  012705  023560                  MOV     #TXTAB,R5       ;WITH
2918  015604  112725  000010          1$:     MOVB    #BIT3,(R5)+     ;INC/BCC
2919  015610  005304                          DEC     R4              ;
2920  015612  001374                          BNE     1$              ;
2921  015614  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
2922  015620  013704  001236                  MOV     STAT,R4         ;SYNC
2923  015624  042704  177400                  BIC     #^C<377>,R4     ;CONTROL
2924  015630  060405                          ADD     R4,R5           ;BYTE
2925  015632  105015                          CLRB    (R5)            ;
2926  015634  012705  022560                  MOV     #TXBAP,R5       ;LOAD
2927  015640  005004                          CLR     R4              ;DATA
2928  015642  110425                  2$:     MOVB    R4,(R5)+        ;INTO
2929  015644  005204                          INC     R4              ;TRANSMITTER BUFFER
2930  015646  022704  000013                  CMP     #11.,R4         ;
2931  015652  001373                          BNE     2$              ;
2932  015654  012705  030160                  MOV     #RXTAB,R5       ;LOAD
2933  015660  012704  000012                  MOV     #10.,R4         ;10
2934  015664  112725  000010          3$:     MOVB    #BIT3,(R5)+     ;RECEIVER
2935  015670  005304                          DEC     R4              ;CONTROL BYTES
2936  015672  001374                          BNE     3$              ;WITH "INC/BCC"
2937  015674  010077  163472          65$:    MOV     R0,@DVSRS       ;LOAD LINE NO.
2938  015700  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2939  015706  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
2940  015710  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2941  015714     000     001                  .BYTE   000,001         ;#REGISTERS
2942  015716  022560                          TXBAP                   ;#LOAD FOR ASYNC
2943  015720  077766                          <-10.>-BIT15                    ;#LOAD FOR ASYNC
2944  015722  000405                          BR      81$             ;#CONTINUE TEST
2945  015724  004537  022120          80$:    PERFORM ,SETREG         ;
2946  015730     000     001                  .BYTE   000,001         ;TX PRINCIPLE BA, BC
2947  015732  022556                          SYNC                    ;
2948  015734  077764                          <-12.>-BIT15            ;MARKED BC!
2949  015736  004537  022120          81$:    PERFORM ,SETREG         ;
2950  015742     004     005                  .BYTE   004,005         ;RX BA, BC
2951  015744  027560                          RXBA                    ;
2952  015746  077766                          <-10.>-BIT15            ;MARKED BC!
2953  015750  004537  022120                  PERFORM ,SETREG         ;
2954  015754     010     011                  .BYTE   010,011         ;TX TABLE, RX TABLE
2955  015756  023560                          TXTAB
2956  015760  030160                          RXTAB
2957  015762  004537  022120                  PERFORM ,SETREG
2958  015766     012     013                  .BYTE   012,013         ;LINE PROTOCOL, LINE STATE
2959  015770  000001                          BIT0                    ;LRCC, IDLE MARK
2960  015772  162004                          BIT15+BIT14+BIT13+BIT10+BIT2
2961  015774  004537  022120                  PERFORM ,SETREG         ;MODE 7,  TXGO
2962  016000     016     017                  .BYTE   016,017         ;LINE PROGRESS REC, REC CNTR STORE
2963  016002  162000                          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$:     RAMCLR                  ;CLEAR ALL SEC REG
 3009  016210  104401                          SCOP1                   ;LOCK ON CURRENT LINE?
 3010  016212  005200                          INC     R0              ;UPDATE LINE POINTER
 3011  016214  005302                          DEC     R2              ;4 LINE GROUP DONE?
 3012  016216  001226                          BNE     65$             ;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
                                                ;*  7          5             6
                                                ;* 34          6             7
                                                ;* 32          7             7
                                                ;* 36          7             7
                                                ;*
                                                ;*
                                                ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                                ;;*****************************************************************

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

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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 ERROR (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 RECV 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/SND/DLE
                                                :* 3             INC/BCC                 INC/BCC
                                                :* 4             NO FUNC                 SND/DLE
                                                :* 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  020144  001216          MOV     #TST17,NEXT
                017202  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
                017206  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
                017214  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
                017216  004737  017304                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
                017222  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
                017226  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
                017234  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
                017236  004737  017304                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
                017242  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
                017246  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
                017254  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
                017256  004737  017304                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
                017262  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
                017266  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
                017274  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
                017276  004737  017304                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4.
                017302  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
                017304                          105$:                           ;TEST ENTRANCE.
                017304  012737  017504  001220          MOV     #3$,LOCK        ;RETURN IF SW09=1
                017312  032737  001400  001236          BIT     #BIT9+BIT8,STAT ;"9 BITS/PER/CHAR ?"
                017320  001401                          BEQ     .+4             ;BR IF YES
                017322  000207                          RTS     PC              ;EXIT TEST FOR THIS LINE CARD!
                017324  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
                017326  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
                017332  012703  030160                  MOV     #RXTAB,R3       ;TRANSMITTER
                017336  005004                          CLR     R4              ;AND
                017340  005025                  1$:     CLR     (R5)+           ;RECEIVER
                017342  005023                          CLR     (R3)+           ;CONTROL
                017344  105204                          INCB    R4              ;TABLES
                017346  100374                          BPL     1$              ;
                017350  012705  000010                  MOV     #BIT3,R5        ;INC/BCC IS IN R5
                017354  110537  023560                  MOVB    R5,TXTAB        ;INC/BCC
                017360  110537  023561                  MOVB    R5,TXTAB+1      ;INC/BCC
                017364  110537  023562                  MOVB    R5,TXTAB+2      ;INC/BCC
```

```
 3244  017370  152737  000002  023562          BISB    #BIT1,TXTAB+2   ;           SND/DLE
 3245  017376  110537  023563                  MOVB    R5,TXTAB+3      ;INC/BCC
 3246  017402  112737  000002  023564          MOVB    #BIT1,TXTAB+4   ;SND/DLE
 3247  017410  110537  023565                  MOVB    R5,TXTAB+5      ;INC/BCC
 3248  017414  110537  023566                  MOVB    R5,TXTAB+6      ;INC/BCC
 3249  017420  052737  000344  023566          BIS     #BIT7+BIT6+BIT5+BIT2,TXTAB+6    ;INC/BCC SND/BCC MOD=7
 3250  017426  110537  030160                  MOVB    R5,RXTAB        ;INC/BCC
 3251  017432  110537  030161                  MOVB    R5,RXTAB+1      ;INC/BCC
 3252  017436  152737  000020  030161          BISB    #BIT4,RXTAB+1   ;           DSCARD
 3253  017444  110537  030162                  MOVB    R5,RXTAB+2      ;INC/BCC
 3254  017450  110537  030163                  MOVB    R5,RXTAB+3      ;INC/BCC
 3255  017454  105037  030164                  CLRB    RXTAB+4         ;NO FUNC.
 3256  017460  110537  030165                  MOVB    R5,RXTAB+5      ;INC/BCC
 3257  017464  152737  000020  030165          BISB    #BIT4,RXTAB+5   ;           DSCARD
 3258  017472  112737  000354  030166          MOVB    #BIT7+BIT6+BIT5+BIT3+BIT2,RXTAB+6       ;INC/BCC EXP/BCC MODE=7
 3259  017500  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
 3260  017504  005037  027560          3$:     CLR     RXBA            ;ZERO
 3261  017510  005037  027562                  CLR     RXBA+2          ;RX
 3262  017514  005037  027564                  CLR     RXBA+4          ;BUFFER
 3263  017520  005037  027566                  CLR     RXBA+6          ;AREA
 3264  017524  010077  161642                  MOV     R0,@DVSRS       ;LOAD LINE NO.
 3265  017530  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
 3266  017536  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
 3267  017540  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
 3270  017544     000     001                  .BYTE   000,001         ;#REGISTERS
 3271  017546  022560                          TXBAP                   ;#LOAD FOR ASYNC
 3272  017550  177771                          -7.                     ;#LOAD FOR ASYNC
 3273  017552  000405                          BR      91$             ;#CONTINUE TEST
 3274  017554  004537  022120          80$:    PERFORM ,SETREG         ;
 3275  017560     000     001                  .BYTE   000,001         ;PRINCIPLE BA, BC
 3276  017562  022556                          SYNC                    ;
 3277  017564  177767                          -9.                     ;
 3300  017566  004537  022120          91$:    PERFORM ,SETREG         ;
 3301  017572     004     005                  .BYTE   004,005         ;RX BA, BC
 3302  017574  027560                          RXBA                    ;
 3303  017576  177766                          -10.                    ;
 3304  017600  004537  022120                  PERFORM ,SETREG         ;
 3305  017604     010     011                  .BYTE   010,011         ;TX TAB, RXTAB
 3306  017606  023560                          TXTAB                   ;
 3307  017610  030160                          RXTAB                   ;
 3310  017612  004537  022120                  PERFORM ,SETREG         ;
 3311  017616     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
 3312  017620  000004                          BIT2                    ;TX GO
 3313  017622  010031                          (20*400)+BIT4+BIT3+BIT0 ;DLE(20 HIGH BYTE),CRC.CCITT, IDLE MARK
 3314  017624  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
 3315  017632  001412                          BEQ     60$             ;#BR IF NO.
 3316  017634  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
 3317  017640  020000                          BIT13                   ;#RECEIVER ENABLE
 3320  017642  004537  022164                  PERFORM ,LOAD.MODE      ;#
 3321  017646  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
 3322  017650  004537  022164                  PERFORM ,LOAD.MODE      ;#
 3323  017654  072000                          (BIT14+BIT13+BIT12)+BIT10
                                                                        ;#9600 BAUD.
 3324  017656  000405                          BR      4$
 3325  017660  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
 3326  017664  034000                          BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
```

```
 3300  017566  004537  021706                    PERFORM ,SETSYNC          :GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
 3301  017572  005004                      4$:   CLR     R4                :LOAD
 3302  017574  012705  022560                    MOV     #TXBAP,R5         :TX
 3303  017600  110425                      5$:   MOVB    R4,(R5)+          :DATA
 3304  017602  005204                            INC     R4                :
 3305  017604  020427  000007                    CMP     R4,#7             :
 3306  017610  001373                            BNE     5$                :
 3307  017612  005277  161444                    INC     @DVSCR            :SET MICRO CODE GO
 3310  017616  105777  161440                    TSTB    @DVSCR            :WAIT FOR
 3311  017622  100376                            BPL     .-4               :DVSCRD7=1
 3312  017624  012701  027560                    MOV     #RXBA,R1          :GET RX POINTER
 3313  017630  012703  020134                    MOV     #50$,R3           :GET DATA EXPECTED POINTER
 3314  017634  012737  000007  001252            MOV     #7.,TEMP3         :CHECK 7 CHARS
 3315  017642  116104                      6$:   MOVB    (R1)+,R4          :GET RECEIVED CHAR
 3316  017644  113305                            MOVB    (R3)+,R5          :GET EXPECTED CHAR
 3317  017646  020504                            CMP     R5,R4             :OK?
 3320  017650  001401                            BEQ     7$                :YES
 3321  017652  104001                            HLT     1                 :DATA IS WRONG!!
 3322  017654  005337  001252              7$:   DEC     TEMP3             :ALL CHARS DONE?
 3323  017660  001370                            BNE     6$                :BR IF NO
 3324  017662  112777  000014  161404            MOVB    #14,@DVSRSH       :GET TX MODE REG.
 3325  017670  017704  161402                    MOV     @DVSRA,R4         :
 3326  017674  042704  177770                    BIC     #^C<BIT2+BIT1+BIT0>,R4  ;CLEAR JUNK
 3327  020000  012705  000007                    MOV     #7,R5             :SET EXPECTED=7
 3330  020004  020504                            CMP     R5,R4             :
 3331  020006  001401                            BEQ     8$                :
 3332  020010  104001                            HLT     1                 :TX MODE REG NOT=7
 3333  020012  105277  161356              8$:   INCB    @DVSRSH           :RX MODE REG
 3334  020016  017704  161354                    MOV     @DVSRA,R4         :
 3335  020022  042704  177770                    BIC     #^C<BIT2+BIT1+BIT0>,R4          :
 3336  020026  020504                            CMP     R5,R4             :
 3337  020030  001401                            BEQ     9$                :
 3340  020032  104001                            HLT     1                 :RX MODE REG NOT=7
 3341  020034  112777  000006  161332    9$:   MOVB    #6,@DVSRSH        :TX BCC REG
 3342  020042  017704  161330                    MOV     @DVSRA,R4         :
 3343  020046  001402                            BEQ     10$               :
 3344  020050  005005                            CLR     R5                :
 3345  020052  104001                            HLT     1                 :TX BCC REG S/B=0
 3346  020054  105277  161314            10$:   INCB    @DVSRSH           :TXBCC
 3347  020060  017704  161312                    MOV     @DVSRA,R4         :
 3350  020064  001402                            BEQ     11$               :
 3351  020066  005005                            CLR     R5                :
 3352  020070  104001                            HLT     1                 :RX BCC REG S/B=0
 3353  020072  010006                      11$:  MOV     R0,R5             :LOAD LINE NO.
 3354  020074  000305                            SWAB    R5                :PUT IN HIGH BYTE
 3355  020076  052705  050000                    BIS     #BIT14+BIT12,R5   :SET BCC COMPLETE
 3356  020102  017704  161260                    MOV     @DVRIC,R4         :READ RIC
 3357  020106  020504                            CMP     R5,R4             :
 3360  020110  001401                            BEQ     12$               :
 3361  020112  104001                            HLT     1                 :DVRIC INCORRECT
 3362  020114  104413                      12$:  RAMCLR                    :CLEAR ALL SEC REGS
 3363  020116  104401                            SCOPI                     :RETURN WITH SAME LINE
 3364  020120  005200                            INC     R0                :UPDATE LINE POINTER
 3365  020122  005302                            DEC     R2                :4 LINES DONE?
 3366  020124  001402                            BEQ     .+6               :BR IF NO
 3367  020126  000137  017504                    JMP     3$                :JMP IF YES
```

```
                                        RTS     PC              ;EXIT
020132  000207
020134      000     020         50$:    .BYTE   0,20
020136      002     003                 .BYTE   2,3
020140      004     005                 .BYTE   4,5
020142      006     000                 .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. (DVSCR08=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) S/B= 1,6,7,10.
                                        ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
                                        ;;**************************************************************

                                    ;   TEST 17
                                    ;---------------
020144  012737  000017  001226      TST17:  MOV     #17,TSTNO
020150  012737  021142  001216              MOV     #TST20,NEXT
020160  012700  000000                      MOV     #0,,R0          ;PLACE LINE NUMBER INTO R0
020164  013737  001416  001236              MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
020172  100402                              BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
020174  004737  020262                      JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
020200  012700  000004              100$:   MOV     #4,,R0          ;PLACE LINE NUMBER INTO R0
020204  013737  001420  001236              MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
020212  100402                              BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
020214  004737  020262                      JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
020220  012700  000010              101$:   MOV     #8,,R0          ;LOAD LINE NUMBER
020224  013737  001422  001236              MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
020232  100402                              BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
020234  004737  020262                      JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
020240  012700  000014              102$:   MOV     #12.,R0         ;LOAD LINE NO.
020244  013737  001424  001236              MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
020252  100402                              BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
020254  004737  020262                      JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
020260  104400                      103$:   SCOPE                   ;SCOPE THIS TEST.
020262                              105$:                           ;TEST ENTRANCE.
020262  012737  020314  001220              MOV     #1$,LOCK        ;SET RETURN
020270  104413                              RAMCLR                  ;CLEAR ALL SEC. REGS
020272  112737  000001  030161              MOVB    #BIT0,RXTAB+1   ;SET "SPECIAL CHAR" CNTRL BYTE
020300  005037  030166                      CLR     RXTAB+6         ;CLEAR
020304  005037  030170                      CLR     RXTAB+10        ;OTHER CNTRL BYTES
020310  012702  000004                      MOV     #4,R2           ;SET FOR 4 LINE GROUP
020314  010077  161052              1$:     MOV     R0,@DVSRS       ;LOAD LINE NUMBER
020320  032737  004000  001236              BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
020326  001406                              BEQ     SO$             ;#BR IF NOT ASYNC.
020330  004537  022120                      PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
020334      000     001                     .BYTE   000,001         ;#REGISTERS
020336  022560                              TXBAP                   ;#LOAD FOR ASYNC
```

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020340  177773                          -5                      ;#LOAD FOR ASYNC
020342  000405                          BR      81$             ;#CONTINUE TEST
020344  004537  022120          80$:    PERFORM .SETREG         ;
020350     000     001                  .BYTE   000,001         ;RX BA P, RX BC P
020352  022556                          SYNC                    ;
020354  177771                          -7                      ;
020356  004537  022120          81$:    PERFORM .SETREG         ;
020362     004     005                  .BYTE   004,005         ;RX BA  RX BC
020364  027560                          RXBA                    ;
020366  177774                          -4                      ;
020370  004537  022120                  PERFORM .SETREG         ;
020374     010     011                  .BYTE   010,011         ;RX CNTRL TAB, RX CNTRL TAB
020376  023560                          TXTAB                   ;
020400  030160                          RXTAB                   ;
020402  004537  022120                  PERFORM .SETREG         ;
020406     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL PARAMS.
020410  000004                          BIT2                    ;TX GO
020412  000101                          BIT6+BIT0               ;TX,DDCMP. IDLE MARK
020414  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
020422  001412                          BEQ     60$             ;#BR IF NO.
020424  004537  022164                  PERFORM .LOAD.MODE      ;#LOAD PARAMETERS.
020430  020000                          BIT13                   ;#RECEIVER ENABLE
020432  004537  022164                  PERFORM .LOAD.MODE      ;#
020436  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
020440  004537  022164                  PERFORM .LOAD.MODE      ;#
020444  072000                          (BIT14+BIT13+BIT12)+BIT10
                                                                ;#9600 BAUD.
020446  000403                          BR      61$
020450  004537  022164          60$:    PERFORM .LOAD.MODE      ;LOAD
020454  034000                          BIT13+BIT12+BIT11       ;MODE + RX ENABLE
020456  005037  027560          61$:    CLR     RXBA            ;CLEAR
020462  005037  027562                  CLR     RXBA+2          ;RX BUFFER
020466  012705  022560                  MOV     #TXBAP,R5       ;SET TX POINTER
020472  005004                          CLR     R4              ;LOAD
020474  005204                  2$:     INC     R4              ;DATA
020476  110425                          MOVB    R4,(R5)+        ;INTO
020500  022704  000005                  CMP     #5,R4           ;TX BUFFER
020504  001373                          BNE     2$              ;(1-5)
020506  004537  021706                  PERFORM .SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
020512  005277  160644                  INC     @DVSCR          ;SET UCPU GO
020516  005005                          CLR     R5              ;SET COUNTER TO 0
020520  105777  160636                  TSTB    @DVSCR          ;WAIT FOR DVSCR07=1
020524  100404                          BMI     .+12            ;BR IF SET.
020526  104414                          DELAY                   ;STALL TIME
020530  005205                          INC     R5              ;UPDATE
020532  001372                          BNE     .-12            ;WAIT
020534  104000                          HLT                     ;DVSCR07 NOT SET.
020536  005005                          CLR     R5              ;SET COUNTER TO 0
020540  005777  160616                  TST     @DVSCR          ;TX DONE?
020544  100404                          BMI     .+12            ;BR IF DVSCR15=1
020546  104414                          DELAY                   ;STALL TIME
020550  005205                          INC     R5              ;UPDATE
020552  001372                          BNE     .-12            ;
020554  104000                          HLT                     ;DVSCR15 NOT SET.
020556  012705  022560                  MOV     #TXBAP,R5       ;SET TX POINTER
020562  113725  001236                  MOVB    STAT,(R5)+      ;SYNC
```

```
3468  020566  113725  001236                  MOVB    STAT,(R5)+      ;SYNC
3469  020572  012704  000006                  MOV     #6,R4           ;SET 1ST DATA TO 6
3470  020576  110425                  3$:     MOVB    R4,(R5)+        ;LOAD
3471  020600  005204                          INC     R4              ;DATA
3472  020602  022704  000011                  CMP     #11,R4          ;ALL DONE?
3473  020606  001373                          BNE     3$              ;BR IF NO
3474  020610  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
3475  020616  001406                          BEQ     82$             ;#BR IF NOT ASYNC.
3476  020620  004537  022120                  PERFORM .SETREG         ;#ADJUST FOR ASYNC LINE CARD
3477  020624      000                         .BYTE   000,001         ;#REGISTERS
3478  020625      001                         TXBAP+2                 ;#LOAD FOR ASYNC
3479  020626  022556                          -3                      ;#LOAD FOR ASYNC
3480  020630  177775                          BR      83$             ;#CONTINUE TEST
3481  020632  000405                  82$:    PERFORM .SETREG         ;
3482  020634  004537  022120                  .BYTE   000,001         ;TX BA P, TX BC P
3483  020640      000                         SYNC                    ;
3484  020641      001                         -7                      ;
3485  020642  022556                  83$:    BIT     #ASYNC,STAT     ;#ASYNC LINE CARD?
3486  020644  177771                          BEQ     .+10            ;#BR IF NO
3487  020646  032737  004000  001236          PERFORM .LOAD.MODE      ;#CLEAR RX ENABLE
3488  020654  001403                          0                       ;#
3489  020656  004537  022164                  MOVB    #13,@DVSRSH     ;LINE STATE
3490  020662  000000                          BIC     #BIT7,@DVSRA    ;CLEAR "USE SEC TABLES"
3491  020664  112777  000013  160502          BIS     #BIT1,@DVSRA    ;SET RE-SYNC
3492  020672  042777  000200  160476          MOVB    #12,@DVSRSH     ;SEL LINE PROTOCOL PARAM.
3493  020700  052777  000002  160470          BIS     #BIT1,@DVSRA    ;SET STRIP LEADING SYNC
3494  020706  112777  000012  160460          MOV     #6000,64$       ;GIVE UCPU TIME
3495  020714  052777  000002  160454          DEC     (PC)+           ;TO RESYNC SILO
3496  020722  012737  006000  020732          0                       ;
3497  020730  005327                  64$:    BNE     .-4             ;
3498  020732  000000                          BIT     #ASYNC,STAT     ;#ASYNC LINE CARD?
3499  020734  001375                          BEQ     .+10            ;#BR IF NOT ASYNC LINE CARD.
3500  020736  032737  004000  001236          PERFORM .LOAD.MODE      ;#SET RX ENABLE FOR ASYNC LINE CARD
3501  020744  001403                          BIT13                   ;#RX ENABLE
3502  020746  004537  022164                  MOVB    #13,@DVSRSH     ;SEL LINE STATE.
3503  020752  020000                          BIS     #BIT2,@DVSRA    ;SET TX GO.
3504  020754  112777  000013  160412          BIS     #BIT8,@DVSCR    ;RESTART CPU
3505  020762  052777  000004  160406          CLR     R4              ;SET FOR TIME OUT.
3506  020770  052777  000400  160364          TSTB    @DVSCR          ;RX DONE?
3507  020776  005004                          BMI     .+12            ;BR IF YES
3508  021000  105777  160356                  DELAY                   ;WASTE TIME
3509  021004  100404                          INC     R4              ;LOOP DONE?
3510  021006  104414                          BNE     .-12            ;BR IF NO
3511  021010  005204                          HLT                     ;DVSCR07 NOT SET AFTER RESYNC.
3512  021012  001372                          MOV     @DVRIC,R4       ;READ D.RIC
3513  021014  104000                          MOV     R0,R5           ;LOAD LINE NO
3514  021016  017704  160344                  SWAB    R5              ;PLACE IN HIGH BYTE
3515  021022  010005                          BIS     #BIT14+10,R5    ;SET BC WARNING + CHAR 10
3516  021024  000305                          CMP     R5,R4           ;RIC OK
3517  021026  052705  040010                  BEQ     4$              ;
3518  021032  020504                          HLT     1               ;DVRIC WRONG
3519  021034  001401                  4$:     MOV     #RXBA,R3        ;CHECK RX DATA
3520  021036  104001                          MOVB    (R3)+,R4        ;
3521  021040  012703  027560                  MOV     #1,R5           ;
3522  021044  112304                          CMP     R5,R4           ;
3523  021046  012705  000001                  BEQ     5$              ;
3524  021052  020504                          ;
3525  021054  001401                          ;
```

```
021056  104001                          HLT     1               ;1ST CHAR NOT "1"!
021060  112304          55:             MOVB    (R3)+,R4        ;
021062  012705  000006                  MOV     #6,R5           ;
021066  020504                          CMP     R5,R4           ;
021070  001401                          BEQ     6$              ;
021072  104001                          HLT     1               ;2ND CHAR NOT "6"!
021074  112304          65:             MOVB    (R3)+,R4        ;
021076  012705  000007                  MOV     #7,R5           ;
021102  020504                          CMP     R5,R4           ;
021104  001401                          BEQ     7$              ;
021106  104001                          HLT     1               ;3RD CHAR NOT "7"!
021110  005205          75:             INC     R5              ;
021112  112304                          MOVB    (R3)+,R4        ;
021114  020504                          CMP     R5,R4           ;
021116  001401                          BEQ     8$              ;
021120  104001                          HLT     1               ;4TH CHAR NOT "10"!
021122  104412          85:             MSTCLR                  ;RESET DV11
021124  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
021126  005200                          INC     R0              ;UPDATE LINE NO.
021130  005302                          DEC     R2              ;4 LINES DONE
021132  001402                          BEQ     .+6             ;BR IF YES
021134  000137  020314                  JMP     1$              ;JMP IF NO
021140  000207                          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  TST20:  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$:   MOV     #12.,R0         ;LOAD LINE NO.
021264  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
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 3580  021272  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
 3581  021300  100402                          BMI     103$            ;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$,LOCK        ;RETURN FOR SW09
 3586  021316  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
 3587  021320  005004                          CLR     R4              ;CLEAR
 3588  021322  012705  030160                  MOV     #RXTAB,R5       ;THE
 3589  021326  005025                          CLR     (R5)+           ;RECEIVER
 3590  021330  105204                          INCB    R4              ;CONTROL
 3591  021332  100375                          BPL     .-4             ;TABLE
 3592  021334  112737  000001  030161          MOVB    #BIT0,RXTAB+1   ;SET "SPECIAL CHAR"(1)
 3593  021342  012702  000004                  MOV     #4,R2           ;4 LINE GROUP
 3594  021346  010077  160020          1$:     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     #HSYNC,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      ;#8 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$
```

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021526  004537  022164           60$:    PERFORM .LOAD.MODE      ;LOAD
021532  034000                           BIT13+BIT12+BIT11        ;MODE
021534  012705  022560           61$:    MOV     #TXBAP,R5        ;LOAD
021540  005004                           CLR     R4               ;TX
021542  105204                   2$:     INCB    R4               ;DATA
021544  001402                           BEQ     21$              ;BUFFER
021546  110425                           MOVB    R4,(R5)+         ;
021550  000774                           BR      2$               ;
021552  004537  021706           21$:    PERFORM .SETSYNC         ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
021556  005277  157600                   INC     @DVSCR           ;SET UCPU GO
021562  105777  157574                   TSTB    @DVSCR           ;DVSCR07=1?
021566  100375                           BPL     .-4              ;BR IF NO
021570  005777  157566                   TST     @DVSCR           ;DVSCR15=1?
021574  100375                           BPL     .-4              ;BR IF NO
021576  112777  000012  157570           MOVB    #12,@DVSRSH      ;LINE PROTOCOL PARAM.
021604  052777  000040  157564           BIS     #BIT5,@DVSRA     ;SET RX DDCMP
021612  052777  000400  157542           BIS     #BIT8,@DVSCR     ;RESTART
021620  105777  157536                   TSTB    @DVSCR           ;DVSCR07=1?
021624  100375                           BPL     .-4              ;BR IF NO
021626  017704  157534                   MOV     @DVRIC,R4        ;READ RIC
021632  010005                           MOV     R0,R5            ;LINE
021634  000305                           SWAB    R5               ;HIGH BYTE
021636  052705  020202                   BIS     #BIT13+202,R5    ;130.
021642  032737  004000  001236           BIT     #ASYNC,STAT      ;#IS THIS AN ASYNC LINE CARD?
021650  001401                           BEQ     .+4              ;#BR IF NOT ASYNC
021652  005205                           INC     R5               ;#ADJUST FOR ASYNC. DOUBLE BUFFER CAUSES
                                                                  ;#CHAR TO BE ONE MORE THAN SYNC LINE CARD.
021654  143705  001244                   BICB    MASKX,R5         ;CLEAR UNUSED BITS
021660  020504                           CMP     R5,R4            ;RIC OK?
021662  001401                           BEQ     3$               ;
021664  104001                           HLT     1                ;NO OVER-RUN; OR ON WRONG CHAR!
021666  104412                   3$:     MSTCLR                   ;RESET DVA
021670  104401                           SCOP1                    ;LOCK ON CURRENT LINE?
021672  005200                           INC     R0               ;UPDATE LINE NO.
021674  005302                           DEC     R2               ;4 LINES DONE
021676  001402                           BEQ     .+6              ;BR IF YES
021700  000137  021346                   JMP     1$               ;JMP IF YES
021704  000207                           RTS     PC               ;EXIT

021706                           SETSYNC:
021706  113737  001236  022556           MOVB    STAT,SYNC        ;SET SYNC FOR THIS LINE.
021714  113737  022556  022557           MOVB    SYNC,SYNC+1      ;PLACE SYNC IN HIGH BYTE
021722  032737  010000  001236           BIT     #TWOSYN,STAT     ;ONE SYNC OR TWO?
021730  001402                           BEQ     1$               ;BR IF JUMPERED FOR TWO.
021732  105037  022556                   CLRB    SYNC             ;SET FIRST SYNC TO NON-SYNC
021736  000205                   1$:     EXIT
021740  010046                   SIMBCC: MOV     R0,-(SP)
021742  010146                           MOV     R1,-(SP)
021744  010246                           MOV     R2,-(SP)
021746  012537  001246                   MOV     (R5)+,TEMP1
021752  012537  001250                   MOV     (R5)+,TEMP2
021756  012537  001252                   MOV     (R5)+,TEMP3
021762  005037  022114           1$:     CLR     BCCFBK
021766  013700  001252                   MOV     TEMP3,R0
021772  006037  001250                   ROR     TEMP2
021776  005500                           ADC     R0
```

```
 3692  022000  032700  000001                  BIT     #BIT0,R0
 3693  022004  001402                          BEQ     2$
 3694  022006  005137  022114                  COM     BCCFBK
 3695  022012  013700  022112          2$:     MOV     XPOLY,R0
 3696  022016  005100                          COM     R0
 3697  022020  040037  022114                  BIC     R0,BCCFBK
 3698  022024  000241                          CLC
 3699  022026  006037  001252                  ROR     TEMP3
 3700  022032  013700  022114                  MOV     BCCFBK,R0
 3701  022036  013701  001252                  MOV     TEMP3,R1
 3702  022042  010102                          MOV     R1,R2
 3703  022044  040100                          BIC     R1,R0
 3704  022046  043702  022114                  BIC     BCCFBK,R2
 3705  022052  050200                          BIS     R2,R0
 3706  022054  043737  022112  001252          BIC     XPOLY,TEMP3
 3707  022062  050037  001252                  BIS     R0,TEMP3
 3708  022066  005337  001246                  DEC     TEMP1
 3709  022072  001333                          BNE     1$
 3710  022074  013737  001252  022116          MOV     TEMP3,CALBCC
 3711  022102  012602                          MOV     (SP)+,R2
 3712  022104  012601                          MOV     (SP)+,R1
 3713  022106  012600                          MOV     (SP)+,R0
 3714  022110  000205                          RTS     R5
 3715  022112  000000                  XPOLY:  0
 3716  022114  000000                  BCCFBK: 0
 3717  022116  000000                  CALBCC: 0
 3718          000200                  LRC8=200
 3719          120001                  CRC16=120001
 3720          102010                  CRC.CCITT=102010
 3721
 3722
 3723  022120  010046                  SETREG: MOV     R0,-(SP)
 3724  022122  010146                          MOV     R1,-(SP)
 3725  022124  112500                          MOVB    (R5)+,R0
 3726  022126  112501                          MOVB    (R5)+,R1
 3727  022130  110077  157240                  MOVB    R0,@DVSRSH
 3728  022134  012577  157236                  MOV     (R5)+,@DVSRA
 3729  022140  042777  000060  157214          BIC     #BIT5+BIT4,@DVSCR
 3730  022146  110177  157222                  MOVB    R1,@DVSRSH
 3731  022152  012577  157220                  MOV     (R5)+,@DVSRA
 3732  022156  012601                          MOV     (SP)+,R1
 3733  022160  012600                          MOV     (SP)+,R0
 3734  022162  000205                          EXIT
 3735
 3736  022164                          LOAD.MODE:
 3737  022164  012577  157200                  MOV     (R5)+,@DVLCR
 3738  022170  052777  100000  157172          BIS     #BIT15,@DVLCR
 3739  022176  010046                          MOV     R0,-(SP)
 3740  022200  005000                          CLR     R0
 3741  022202  005777  157162          1$:     TST     @DVLCR
 3742  022206  100004                          BPL     2$
 3743  022210  104414                          DELAY
 3744  022212  005200                          INC     R0
 3745  022214  001372                          BNE     1$
 3746  022216  104000                          HLT     0                       ;BIT 15 FAILED TO CLEAR
 3747  022220  012600                  2$:     MOV     (SP)+,R0
```

```
3748  022222  000205                          EXIT
3749
3750                                          ;SUBROUTINE.
3751                                          ;CORE TABLES ALREAY SET UP
3752                                          ;XMIT 3 CHARS 2SYNC+ 1 DATA
3753                                          ;RCV    1 CHAR
3754  022224  010077  157142          DV11ON: 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                  CORMAX:
 3861          000001          .END
```

```
ADRCNT= 003443          1138* 1174* 1183#
ALU   = 010000           594#
ASYNC = 004000           602#  1781  1859  1878  1901  1983  2002  2025  2136  2148  2167  2139  2567
                        2798  2825  2938  2965  3117  3140  3265  3288  3407  3430  3474  3485  3498
                        3595  3607  3626  3659  3755  3778
AUTO.S  002622          1648#
BUS   = 020000           599#
BUSFBK  022114          1368* 1694* 1697* 3700  3704  3716#
BUSWD   003746          1225* 1262#
BIT0  = 000001           590#  1405  1794  2024  2166  2589  2664  2677  2819  2850  2959  2990  3287
                        3328  3328  3402  3429  3692  3626  3692  3777
BIT1  = 000002           591#  1406  1416  2436  2589  2850  2990  3070  3244  3246  3322  3329  3491
                        3493  3795  3802
BIT10 = 002000           602#  1405  1786  1908  2032  2174  2820  2823  2832  2960  2963  2972  3035*
                        3086* 3087* 3088* 3089* 3095* 3096* 3097* 3098* 3099* 3147  3295  3437  3633
                        3785
BIT11 = 004000           603#  1405  1784  1790  1906  1912  2030  2036  2172  2178  2930  2836  2970
                        2978  3145  3151  3293  3299  3435  3441  3631  3637  3793  3799
BIT12 = 010000           580#   594   596   598   600  1784  1786  1790  1906  1908  1912  2030  2032
                        2036  2172  2174  2178  2830  2832  2836  2844  2970  2972  2978  2984  3145
                        3147  3151  3293  3295  3299  3345  3435  3437  3441  3631  3633  3637  3793
                        3795  3799  3802
BIT13 = 020000           579#   596   596   598   600  1786  1794  1802  1904  1908  1912  2028  2032
                        2036  2170  2174  2178  2820  2823  2828  2832  2836  2960  2963  2968  2972
                        3136  3143  3147  3151  3291  3295  3299  3433  3437  3441  3501  3629  3633
                        3637  3655  3781  3785  3789
BIT14 = 040000           578#   597   598   599   600  1045  1786  1908  2032  2174  2707  2820  2823
                        2832  2844  2960  2963  2972  2984  3147  3295  3345  3437  3515  3633  3785
                        3799  3802
BIT15 = 100000           577#  2803  2808  2812  2820  2823  2943  2948  2952  2960  2963  3738
BIT2  = 000004           590#   972  1405  1775  1999  2023  2165  2820  2850  2960  2990  3139  3249
                        3258  3286  3322  3329  3428  3503  3624  3776
BIT3  = 000010           589#  1405  2259  2291  2313  2778  2794  2819  2918  2934  3071  3240  3258
                        3287  3796
BIT4  = 000020           588#  2128  2129  2313  2819  3252  3257  3287  3729
BIT5  = 000040           587#  1814  2390  2496  2500  2589  3081  3093  3095  3087  3088  3089  3091
                        3093  3095  3097  3098  3099  3249  3258  3651  3729
BIT6  = 000100           586#  1716  2496  2500  2589  2673  2677  2700  3082  3093  3096  3097  3099
                        3089  3092  3093  3096  3097  3098  3099  3249  3258  3429  3625  3798  3802
BIT7  = 000200           585#  1039  1286  1443  1464  1716  2496  3084  3085  3086  3087  3088  3089
                        3094  3096  3096  3097  3098  3099  3249  3258  3490
BIT8  = 000400           584#  1405  1422  2694  2771  3082* 3084* 3086* 3088* 3089* 3092* 3094* 3096*
                        3098* 3099* 3229  3504  3652
BIT9  = 001000           583#  1405  1716  1721  1784  1906  2030  2172  2771  2830  2970  3083* 3084*
                        3087* 3088* 3089* 3093* 3094* 3097* 3098* 3099* 3145  3229  3293  3435  3631
                        3783
BRB   = 070000           600#
BRW     003014           978  1067#
BRX     003016           979  1068#
CALBCC  022116          2275* 2281  2297* 2303  2319* 2325  3710* 3717#
CHRCNT  003744          1222* 1226  1242* 1260# 1261
CLKX    001242           571#
CLK.A   001412           771#  1566
CLK.B   001413           772#  1571
CLK.C   001414           773#  1576
CLK.D   001415           774#  1581
```

```
CNVRT  = 104411          730#    997     999    1001    1003    1323    1325    1381    1438
CONVRT= 104410           728#    937    1339
CORMAX  034442          3860#   3861
CRC.CC= 102010          2320    3720#
CRC16  = 120001         2298    3719#
CREAM   001306           692#    906*   1513*   1514    1516*   1521    1522*   1523    1526*
CSRMAP  006624           931    1650#
CYCLE   005666           981    1017    1018    1503#
DATA    034160          3834#
DATABP  004276          1312*   1315    1337    1340#
DATACL= 104416           740#
DATAHD  004264          1311*   1333    1336#
DELAY  = 104414          736#    1796    2184    2682    3455    3462    3508    3743
DEVADR  003440          1136*   1171    1181#
DH1     034333          3835#   3848    3851    3854    3857
DT1     034366          3835#   3849    3852    3855    3858
DVACTV  001300           686#    953*    954    1503    1508    1682*   1688*   1689*   1693    1712
DVCR00  001500           802#
DVCR01  001524           913#
DVCR02  001550           924#
DVCR03  001574           935#
DVCR04  001620           946#
DVCR05  001644           957#
DVCR06  001670           968#
DVCR07  001714           979#
DVLCR   001370           754#   1422*   1423    1542*   1543*   1544    3737*   3738*   3741
DVNSR   001402           759#   1552*   1553*   1554
DVNUM   001301           687#    903     1007    1654*   1675*   1676    1683    1685
DVR1C   001366           753#   1540*   1541*   1542    2690    2708    2841    2981    3346    3512    3655
DVRLVL  001354           748#   1557*   1558*   1559    2676*
DVRVEC  001352           747#   1024    1528*   1557    2675*
DVSCR   001362           751#   1021    1399*   1412*   1416*   1527*   1539    1794*   1802*   1914*   1915    2038*   2039
                        2180*   2182    2270*   2271    2292*   2293    2314*   2315    2379*   2380    2445*   2446    2502*
                        2503    2590*   2591    2677*   2694*   2700*   2703    2838*   2839    2979*   2979    3152*   3153
                        3307*   3308    3451*   3453    3460    3504*   3508    3645*   3646    3648    3652*   3653    3729*
                        3796*
DVSCRH  001364           752#   1538*   1539*   1540
DVSFR   001400           758#   1550*   1551*   1552    3799*   3802*
DVSRA   001376           757#   1403    1548*   1549*   1550    1806    2274    2296    2318    2383    2455*   2500*   2507
                        2511    2515    2519    2589*   2673*   2849    2855    2861    2865    2989    2995    3001    3005
                        3169    3174    3179    3321    3328    3334    3339    3490*   3491*   3493*   3503*   3651*   3728*
                        3731*
DVSRS   001372           755#   1402    1544*   1545*   1546    1768*   1874*   1998*   2133*   2264*   2286*   2308*   2797*
                        2937*   3116*   3264*   3406*   3594*   3754*
DVSRSH  001374           756#   1546*   1547*   1548    1805*   2273*   2295*   2317*   2382*   2454*   2499*   2506*   2510*
                        2514*   2518*   2588*   2672*   2848*   2854*   2860*   2864*   2989*   2994*   3000*   3004*   3169*
                        3173*   3178*   3320*   3327*   3333*   3338*   3499*   3492*   3502*   3650*   3727*   3730*
DVTLVL  001360           750#   1561*   1562*   1793*
DVTR00  001502           803#
DVTR01  001526           814#
DVTR02  001552           825#
DVTR03  001576           836#
DVTR04  001622           847#
DVTR05  001646           858#
DVTR06  001672           869#
DVTR07  001716           880#
```

```
DVTVEC  001356           749#   1559*  1560*  1561   1792*
DV.END  001400           990#   1514   1523   1652
DV.MAP  001500           692     801#   906    933    1516   1526   1650   1655   1704
DVDO.   001504           904#
DVDO.   001510           906#
DVDO.   001514           908#
DVDO.   001520           910#
DVDO.   001524           915#
DVDO.   001530           917#
DVDO.   001534           919#
DVDO.   001540           921#
DVDO.   001544           926#
DVDO.   001550           930#
DVDO.   001554           936#
DVDO.   001560           937#
DVDO.   001564           939#
DVDO.   001570           941#
DVDO.   001574           943#
DVDO.   001600           950#
DVDO.   001634           952#
DVDO.   001640           954#
DVDO.   001644           959#
DVDO.   001650           961#
DVDO.   001654           963#
DVDO.   001660           965#
DVDO.   001664           970#
DVDO.   001674           972#
DVDO.   001700           974#
DVDO.   001704           976#
DVDO.   001710           981#
DVDO.   001720           983#
DVDO.   001726           985#
DVDO.   001730           987#
DVDO.   001734
DV110N  022224          2265    2287   2309   2374   2439   2498   2581   2667   3754#
DVM     034162          3835#   3847
DVM0    034162          3835#   3850
DVM3    034167          3835#   3853
DVM4    034207          3835#   3856
ERRCNT  001232           663#    908*  1030   1348*
ERRFLG  001233           698#    904*   992*  1059*  1300*  1313   1327*  1382*
ERRMSG  004200          1310*   1328   1331#
ERTABD  004360          1325    1357#
EXIT    000206           602#   3681   3734   3748   3811
EXITER  004320          1343    1348#
FIX.DO  006516          1567    1572   1577   1582   1616#
HALTSW  004302          1296    1342#
HILIM   003436          1135*   1162   1180#
ICOUNT  001226           659#   1057   1062*
.NBUF   005520          1105    1141   1488#
.NIFLG  001310           697#    913    928*
.NSTER= 104404           720#   1156
.NSTR  = 104403           718#   1589
.NSTR2  003236          1112    1124#
LIGHT   000174           631#    923
```

```
LIGHTS  001200            642#    923*    994*
LIMITS  003364           1151     1152#
LOAD.M  022164           1783     1785    1789    1903    1905    1907    1911    2027    2029    2031    2035    2169    2171
                         2173     2175    2823    2829    2831    2835    2967    2969    2971    2975    3142    3144    3146
                         3150     3290    3292    3294    3298    3430    3434    3436    3440    3487    3500    3628    3630
                         3632     3636    3736#   3780    3782    3784    3788
LOBITS  003448           1132*    1166    1182#   1183
LOCK    001220            660#    1061*   1075    1077    1319    1761*   1862*   1986*   2116*   2256*   2366*   2433*   2493*
                         2670*    2652*   2770*   2913*   3065*   3228*   3400*   3585*
LOGICA  002560            629     1011#
LOKFLG  001346            698#
LOOP.M  003436           1134*    1164    1179#
LPCNT   001264            660#    1056*   1057    1060*
LRCB    000200           2276     3718#
LSIERR  001234            664#     909*    991*   1043*   1297    1299*   1383*
LOO.03  001416            776#    1529*   1564    1744    1839    1963    2096    2239    2349    2416    2476    2547    2635
                         2753     2896    3048    3211    3383    3565
LO4.07  001420            777#    1531*   1569    1748    1844    1968    2101    2243    2353    2420    2480    2552    2639
                         2757     2900    3052    3215    3387    3570
LO8.11  001422            778#    1533*   1574    1752    1849    1973    2106    2247    2357    2424    2484    2557    2643
                         2761     2904    3056    3219    3391    3575
L12.15  001424            779#    1535*   1579    1756    1854    1978    2111    2251    2361    2428    2488    2562    2647
                         2765     2908    3060    3223    3395    3580
MASKX   001244            672#    1838*   1843*   1848*   1853*   1931    1962*   1967*   1972*   1977*   2055    2035*   2100*
                         2105*    2110*   2204    2646*   2651*   2656*   2661*   2601    3664*   3669*   3674*   3679*   3683
MASK.A  001406            766#    1565    1838    1962    2096    2646    3664
MASK.B  001407            767#    1570    1843    1967    2100    2651    3669
MASK.C  001410            768#    1575    1848    1972    2105    2656    3674
MASK.D  001411            769#    1580    1853    1977    2110    2661    3679
MCHTBX  000400           1320     1479#
MCRLF   000104           1090     1213    1317    1318    1326    1467    1479#   1583    1606
MCSRX   000330            996     1479#
MDATA   000624           1240     1250    1492#
MEPASS  000145            995     1479#
MERRPC  000454           1324     1479#
MERRX   000365           1002     1479#
MERR2   000174           1479#    1505    1695
MERR3   000243            950     1479#
MLOCK   000301            974     1479#
MNEW    000402            946     1479#
MPASSX  000344           1000     1479#
MPFAIL  000107           1380     1479#
MQM     000100           1120     1479#   1611
MR      000171            982     1479#
MRESET= 004000            602#    1399    1412
MSTCLR= 104412            732#    1384    1811    1941    2065    2213    2263    2285    2307    2389    2453    2522    2612
                         2722     3183    3540    3667
MTITLE  001000            640#     927
MTSTN   000366           1322     1479#   1590
MTSTPC  000267           1479#
MVECX   000336            998     1479#
NEXT    001216            657#    1063    1353    1742*   1936*   1960*   2093*   2237*   2347*   2414*   2474*   2544*   2633*
                         2751*    2894*   3046*   3209*   3381*   3562*
NOLIST= ****** U           522
NPR     = 040000           597#
PARAM = 104405             722#    1591
```

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PARAM1  003304          1140#   1157
PARBIT= 040000           602#   1635
PARERR  003360          1143    1145    1147    1156#   1163    1165    1167
PASCNT  001230           663#    803*    993*    994     1027
PC     =%000007          565#    931*   1012*   1042*   1289*   1468*   1567*   1572*   1577*   1582*   1598    1599*   1638*
                        1730*   1746*   1750*   1754*   1758*   1822*   1841*   1846*   1851*   1656*   1861*   1946*   1965*
                        1970*   1975*   1980*   1985*   2070*   2098*   2103*   2108*   2113*   2124    2126    2210*   2214*
                        2245*   2249*   2253*   2265*   2287*   2309*   2333*   2351*   2355*   2359*   2363*   2374*   2388*
                        2418*   2422*   2426*   2430*   2439*   2460*   2478*   2482*   2486*   2490*   2498*   2527*   2544*
                        2554*   2559*   2564*   2569*   2581*   2617*   2637*   2641*   2645*   2649*   2667*   2727*   2738*
                        2759*   2763*   2767*   2773*   2873*   2898*   2902*   2906*   2910*   3013*   3050*   3054*   3058*
                        3062*   3107    3109    3111    3113    3198*   3213*   3217*   3221*   3225*   3231*   3356*   3388*
                        3389*   3393*   3397*   3495*   3546*   3567*   3572*   3577*   3582*   3673*   3791*
PERFOR= 004537           602#   1769    1773    1777    1783    1785    1789    1880    1885    1889    1893    1897    1903
                        1905    1907    1911    1913    2004    2009    2013    2017    2021    2027    2029    2031    2035
                        2037    2138    2143    2150    2155    2159    2163    2169    2171    2173    2177    2179    2185
                        2288    2310    2375    2440    2584    2668    2800    2805    2809    2813    2817    2821    2837
                        2829    2831    2835    2837    2940    2945    2949    2953    2957    2961    2967    2969    2971
                        3077    3077    3074    3119    3124    3128    3132    3136    3142    3144    3146    3150    3187
                        3272    3276    3280    3284    3290    3292    3294    3298    3300    3409    3414    3418    3422
                        3426    3430    3434    3436    3440    3450    3476    3481    3487    3500    3597    3602    3620
                        3614    3618    3622    3628    3630    3632    3636    3644    3757    3762    3766    3770    3774
                        3780    3782    3784    3788    3790
PFTAB   004470          1361    1387#
PCPRO  = 012600           576#   1347
POP1SP= 005726            576#
POP2SP= 022626            576#   1065
PS     = 177776           574#    999*    968*   1715*   1791*   1797*   1803*   2674*   2681*
PUSHRO= 010046            576#   1344
PUSH1S= 005746            576#
PUSH2S= 024646            576#
OV.FLG  001313            700#    905*   1006*   1054
RAM    = 020000           595#
RAMCLR= 104413            734#   1385    1763    1863    1987    2117    2257    2367    2434    2494    2571    2653    2774
                        2860    2914    3008    3066    3232    3350    3401    3586
REGBUF  022452          3813#
RESREG  004300          1338    1341#
RESTAR  004414          1360    1374#
RESTRT  002572          1006    1009    1017#
RESV16  001404           760#   1554*   1555*
RESOS  = 104407           726#   1341
RETURN  001214           656#    911*    981*    983    1017*   1063*   1066    1353*   1355    1386    1605*   1613*   1614
ROMCLK= 104415           738#   3800    3803
RUN     001304           690#    907*   1508    1511*   1512*   1519*   1520*
RXBA    027560          1875*   1876*   1877*   1891    1919    1924    1933    1999*   2000*   2001*   2015    2043    2048
                        2057    2134*   2135*   2152    2157    2190    2195    2205    2209    2444*   2448    2582*   2583*
                        2594    2602    2607    2712    2811    2951    3100    3130    3156    3260*   3261*   3262*   3263*
                        3278    3310    3420    3442*   3443*   3519    3611    3616    3768    3825#
RXTAB   030160          1865    1896    1989    2020    2128*   2129*   2130*   2131*   2162    2259*   2373*   2437*   2497*
                        2663    2792    2816    2932    2956    3068    3091*   3092*   3093*   3094*   3095*   3096*   3097*
                        3098*   3099*   3135    3234    3250*   3251*   3252*   3253*   3254*   3255*   3256*   3257*   3258*
                        3283    3402*   3403*   3404*   3425    3588    3592*   3621    3773    3826#
PC     =%000000           562#    946*    954*    955*    957*    959*    961     962    1044    1050*   1064*   1197    1202*
                        1214    1227*   1231*   1241    1257*   1345*   1390    1391*   1392*   1394*   1420    1421*   1435*
                        1429*   1521*   1527    1528    1529    1530    1531    1532    1533    1534    1535    1536    1537*
                        1543    1545    1551    1553    1555    1558    1560    1562    1564*   1569*   1574*   1579*   1597*
```

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                    1598    1601    1603    1605    1608    1609    1616    1635    1696*   1705*   1707*   1709    1717*
                    1718*   1743*   1747*   1751*   1755*   1768    1813*   1937*   1942*   1947*   1952*   1974    1943*
                    1961*   1966*   1971*   1976*   1998    2067*   2094*   2099*   2104*   2109*   2133    2215*   2238*
                    2242*   2246*   2250*   2264    2286    2308    2330*   2348*   2352*   2356*   2360*   2396*   2415*
                    2419*   2423*   2427*   2457*   2475*   2479*   2483*   2487*   2524*   2545*   2550*   2556*   2560*
                    2614*   2634*   2638*   2642*   2646*   2687    2705    2724*   2752*   2756*   2760*   2764*   2797
                    2842    2870*   2895*   2899*   2903*   2907*   2937    2982    3010*   3047*   3051*   3055*   3059*
                    3116    3185*   3210*   3214*   3218*   3222*   3264    3343    3352*   3382*   3386*   3390*   3394*
                    3406    3513    3542*   3563*   3568*   3573*   3578*   3594    3656    3669*   3682    3689*   3691*
                    3698    3695*   3696*   3697    3700*   3703*   3705*   3707    3713*   3723    3725*   3727    3733*
                    3739    3740*   3744*   3747*   3754    3809*   3810*
R1      =.000001      563#    958*    959     960*    961     1008*   1012    1196    1203*   1215    1219*   1221    1222
                    1223    1224    1256*   1400    1402*   1405*   1408*   1565*   1570*   1575*   1580*   1620*   1625*
                    1630*   1633*   1656*   1658    1660    1662    1665    1678*   1679    1685*   1686    1690*   1706*
                    1707    1708*   1709    1710    1764*   1767    1814*   1815    1917*   1966*   1969*   1933*   1934
                    1990*   1993*   2057*   2058    2369*   2373    2390*   2391    2393*   2654*   2712*   2715    3069*
                    3072*   3155*   3160    3310*   3313    3683    3701*   3702    3703    3712*   3724    3726*   3730
                    3732*   3801*   3804*   3808
R2      =.000002      564#    1196    1204*   1566*   1571*   1576*   1581*   1621*   1626*   1631*   1634*   1637*   1650*
                    1651*   1652    1655*   1665*   1666    1667*   1668*   1669*   1670*   1671*   1672*   1673*   1674*
                    1681*   1704*   1716*   1720*   1721*   1722*   1723*   1725*   1726*   1766*   1820*   1873*   1944*
                    1997*   2068*   2132*   2216*   2261*   2331*   2370*   2397*   2438*   2458*   2496*   2525*   2572*
                    2615*   2655*   2725*   2775*   2871*   2915*   3011*   3075*   3186*   3259*   3353*   3405*   3543*
                    3693*   3670*   3684    3702*   3704*   3705    3711*
R3      =.000003      565#    1098    1106*   1116*   1119*   1121    1125*   1194    1205*   1216    1228*   1229*   1230*
                    1231    1240*   1241*   1246*   1249*   1255*   1616*   1617*   1618    1623    1628    1763*   1907
                    1813*   1818*   1932*   1939*   2056*   2063*   2368*   2384    2389*   2394*   2679*   2689    2695*
                    2696    3156*   3161    3234*   3237*   3311*   3314    3519*   3520    3525    3530    3536    3748
                    3797*   3805*   3807*
R4      =.000004      566#    1100    1105*   1109*   1110*   1111    1118*   1122    1124*   1132    1141*   1142    1144
                    1146    1148*   1149    1150    1171*   1172*   1176*   1193    1206*   1217    1225*   1228    1233*
                    1235*   1237*   1254*   1304*   1305*   1306*   1307*   1308*   1309*   1310    1311    1312    1401
                    1403*   1404*   1407*   1806*   1808    1865*   1868*   1917*   1919*   1920    1924*   1925    1934*
                    1935*   1936    1989*   1992*   2041*   2043*   2044    2048*   2049    2058*   2059*   2060    2190*
                    2191    2195*   2196    2205*   2206    2209*   2210    2274*   2282    2296*   2304    2318*   2326
                    2383*   2385    2448*   2450    2507*   2511*   2515*   2519*   2573*   2576*   2594*   2595*   2598
                    2602*   2603*   2604    2607*   2608*   2609    2657*   2658*   2663*   2664*   2690*   2691    2708*
                    2709    2714*   2715*   2716    2776*   2779*   2782*   2783*   2784    2787*   2788    2789*   2790
                    2793*   2795*   2841*   2845    2849*   2851    2855*   2856    2861*   2865*   2916*   2919*   2922*
                    2923*   2924    2927*   2928    2929*   2930    2933*   2935*   2981*   2985    2989*   2991    2995*
                    2996    3001*   3005*   3068*   3071*   3078*   3079*   3080*   3159*   3161*   3162    3169*   3174*
                    3175    3179*   3180    3235*   3238*   3301*   3303    3304*   3305    3313*   3315    3321*   3322*
                    3324    3328*   3329*   3330    3334*   3339*   3346*   3347    3445*   3446*   3447    3448    3464*
                    3470    3471*   3472    3505*   3509*   3512*   3516    3520*   3522    3525*   3527    3530*   3532
                    3536*   3537    3587*   3590*   3639*   3640*   3642    3655*   3664
RE      =.000005      567#    1083    1084*   1088    1093    1095*   1131    1133*   1134    1135    1136    1137    1138
                    1139    1140*   1149*   1152*   1153*   1154*   1162    1164    1166    1172    1173*   1177*   1180
                    1207*   1218    1226*   1238*   1253*   1302*   1303*   1304    1306    1795*   1798*   1807*   1809
                    1864*   1867*   1918*   1920    1923*   1925    1929*   1930*   1931*   1936    1988*   1991*   1994*
                    2044    2047*   2049    2053*   2054*   2055*   2060    2123*   2124*   2126*   2191*   2195*   2196
                    2191    2194*   2196    2201*   2204*   2206    2210    2277*   2281*   2282    2299*   2303*   2307
                    2321*   2325*   2326    2384*   2385    2449*   2450    2505*   2574*   2575*   2578*   2579*   2580
                    2593*   2596    2599*   2600*   2601*   2604    2609    2656*   2658    2659*   2660    2662*   2665
                    2687*   2688*   2689*   2691    2705*   2706*   2707*   2709    2713*   2716    2719*   2720    2745
                    2778*   2781*   2784*   2785*   2786*   2788*   2792*   2794*   2842*   2843*   2844*   2845    2850*
                    2851    2856    2859*   2917*   2918*   2921*   2924*   2925*   2926*   2928*   2932*   2934*   2935*
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                    2983*   2984*   2985    2990*   2991    2996    2999*   3067*   3070*   3076*   3077*   3079    3100*
                    3101*   3102*   3103*   3104*   3105*   3106*   3107*   3109*   3111*   3113*   3115*   3158*   3160*
                    3162    3167*   3172*   3175    3180    3233*   3236*   3240*   3241    3242    3243    3245    3247
                    3248    3250    3251    3253    3254    3256    3302*   3303*   3314*   3315    3323*   3324    3330
                    3336*   3341*   3343*   3344*   3345*   3347    3444*   3447*   3452*   3456*   3459*   3463*   3466*
                    3467*   3468*   3470*   3513*   3514*   3515*   3516    3521*   3522    3526*   3527    3531*   3532
                    3535*   3537    3588*   3589*   3638*   3642*   3656*   3657*   3658*   3661*   3663*   3664    3685
                    3686    3687    3714*   3725    3726    3728    3731    3737    3797
SAVACT  001302       688#    948    1693*
SAVNUM  001306       689#    902*   1004*   1007*   1686*
SAVPC   001276       685#   1188*   1359
SAVR0   001260       678#   1197*   1202    3841
SAVR1   001262       679#   1196*   1203
SAVR2   001264       680#   1195*   1204
SAVR3   001266       681#   1194*   1205
SAVR4   001270       682#   1193*   1206    3839
SAVR5   001272       683#   1192*   1207    3837
SAVSP   001274       684#
SAVD5 = 104406       724#   1301
SCOPE = 104400       712#   1759    1857    1981    2114    2254    2364    2431    2491    2565    2650    2758    2911
                    3063    3226    3398    3583
SCOP1 = 104401       714#   1812    1942    2066    2214    2329    2395    2456    2523    2613    2723    2869    3009
                    3184    3351    3541    3668
SERV.0  004640      1042    1289    1433#   1434
SETREG  022120      1769    1773    1777    1880    1885    1889    1893    1897    2004    2009    2013    2017    2021
                    2138    2143    2150    2155    2159    2163    2266    2289    2310    2375    2440    2584    2663
                    2800    2805    2809    2813    2817    2821    2940    2945    2949    2952    2957    2961    3119
                    3124    3128    3132    3136    3267    3272    3276    3280    3284    3409    3414    3419    3422
                    3426    3476    3481    3597    3602    3609    3614    3618    3622    3723#   3757    3762    3766
                    3770    3774
SETSCA  022374      3794#
SETSYN  021706      1913    2037    2179    2837    2977    3074    3300    3450    3644    3675#   3790
SIMBCC  021740      2277    2299    2321    3682#
SP    =%000006       568#    900*    915*    916*    922     925     926     969*   1038*   1039*   1040    1044*   1064
                    1077*   1083*   1084    1085*   1095    1099*   1100*   1101    1102*   1118    1119    1121*   1122*
                    1124    1125    1131*   1132*   1133    1139*   1176    1177    1188    1214*   1215*   1216*   1217*
                    1218*   1219    1220*   1253    1254    1255    1256    1257    1270*   1271*   1272*   1273*   1274*
                    1275*   1276*   1277    1285*   1286*   1287    1297    1299    1302    1345    1354*   1376*   1390*
                    1394    1400*   1401*   1407    1408    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*   3747
                    3795*   3807
SPACNT= 003745      1223*   1244    1247*   1261#
SSWR    000176       633#    924
STACK = 001200       575#    900     969    1354    1376
STAT    001236       669#   1744*   1748*   1752*   1756*   1781    1839*   1844*   1849*   1854*   1859    1879    1901
                    1929    1963*   1968*   1973*   1978*   1983    2002    2025    2096*   2101*   2106*   2111*   2136
                    2142    2167    2199    2239*   2243*   2247*   2251*   2349*   2353*   2357*   2361*   2416*   2420*
                    2424*   2428*   2476*   2480*   2484*   2488*   2547*   2552*   2557*   2562*   2567    2575    2579
                    2580    2599    2635*   2639*   2643*   2647*   2753*   2757*   2761*   2765*   2771    2782    2798
                    2825    2896*   2900*   2904*   2908*   2922    2938    2965    3048*   3052*   3056*   3060*   3076*
                    3117    3140    3211*   3215*   3219*   3223*   3229    3265    3288    3383*   3387*   3391*   3395*
                    3407    3430    3467    3468    3474    3485    3498   3565*   3570*   3575*   3580*   3595    3607
                    3626    3659    3676    3678    3755    3778
SVD5    003452      1192#
SWR     001202       644#    919     924*    929     943     948     953     972    1036    1045    1052    1073    1086
```

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                                1283    1290    1295    1342    1349    1351    1435    1436*   1446*   1451*   1452*   1453*   1460*
                                1583
SW00    = 000001                 555*    943
SW01    = 000002                 554*   1583
SW02    = 000004                 553*
SW03    = 000010                 552*
SW04    = 000020                 551*
SW05    = 000040                 550*
SW06    = 000100                 549*
SW07    = 000200                 548*
SW08    = 000400                 547*   1349
SW09    = 001000                 546*   1073
SW10    = 002000                 545*   1351
SW11    = 004000                 544*   1082
SW12    = 010000                 543*   1086    1290
SW13    = 020000                 542*   1295
SW14    = 040000                 541*
SW15    = 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                   882*
SYNB00  001512                   807*
SYNB01  001536                   818*
SYNB02  001562                   829*
SYNB03  001606                   840*
SYNB04  001632                   851*
SYNB05  001656                   862*
SYNB06  001702                   873*
SYNB07  001726                   884*
SYNC    022556                  1887    2011    2145    2807    2947    3126    3274    3416    3483    3604    3676*   3677*   3680*
                                3764    3814*
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                   886*
SYNC2A  001426                   781*   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                   866*
SYND06  001712                   877*
```

```
SYNDO7  001736           988#
S.C   = 050000           598#
TEMP    005562          1227    1377*   1378*   1490#
TEMP1   001246           673#    933*    934     939*    1481    1712*   1713*   3157*   3165*   3635*   3708*
TEMP2   001250           674#    934*    935     1483    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    1285    1442    1463
TLAST = 021142          1609    3835#
TPCSR   001210           650#    1091    1113    1292    1447
TPDBR   001212           651#    1093*   1115*   1294*   1449*
TRPOK   003762          1273#
TSTNO   001226           661#    910*    1362    1389    1594    1601    1603    1741*   1935*   1959*   2092*   2236*   2346*
                        2413*   2473*   2543*   2632*   2750*   2893*   3045*   3208*   3380*   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    3380#
TST2    007664          1742    1835#
TST20   021142          3381    3561#   3835
TST21 = ****** U        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#
TWOSYN= 010000           602#    3678
TXBAP   022560          1765*   1771    1871*   1872*   1882    1995*   1996*   2005    2123    2140    2260*   2371*   2436*
                        2501*   2574    2657    2786    2802    2926    2942    3106    3121    3155    3269    3302    3411
                        3444    3466    3478    3599    3638    3759    3815#
TXBAS   023160          3816#
TXTAB   023560          1767*   1776    1864    1895    1988    2019    2118*   2119*   2120*   2121*   2122*   2161    2259*
                        2372*   2435*   2496*   2497    2777    2781    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*   3282    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    1318    1321    1322    1324    1326    1330    1335    1380
                        1437    1439    1467    1505    1588    1606    1611    1695
TYPMSG  004166          1314    1317#
VECMAP  007102          1694    1702#
WRDCNT  003742          1221*   1251*   1259#
WRK0.F  004254          1329    1332#
XBX     004060          1291    1293    1295#
XCSR    002604           997    1019#
XERR    002626          1003    1028#
XFR   = 030000           596#
XHEAD   005461           932    1479#
```

```
XPASS   002620          1001    1025#
XPOLY   022112          2276*   2298*   2320*   3695    3706    3715#
XSTATQ  005506           938    1479#
XTSTN   004374          1323    1360#
XVEC    002612           999    1022#
$CRAP = 177777             1#   1733#   1737#   1825#   1831#   1949#   1955#   2073#   2088#   2621#   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    2238#   2336    2344    2348#   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    3382#   3548    3559    3563#   3835#
$Y    = 000017             1#    703#    712     714#    716#    718#    720#    722#    724#    726#    728#    730#    732#
                         734#    736#    738#    740#    742#
.     = 034442           613#    614     617#    624#    625#    626#    627#    630#    632#    635#    639#    641#    686#
                         687#    688#    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    1288    1370    1379
                        1393    1431#   1441    1448    1462    1489#   1491#   1493#   1507    1698    1719    1960    1916
                        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    3813#   3814#   3815#
                        3816#   3817#   3818#   3819#   3820#   3821#   3822#   3823#   3824#   3825#   3826#   3827#   3828#
                        3829#   3830#   3831#   3832#   3833#
.BEGIN  002332           968#
.CNVRT  003542           731    1214#
.CONVR  003536           729    1213#
.DATAC  004576           741    1419#
.DELAY  004476           737    1390#
.EOP    002436           990#   3562
.ERRTA  034404          1309    3843#
.HLT    004002           620    1282#
.INSTE  003224           721    1120#
.INSTR  003120           719    1099#
.INST1  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    1188#
.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#
```

DZDVDB.P11 CROSS REFERENCE TABLE -- MACRO NAMES

```
DVEND       1#    984
DVFRNT      1#    522
HLT       576#   1428   1800   1810   1922   1927   1938   2046   2051   2062   2187   2193   2198   2208   2212
         2284    2306   2328   2387   2452   2509   2513   2517   2521   2598   2606   2611   2695   2693   2711
         2718    2847   2853   2858   2863   2867   2987   2993   2998   3003   3007   3164   3171   3177   3182
         3317    3326   3332   3337   3342   3349   3458   3465   3511   3518   3524   3529   3534   3539   3666
         3746
$ADJUS    522#   1878   2002   2136   2148   2798   2938   3117   3265   3407   3474   3595   3607   3755
$BEAK     522#   2263   2285   2307
$BUFFE      1#   1485
$CK15       1#
$CK15D      1#
$CLR.T      1#
$CYCLE      1#   1494
$EOP        1#    984
$FINI       1#   3835
$GETFL      1#
$GETPA      1#   1589
$HEADE      1#    522
$LC16     522#   1732
$LC16A    522#   1824   1948
$LC17     522#   2072
$LC18     522#   2220
$LC19     522#   2463
$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   3288   3430   3626   3778
$SETLI      1#   1739   1833   1957   2090   2234   2344   2411   2471   2541   2630   2748   2891   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   2891   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   2889   3016   3041   3190   3204   3362
         3376    3548   3557
```

DZDVDB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

```
ADC     3691
ADCB    1512  1520
ADD      939  1085  1102  1173  1220  1230  1275  1306  1309  1405  1513  1522  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
BEQ      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  2862  2866  2939  2966
        2986  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
        1878  1901  1983  2002  2025  2136  2148  2167  2199  2567  2771  2798  2825  2938  2965
        3117  3140  3229  3265  3288  3407  3430  3474  3485  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  2834  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  1383  1404  1421
        1446  1651  1696  1715  1717  1722  1763  1764  1795  1797  1803  1817  1818  1866  1867
        1868  1875  1876  1877  1917  1990  1991  1992  1999  2000  2001  2041  2134  2135  2181
        2275  2297  2319  2368  2369  2393  2394  2444  2455  2505  2582  2583  2654  2656  2679
        2680  2681  2713  2714  2787  2859  2927  2999  3101  3102  3103  3104  3105  3158  3159
```

```
        3167  3235  3236  3237  3260  3261  3262  3263  3301  3336  3341  3403  3404  3442  3443
        3445  3452  3459  3505  3587  3589  3639  3688  3740
CLRB     904   905   992  1059  1249  1300  1382  1620  1654  1682  2118  2119  2120  2121  2122
        2130  2131  2258  2372  2437  2785  2925  3080  3255  3680
CMP     922   935   961   962  1036  1057  1162  1164  1283  1297  1455  1457  1514  1523  1598
        1601  1603  1609  1623  1628  1652  1660  1679  1709  1710  1727  1801  1804  1808  1920
        1925  1936  2044  2049  2060  2191  2282  2304  2326  2385  2450  2596  2604  2609  2660
        2686  2691  2696  2709  2716  2720  2790  2845  2851  2856  2930  2985  2991  2996  3162
        3175  3180  3305  3315  3324  3330  3347  3448  3472  3516  3522  3527  3532  3537  3664
CMPB     948  1040  1111  1142  1144  1146  1150  1287  1444  1465  1676  2196  2206  2210
COM     3694  3696
COMB     928
DEC     1116  1238  1251  1392  1690  1820  1939  1944  2063  2068  2216  2331  2397  2458  2525
        2576  2615  2665  2725  2779  2795  2871  2919  2935  3011  3072  3165  3186  3318  3353
        3495  3543  3670  3708  3805
DECB    1004  1174  1242  1247
EMT      576
HALT     614   947   951   956  1346  1369  1506  1697
INC      993  1056  1348  1378  1426  1539  1541  1547  1549  1718  1798  1813  1819  1914  1943
        2038  2067  2180  2185  2215  2270  2292  2314  2330  2379  2389  2396  2445  2457  2502
        2524  2590  2614  2659  2683  2695  2719  2724  2789  2838  2870  2929  2978  3010  3152
        3185  3304  3307  3352  3446  3451  3456  3463  3471  3509  3535  3542  3645  3661  3669
        3744  3801  3804
INCB    1637  1675  1689  1869  1993  2510  2518  2854  2864  2994  3004  3178  3238  3327  3338
        3590  3640
JMP      636   983  1018  1066  1277  1355  1386  1614  1694  3355  3545  3672
JSR      931  1012  1042  1289  1567  1572  1577  1582  1746  1750  1754  1758  1841  1846  1851
        1856  1965  1970  1975  1980  2098  2103  2108  2113  2241  2245  2249  2253  2265  2277
        2287  2299  2309  2321  2351  2355  2359  2363  2374  2418  2422  2426  2430  2439  2478
        2482  2486  2490  2498  2549  2554  2559  2564  2581  2637  2641  2645  2649  2667  2755
        2759  2763  2767  2898  2902  2906  2910  3050  3054  3059  3062  3213  3217  3221  3225
        3385  3389  3393  3397  3567  3572  3577  3582
MOV      899   900   901   906   910   911   915   916   918   923   924   925   926   933   934
         957   958   959   968   969   975   976   978   979   981   994  1008  1017  1038  1044
        1050  1062  1063  1064  1077  1083  1084  1095  1099  1100  1101  1105  1106  1115  1118
        1119  1121  1122  1124  1125  1131  1132  1133  1134  1135  1136  1139  1141  1171  1172
        1176  1177  1188  1192  1193  1194  1195  1196  1197  1202  1203  1204  1205  1206  1207
        1214  1215  1216  1217  1218  1219  1221  1224  1225  1227  1228  1240  1253  1254  1255
        1256  1257  1270  1272  1276  1285  1299  1302  1304  1310  1311  1312  1345  1353  1354
        1368  1375  1376  1390  1391  1394  1399  1400  1401  1402  1403  1407  1408  1412  1420
        1423  1429  1435  1436  1442  1449  1463  1516  1521  1526  1527  1528  1529  1530  1531
        1532  1533  1534  1535  1536  1537  1538  1540  1542  1544  1546  1548  1550  1552  1554
        1557  1559  1561  1564  1565  1566  1569  1570  1571  1574  1575  1576  1579  1580  1581
        1597  1599  1605  1613  1616  1650  1655  1656  1657  1665  1681  1692  1699  1702  1703
        1704  1705  1706  1707  1708  1716  1728  1741  1742  1743  1744  1747  1748  1751  1752
        1755  1756  1761  1766  1768  1791  1792  1793  1806  1807  1835  1836  1837  1839  1842
        1844  1847  1849  1852  1854  1862  1864  1865  1871  1873  1874  1918  1932  1933  1959
        1960  1961  1963  1966  1968  1971  1973  1976  1978  1986  1988  1989  1995  1997  1998
        2042  2053  2056  2057  2092  2093  2094  2096  2099  2101  2104  2106  2109  2111  2116
        2123  2124  2126  2132  2133  2189  2194  2236  2237  2238  2239  2242  2243  2246  2247
        2250  2251  2256  2261  2264  2274  2276  2281  2286  2296  2298  2303  2308  2318  2320
        2325  2346  2347  2348  2349  2352  2353  2356  2357  2360  2361  2366  2370  2371  2383
        2384  2413  2414  2415  2416  2419  2420  2423  2424  2427  2428  2433  2438  2448  2449
        2473  2474  2475  2476  2479  2480  2483  2484  2487  2488  2493  2495  2507  2511  2515
        2519  2543  2544  2545  2547  2550  2552  2555  2557  2560  2562  2570  2572  2573  2574
        2589  2593  2632  2633  2634  2635  2638  2639  2642  2643  2646  2647  2652  2655  2657
```

B08

	2662	2663	2674	2675	2676	2687	2690	2698	2701	2705	2708	2712	2750	2751	2753
	2755	2756	2757	2760	2761	2764	2765	2770	2775	2776	2777	2791	2792	2796	2793
	2795	2797	2841	2842	2849	2850	2855	2861	2865	2893	2894	2895	2896	2899	2900
	2903	2904	2907	2908	2913	2915	2916	2917	2921	2922	2926	2932	2933	2937	2981
	2985	2989	2990	2995	3001	3005	3045	3046	3047	3048	3051	3052	3055	3056	3059
	3060	3065	3067	3068	3069	3075	3078	3100	3106	3107	3109	3111	3113	3116	3155
	3156	3157	3169	3172	3174	3179	3208	3209	3210	3211	3214	3215	3218	3219	3222
	3223	3228	3233	3234	3240	3259	3264	3302	3310	3311	3312	3321	3323	3328	3334
	3339	3343	3346	3380	3381	3382	3383	3386	3387	3390	3391	3394	3395	3400	3405
	3406	3444	3466	3469	3494	3512	3513	3519	3521	3526	3531	3561	3562	3563	3565
	3568	3570	3573	3575	3578	3580	3585	3588	3593	3594	3638	3655	3656	3682	3683
	3684	3685	3686	3687	3689	3695	3700	3701	3702	3710	3711	3712	3713	3723	3724
	3728	3731	3732	3733	3737	3739	3747	3754	3795	3797	3799	3802	3807	3808	
MOVB	902	907	953	954	1006	1007	1093	1109	1137	1138	1222	1223	1226	1231	1241
	1246	1294	1327	1621	1625	1626	1630	1631	1633	1634	1685	1686	1693	1712	1765
	1767	1805	1838	1843	1849	1853	1872	1919	1923	1924	1929	1934	1962	1967	1972
	1977	1996	2043	2047	2048	2058	2095	2100	2105	2110	2128	2129	2190	2195	2201
	2205	2209	2259	2260	2273	2295	2317	2373	2382	2435	2436	2454	2496	2497	2499
	2501	2506	2514	2546	2551	2556	2561	2575	2578	2579	2580	2589	2594	2599	2602
	2607	2658	2664	2672	2715	2778	2788	2794	2849	2860	2919	2929	2934	2989	3000
	3070	3071	3076	3081	3082	3083	3084	3085	3086	3087	3088	3089	3091	3092	3093
	3094	3095	3096	3097	3098	3099	3115	3160	3161	3168	3173	3241	3242	3243	3245
	3246	3247	3248	3250	3251	3253	3254	3256	3258	3303	3313	3314	3320	3333	3403
	3447	3467	3468	3470	3489	3493	3502	3520	3525	3530	3536	3564	3569	3574	3579
	3592	3642	3650	3676	3677	3725	3726	3727	3730						
NOP	960	975	976	1013	1014	1015	1016								
RESET	990	1010	1649												
ROL	1451	1452	1453												
ROLB	1511	1519	1688												
ROR	1233	1235	1237	1713	3690	3699	3810								
RORB	1424														
RTI	1078	1096	1126	1178	1198	1208	1259	1356	1395	1409	1413	1417	1430	1700	1729
	2699	2702													
RTS	1469	1639	1730	1822	1861	1946	1985	2070	2218	2333	2399	2460	2527	2569	2617
	2727	2773	2873	3013	3188	3231	3356	3546	3673	3714	3791				
SUB	1271	1303													
SWAB	2698	2706	2843	2983	3344	3514	3657								
TRAP	712	714	716	718	720	722	724	726	728	730	732	734	736	738	740
TST	919	941	970	1075	1315	1319	1328	1333	1337	1342	1586	1608	1618	1658	1662
	1666	3460	3648	3741											
TSTB	913	929	1048	1054	1088	1091	1107	1113	1244	1292	1313	1440	1447	1461	1503
	1683	1815	1915	2039	2182	2271	2293	2315	2390	2391	2446	2503	2591	2703	2839
	2973	3153	3308	3453	3506	3646	3653								
.ASCIZ	640	1470	1477	1479	3835										
.BLKB	686	687	688	689	690	3815	3816	3817	3818	3819	3820	3821	3822	3823	3824
	3825	3826	3827	3828	3829	3830	3831	3832	3833						
.BLKW	625	626	627	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	1431	3813	3814				
.BYTE	697	698	699	700	766	767	768	769	771	772	773	774	1020	1023	1026
	1029	1358	1361	1388	1474	1480	1482	1595	1596	1770	1774	1778	1881	1886	1890
	1894	1898	2006	2010	2014	2018	2022	2125	2127	2139	2144	2151	2156	2160	2164
	2267	2289	2311	2376	2441	2585	2669	2801	2806	2810	2814	2818	2822	2941	2946

```
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DZDVDB.P11      CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

.8BIT.    522     557     604     638     891     984    1032    1732
.TITLE    536
.WORD    1476


 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 *,DZDVDB/SOL/CRF=DZDVDB.MAC,DZDVDB.P11
 RUN-TIME:  59.44  7 SECONDS
 RUN-TIME RATIO: 356/91=4.3
 CORE USED:  26K  (51 PAGES)
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Spooler runtime 15 Seconds, 67 KCS, 424 disk reads, 3 disk writes, 91 pages