DV11

DV11 ROM TST PRT 1

CZDVCD0

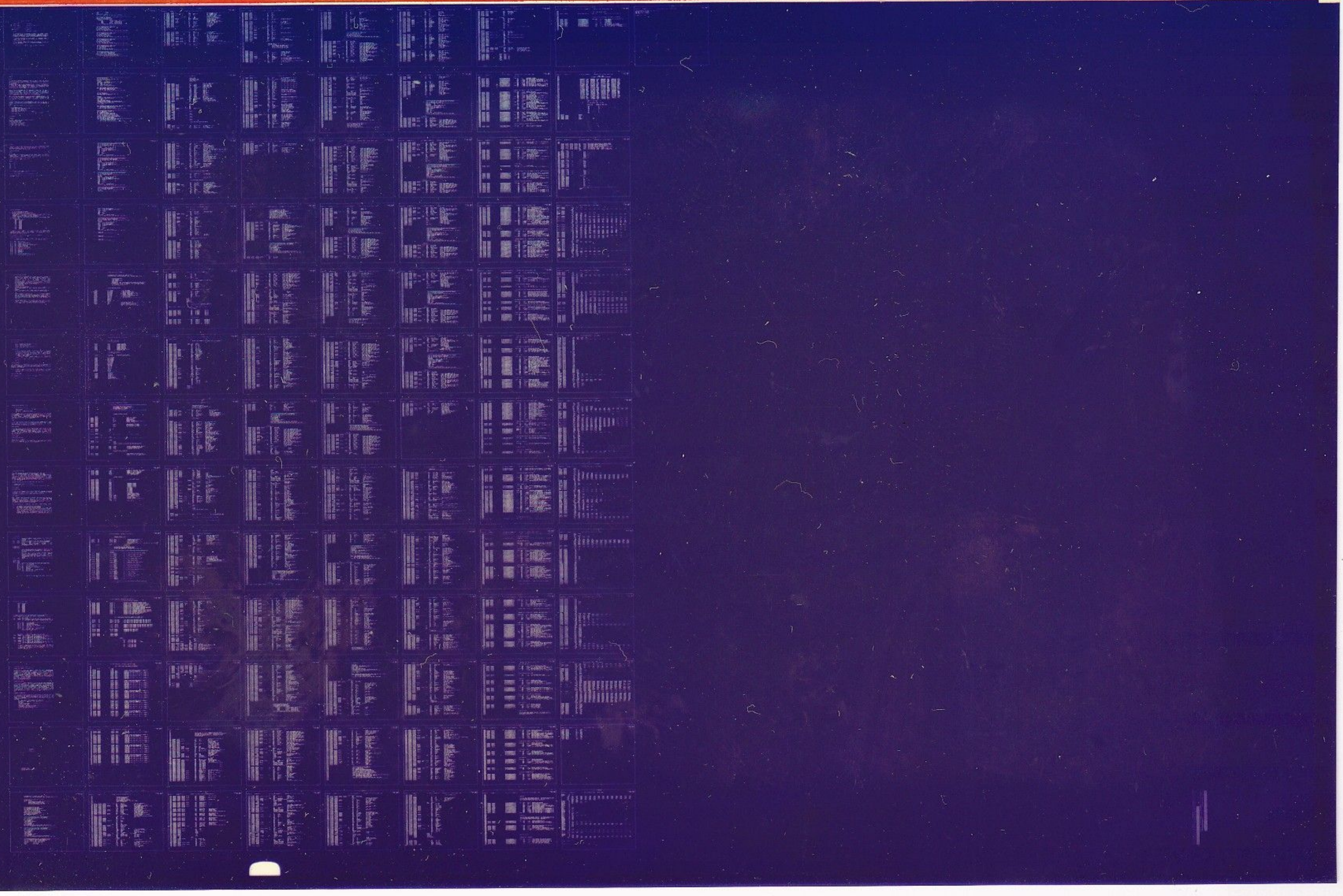
AH-8737D-MC

FICHE 1 OF 1

SEP 1979

digital

MADE IN USA



EOF1CZDXIBSEQ 00010000 780330 PDP10 411 HDR1CZDVDCSEQ 00010000 780330
PDP10 411 SEQ 0001 IDENTIFICATION

PRODUCT CODE: AC-8740C-MC

PRODUCT NAME: CZDVDC0 DV11 ROM TST PRT2

DATE RELEASED: FEB-1978

MAINTAINER: DIAG-MK

AUTHOR: J EGOLF J VALDES

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 ENVIROMENT.
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)
HSR 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 'SCOP1' 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 POSSIBLY 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.

5.2.1

IF THE DATA "SET BUZY" JUMPER(S) ARE REMOVED FROM THE M7833 ASYNC LINE CARD, THE FOLLOWING PATCH SHOULD BE INSTALLED.

CHANGE LOC 21524 FROM 403 TO 240
LOC 21532 FROM 34000 TO 7000 .

THIS PATCH PUTS THE DV-11BB IN INTERNAL MAINTENANCE FOR THE PARTICULAR TEST. THIS WILL WORK WITH ALL ASYNC LINE CARDS; WILL NOT WORK WITH SYNC LINE CARDS.

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.

7.3 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.

2.0 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.

D/SCR (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 BIT15 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

** ALL ADJUSTMENTS PLEASE REFER TO SECTION 8.4A FOR GRETER DETAIL.

```
                                INTRODUCTION TO DV11 DIAGNOSCTIC


                                ;*AC-8740C-MC/(377)/"CZDVDC0 DV11" ROM TST PRT2
                                ;*COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
                                ;*---------------------------------------------------------------

                                        ;STARTING PROCEDURE
                                        ;LOAD PROGRAM
                                        ;LOAD ADDRESS 000200
                                        ;PRESS START
                                        ;PROGRAM WILL TYPE "AC-8740C-MC/(377)/"CZDVDC0 DV11" ROM TST PRT2"
                                        ;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  041501  034055  MTITLE: .ASCIZ  <377><12>/AC-8740C-MC/<377>/"CZDVDC0 DV11" ROM TST PRT2.<377>
(2)
            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
```

```
138  001222  000003                ICOUNT: 3                       ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
139  001224  000000                LPCNT:  0                       ;NUMBER OF ITEREATIONS COMPLETED
140  001226  000000                TSTNO:  0                       ;NUMBER OF TEST IN PROGRESS
141  001230  000000                PASCNT: 0                       ;NUMBER OF PASSES COMPLETED
142  001232  000000                ERRCNT: 0                       ;TOTAL NUMBER OF ERRORS
143  001234  000000                LSTERR: 0                       ;PC OF LAST ERROR CALL
144
145                                      ;PROGRAM VARIABLES
146                                      ;-----------------
147                                       .
148  001236  0C0000                STAT:   0                       ;DV STATUS WORD STORAGE
149  001240  000000                SYNCX:  0
150  001242  000000                CLKX:   0
151  001244  0C0000                MASKX:  0
152  001246  000000                TEMP1:  0                       ;TEMPORARY STORAGE
153  001250  000000                TEMP2:  0                       ;TEMPORARY STORAGE
154  001252  000000                TEMP3:  0                       ;TEMPORARY STORAGE
155  001254  000000                TEMP4:  0                       ;TEMPORARY STORAGE
156  001256  000000                TEMP5:  0                       ;TEMPORARY STORAGE
157  001260  000000                SAVR0:  0                       ;R0 STORAGE
158  001262  000000                SAVR1:  0                       ;R1 STORAGE
159  001264  000000                SAVR2:  0                       ;R2 STORAGE
160  001266  000000                SAVR3:  0                       ;R3 STORAGE
161  001270  000000                SAVR4:  0                       ;R4 STORAGE
162  001272  000000                SAVR5:  0                       ;R5 STORAGE
163  001274  000000                SAVSP:  0                       ;STACK POINTER STORAGE
164  001276  000000                SAVPC:  0                       ;PROGRAM COUNTER STORAGE
165  001300  000001                DVACTV: .BLKB 1                 ;DV11'S SELECTED ACTIVE.
166  001301  000001                DVNUM:  .BLKB 1                 ;OCTAL NUMBER OF DV11'S.
167  001302  000001                SAVACT: .BLKB 1                 ;ORIGINAL ACTV.  DEVICES.
168  001303  000001                SAVNUM: .BLKB 1                 ;WORKABLE NUMBER.
169  001304  000001                RUN:    .BLKB 1                 ;POINTER ONE PAST RUNNING DEVICE.
170       001306                   .EVEN
171  001306  001500                CREAM:  DV.MAP                  ;TABLE POINTER.
```

```
                                        ;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                  SAVOS=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
001330  003444                  .SAVOS
104407                  RESOS=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
001332  003504                  .RESOS
104410                  CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
001334  003536                  .CONVRT
104411                  CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
001336  003542                  .CNVRT
104412                  MSTCLR=TRAP+12          ;CALL TO ISUE A MASTER CLEAR
001340  004556                  .MSTCLR
104413                  RAMCLR=TRAP+13          ;CALL TO CLEAR THE RAMS
001342  004516                  .RAMCLR
104414                  DELAY=TRAP+14           ;CALL TO VARIABLE DELAY COUNTER
001344  004476                  .DELAY
104415                  ROMCLK=TRAP+15          ;CALL TO CLOCK ROM ONCE
001346  004566                  .ROMCLK
104416                  DATACLK=TRAP+16         ;CALL TO CLK DATA
001350  004576                  .DATACLK

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

```
                                        ;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  000C00                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               ;   INTER TO DV11 SECONDARY REGISTER ACCESS REGISTER
001400  000000                DVSFR:  0               ; )INTER 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.
                                ;                       00E     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 NUMBEP 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 NUMBEP 04
```

```
   332  001636  000001                SYNC04: .BLKW 1         ;SYNC TWO
   333  001640  000001                DV04.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 04
   334  001642  000001                SYND04: .BLKW 1         ;SYNC TWO
   335
   336  001644  000001                DVCR05: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 05
   337  001646  000001                DVTR05: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 05
   338  001650  000001                DV05.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 05
   339  001652  000001                SYNA05: .BLKW 1         ;SYNC TWO
   340  001654  000001                DV05.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 05
   341  001656  000001                SYNB05: .BLKW 1         ;SYNC TWO
   342  001660  000001                DV05.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 05
   343  001662  000001                SYNC05: .BLKW 1         ;SYNC TWO
   344  001664  000001                DV05.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 05
   345  001666  000001                SYND05: .BLKW 1         ;SYNC TWO
   346
   347  001670  000001                DVCR06: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 06
   348  001672  000001                DVTR06: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 06
   349  001674  000001                DV06.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 06
   350  001676  000001                SYNA06: .BLKW 1         ;SYNC TWO
   351  001700  000001                DV06.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 06
   352  001702  000001                SYNB06: .BLKW 1         ;SYNC TWO
   353  001704  000001                DV06.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 06
   354  001706  000001                SYNC06: .BLKW 1         ;SYNC TWO
   355  001710  000001                DV06.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 06
   356  001712  000001                SYND06: .BLKW 1         ;SYNC TWO
   357
   358  001714  000001                DVCR07: .BLKW 1         ;CONTROL STATUS REGISTER FOR DV11 NUMBER 07
   359  001716  000001                DVTR07: .BLKW 1         ;VECTOR "A" FOR DV11 NUMBER 07
   360  001720  000001                DV07.A: .BLKW 1         ;PARAMETER FOR LINES 00-03 FOR DV11 NUMBER 07
   361  001722  000001                SYNA07: .BLKW 1         ;SYNC TWO
   362  001724  000001                DV07.B: .BLKW 1         ;PARAMETER FOR LINES 04-07 FOR DV11 NUMBER 07
   363  001726  000001                SYNB07: .BLKW 1         ;SYNC TWO
   364  001730  000001                DV07.C: .BLKW 1         ;PARAMETER FOR LINES 08-11 FOR DV11 NUMBER 07
   365  001732  000001                SYNC07: .BLKW 1         ;SYNC TWO
   366  001734  000001                DV07.D: .BLKW 1         ;PARAMETER FOR LINES 12-15 FOR DV11 NUMBER 07
   367  001736  000001                SYND07: .BLKW 1         ;SYNC TWO
   368
   369  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$:    CMP     (SP)+,(SP)+         ;
002106  012737  000174  001200          MOV     #LIGHT,LIGHTS       ;
002114  012737  000176  001202          MOV     #SSWR,SWR           ;
002122  012637  000006          81$:    MOV     (SP)+,6             ;
002126  012637  000004                  MOV     (SP)+,4             ;
002132  104402  001000                  TYPE    ,MTITLE             ;TYPE TITLE MESSAGE
002136  105137  001310                  COMB    INIFLG              ;IF NOT SET FLAG AND DO
002142  105777  177034                  TSTB    @SWR                ;BIT7=1??
002146  100402                          BMI     16$                 ;BR IF NO AUTO SIZE
002150  004737  006624                  JSR     PC,CSRMAP           ;GO DO THE AUTO SIZE
002154  104402  005461          16$:    TYPE    ,XHEAD              ;TYPE HEADER
002160  012737  001500  001246          MOV     #DV.MAP,TEMP1       ;SET POINTER
002166  017737  177054  001250  5$:     MOV     @TEMP1,TEMP2        ;SET DATA
002174  022737  177777  001250          CMP     #177777,TEMP2       ;ALL DONE?
002202  001406                          BEQ     1$                  ;BR IF YES
002204  104410                          CONVRT                      ;
002206  005506                          XSTATQ                      ;
002210  062737  000002  001246          ADD     #2,TEMP1            ;UPDATE POINTER
002216  000763                          BR      5$                  ;
002220  005737  000042          1$:     TST     @#42                ;IS PROGRAM RUNNING UNDER MONITOR
002224  001030                          BNE     3$                  ;BR IF YES
002226  032777  000001  176746          BIT     #SW00,@SWR          ;SELECT SPECIFIC DEVICES??
002234  001424                          BEQ     3$                  ;BR IF NO.
002236  104402  005402                  TYPE    ,MNEW               ;TYPE THE MESSAGE.
002242  005000                          CLR     R0                  ;ZERO DATA LIGHTS
```

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

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

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

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

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

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

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

```
519  002654  122726  000007                    CMPB    #7,(SP)+        ;WAS IT CNTRL 'G' ?
520  002660  001002                            BNE     .+6             ;BR IF NO.
521  002662  004737  004640                    JSR     PC,SERV.G       ;SERVICE "CNTRL 'G'".
522  002666  005037  001234            64$:    CLR     LSTERR          ;CLEAR LAST ERROR PC.
523  002672  010016                            MOV     R0,(SP)         ;SAVE R0 ON THE STACK
524  002674  032777  040000  176300            BIT     #BIT14,@SWR     ;"LOOP ON THIS TEST"?
525  002702  001407                    TTST:   BEQ     1$              ;BR IF NO.  (IF LOCK SW01=1; THIS LOC =240,
526  002704  000437                            BR      3$              ;GOTO 3$    (IF LOCK SW01=1; THIS LOC =240)
527  002706  105777  176272                    TSTB    @TKCSR          ;KEYBOAD DONE?
528  002712  100034                            BPL     3$              ;BR IF NO. (LOCK: HIT KEY TO GOTO NEXT TEST)
529  002714  017700  176266                    MOV     @TKDBR,R0       ;CLEAR DONE BIT
530  002720  000415                            BR      2$              ;CONTINUE
531  002722  032777  004000  176252    1$:     BIT     #SW11,@SWR      ;DELETE ITERATION?  (QUICK PASS)
532  002730  001011                            BNE     2$              ;BR IF YES
533  002732  105737  001313                    TSTB    QV.FLG          ;HAVE PASSES BEECOMPLETED?
534  002736  001406                            BEQ     2$              ;BR IF QUICK PASS.
535  002740  005237  001224                    INC     LPCNT           ;UPDATE ITERATION COUNTER
536  002744  023737  001224  001222            CMP     LPCNT,ICOUNT    ;ARE ALL ITERATIONS DONE??
537  002752  001014                            BNE     3$              ;BR IF NOT YET
538  002754  105037  001311            2$:     CLRB    ERRFLG          ;PREPARE FOR NEW TEST
539  002760  005037  001224                    CLR     LPCNT           ;START ICOUNTER AT 0
540  002764  005037  001220                    CLR     LOCK
541  002770  012737  000024  001222            MOV     #20.,ICOUNT     ;RESET ITERATIONS
542  002776  013737  001216  001214            MOV     NEXT,RETURN     ;GET NEXT TEST
543  003004  011600                    3$:     MOV     (SP),R0         ;POP R0 OFF OF THE STACK
544  003006  022626                            POP2SP                  ;FAKE AN "RTI"
545  003010  000177  176200                    JMP     @RETURN         ;GO DO THE TEST
546  003014  001407                    BRW:    1407
547  003016  000437                    BRX:    437
548
549                                             ;CHECK FOR FREEZE ON CURRENT DATA
550                                             ;--------------------------------
551
552  003020  032777  001000  176154    .SCOP1: BIT     #SW09,@SWR      ;IS SW09=1(SET)?
553  003026  001405                            BEQ     1$              ;BR IF NOT SET.
554  003030  005737  001220                    TST     LOCK
555  003034  001402                            BEQ     1$
556  003036  013716  001220                    MOV     LOCK,(SP)       ;GOTO THE ADDRESS IN LOCK.
557  003042  000002                    1$:     RTI                     ;GO BACK.
558
559                                             ;TELETYPE OUTPUT ROUTINE
560                                             ;-----------------------
561
562  003044  010546                    .TYPE:  MOV     R5,-(SP)        ;SAVE R5 ON THE STACK.
563  003046  017605  000002                    MOV     @2(SP),R5       ;GET ADDRESS OF MESSAGE.
564  003052  062766  000002  000002            ADD     #2,2(SP)        ;POP OVER ADDRESS.
565  003060  032777  010000  176114    1$:     BIT     #SW12,@SWR      ;INHIBIT ALL PRINT OUT??
566  003066  001012                            BNE     3$              ;BR IF NO PRINT OUT WANTED (SW12=1)
567  003070  105715                            TSTB    (R5)            ;IS NUMBER MINUS? (MSB=1(BIT7))
568  003072  100002                            BPL     2$              ;BR IF NUMBER IS PLUS
569  003074  104402  005104                    TYPE    ,MCRLF          ;TYPE A CR/LF!
570  003100  105777  176104            2$:     TSTB    @TPCSR          ;TTY READY?
571  003104  100375                            BPL     2$              ;BR IF NO.
572  003106  112577  176100                    MOVB    (R5)+,@TPDBR    ;PRINT CURRENT CHAR.
573  003112  001362                            BNE     1$              ;IF NOT ZERO KEEP PRINTING!
574  003114  012605                    3$:     MOV     (SP)+,R5        ;END OF OUTPUT. RESTORE R5
```

```
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    ,MQM
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
                                        ;--------------------------------------

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

                                        ;STORE NUMBER AT SPECIFIED ADDRESS

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

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

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

                                        ;SAVE R0-R5

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

                                        ;RESTORE R0-R5

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

```
687  003534  000002                          RTI                     ;LEAVE
688
689                                          ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
690                                          ;-----------------------------------------------------
691
692  003536  104402  005104          .CONVR: TYPE    ,MCRLF
693  003542  010046                  .CNVRT: MOV     R0,-(SP)
694  003544  010146                          MOV     R1,-(SP)
695  003546  010346                          MOV     R3,-(SP)
696  003550  010446                          MOV     R4,-(SP)
697  003552  010546                          MOV     R5,-(SP)
698  003554  017601  000012                  MOV     @12(SP),R1
699  003560  062766  000002  000012          ADD     #2,12(SP)
700  003566  012137  003742                  MOV     (R1)+,WRDCNT
701  003572  112137  003744          1$:     MOVB    (R1)+,CHRCNT
702  003576  112137  003745                  MOVB    (R1)+,SPACNT
703  003602  013137  003746                  MOV     @(R1)+,BINWRD
704  003606  013704  003746          2$:     MOV     BINWRD,R4
705  003612  113705  003744                  MOVB    CHRCNT,R5
706  003616  012700  005562                  MOV     #TEMP,R0
707  003622  010403                  3$:     MOV     R4,R3
708  003624  042703  177770                  BIC     #177770,R3
709  003630  062703  000060                  ADD     #060,R3
710  003634  110320                          MOVB    R3,(R0)+
711  003636  000241                          CLC
712  003640  006004                          ROR     R4
713  003642  000241                          CLC
714  003644  006004                          ROR     R4
715  003646  000241                          CLC
716  003650  006004                          ROR     R4
717  003652  005305                          DEC     R5
718  003654  001362                          BNE     3$
719  003656  012703  005624                  MOV     #MDATA,R3
720  003662  114023                  4$:     MOVB    -(R0),(R3)+
721  003664  105337  003744                  DECB    CHRCNT
722  003670  001374                          BNE     4$
723  003672  105737  003745                  TSTB    SPACNT
724  003676  001405                          BEQ     6$
725  003700  112723  000040          5$:     MOVB    #040,(R3)+
726  003704  105337  003745                  DECB    SPACNT
727  003710  001373                          BNE     5$
728  003712  105013                  6$:     CLRB    (R3)
729  003714  104402  005624                  TYPE    ,MDATA
730  003720  005337  003742                  DEC     WRDCNT
731  003724  001322                          BNE     1$
732  003726  012605                          MOV     (SP)+,R5
733  003730  012604                          MOV     (SP)+,R4
734  003732  012603                          MOV     (SP)+,R3
735  003734  012601                          MOV     (SP)+,R1
736  003736  012600                          MOV     (SP)+,R0
737  003740  000002                          RTI
738  003742  000000          WRDCNT: 0
739  003744  000000          CHRCNT: 0
740          003745          SPACNT=CHRCNT+1
741  003746  000000          BINWRD: 0
742
```

```
                                                ;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,@WR     ;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$:      SAV05                   ;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
```

```
                        BEQ     1$
                        TYPE    ,MASTEK
                1$:     TYPE    ,MTSTN
                        CNVRT   ,XTSTN          ;SHOW IT
                        TYPE    ,MERRPC         ;TYPE PC.
                        CNVRT   ,ERTABO         ;SHOW IT
                        TYPE    ,MCRLF          ;GIVE A CR/LF
                        MOVB    #-1,ERRFLG      ;NO MORE HEADER UNLESS NO DATA TABLE.
                        TST     ERRMSG          ;IS THERE AN ERROR MESSAGE?
                        BEQ     WRKO.FM         ;BR IF NO.
                        TYPE                    ;TYPE
                ERRMSG: 0                       ;    ERROR MESSAGE
                WRKO.FM:                        ;
                        TST     DATAHD          ;DATA HEADER?
                        BEQ     TYPDAT          ;BR IF NO
                        TYPE                    ;TYPE
                DATAHD: 0                       ;    DATA HEADER
                TYPDAT: TST     DATABP          ;DATA TABLE?
                        BEQ     RESREG          ;BR IF NO.
                        CONVRT                  ;SHOW
                DATABP: 0                       ;    DATA TABLE
                RESREG: RESOS                   ;RESTORE PROC REGISTERS
                HALTS:  TST     @SWR            ;HALT ON ERROR?
                        BPL     EXITER          ;BR IF NO HALT ON ERROR
                        PUSHRO                  ;SAVE RO
                        MOV     2(SP),RO        ;SHOW ERROR PC IN DATA LIGHTS
                        HALT                    ;HALT
                        POPRO                   ;GET RO
                EXITER: INC     ERRCNT          ;UPDATE ERROR COUNT
                        BIT     #SW08,@SWR      ;GOTO TOP OF TEST?
                        BNE     1$              ;BR IF YES
                        BIT     #SW10,@SWR      ;GOTO NEXT TEST?
                        BEQ     2$              ;BR IF NO
                        MOV     NEXT,RETURN     ;SET FOR NEXT TEST
                1$:     MOV     #STACK,SP       ;RESET SP
                        JMP     @RETJRN         ;GOTO SPECIFIED TEST
                2$:     RTI                     ;RETURN
                ERTABO: 1
                        .BYTE   6,2
                        SAVPC
                XTSTN:  1
                        .BYTE   3,2
                        TSTNO
                        ;ENTER HERE ON POWER FAILURE
                        ;--------------------------



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

                        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

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

```
855  004422  012706  001200                  MOV     #STACK,SP       ;RESET THE STACK POINTER
856  004426  005037  005562                  CLR     TEMP            ;READY FOR TIMMER
857  004432  005237  005562                  INC     TEMP            ;PLUS ONE TO THE TIMER!
858  004436  001375                          BNE     .-4             ;BR IF MORE TO GO
859  004440  104402  005107                  TYPE    ,MPFAIL         ;TYPE THE MESSAGE
860  004444  104411  004470                  CNVRT   ,PFTAB          ;TELL WHAT TEST TO RETURN TO.
861  004450  105037  001311                  CLRB    ERRFLG          ;START CLEAN
862  004454  005037  001234                  CLR     LSTERR          ;
863  004460  104412                          MSTCLR                  ;START CLEAN UP OF DEVICE
864  004462  104413                          RAMCLR                  ;CLEAR IT ALL!
865  004464  000177  174524                  JMP     @RETURN         ;START DOING THAT TEST AGAIN.
866  004470  000001                  PFTAB:  1
867  004472     003     002           .BYTE   3,2
868  004474  001226                          TSTNO
869  004476  010046                  .DELAY: MOV     R0,-(SP)
870  004500  013700  004514                  MOV     1$,R0
871  004504  005300                          DEC     R0
872  004506  001376                          BNE     .-2
873  004510  012600                          MOV     (SP)+,R0
874  004512  000002                          RTI
875  004514  000036                  1$:     30.
876
877  004516                          .RAMCLR:
878  004516  012777  004000  174636          MOV     #MRESET,@DVSCR  ;ISSUE A MASTER CLEAR
879  004524  010146                          MOV     R1,-(SP)        ;SAVE R1 ON THE STACK
880  004526  010446                          MOV     R4,-(SP)        ;SAVE R4 ON THE STACK
881  004530  013701  001372                  MOV     DVSRS,R1        ;GET SECONDARY SEL. REG.
882  004534  013704  001376                  MOV     DVSRA,R4        ;GET SECONDARY REGISTER ACCESS REG.
883  004540  005014                  1$:     CLR     (R4)            ;ZERO THE SECONDARY REGISTER.
884  004542  062711  170361                  ADD     #^C<BIT11+BIT10+BIT9+BIT8+BIT3+BIT2+BIT1+BIT0>+BITC,(R1)
885  004546  001374                          BNE     1$
886  004550  012604                          MOV     (SP)+,R4        ;RESTORE R4
887  004552  012601                          MOV     (SP)+,R1        ;RESTORE R1
888  004554  000002                          RTI
889
890  004556                          .MSTCLR:
891  004556  012777  004000  174576          MOV     #MRESET,@DVSCR  ;ISSUE MASTER CLEAR.
892  004564  000002                          RTI
893
894  004566                          .ROMCLK:
895  004566  052777  000002  174566          BIS     #BIT1,@DVSCR
896  004574  000002                          RTI
897
898  004576                          .DATACLK:
899  004576  010046                          MOV     R0,-(SP)
900  004600  005000                          CLR     R0
901  004602  052777  000400  174560          BIS     #BIT8,@DVLCR
902  004610  017737  174554  004636  1$:     MOV     @DVLCR,3$
903  004616  106037  004637                  RORB    3$+1
904  004622  103003                          BCC     2$
905  004624  005200                          INC     R0
906  004626  001370                          BNE     1$
907  004630  104000                          HLT     0
908  004632  012600                  2$:     MOV     (SP)+,R0
909  004634  000002                          RTI
910  004636  000001                  3$:     .BLKW 1
```

```
 911
 912  004640  032777  004000  174336  SERV.G: BIT     #4000,@TKCSR    ;RX BUSY?
 913  004646  001374                  BNE     SERV.G          ;BR IF YES
 914  004650  017737  174326  005072          MOV     @SWR,90$        ;SAVE (SWR).
 915  004656  013777  005072  174316  1$:     MOV     90$,@SWR        ;
 916  004664  104402  005052                  TYPE    ,89$            ;
 917  004670  104411  005064                  CNVRT   ,88$            ;
 918  004674  104402  005074                  TYPE    ,91$            ;
 919  004700  105777  174300                  TSTB    @TKCSR          ;WAIT FOR DONE.
 920  004704  100375                  BPL     .-4
 921  004706  017746  174274                  MOV     @TKDBR,-(SP)    ;
 922  004712  042716  000200                  BIC     #BIT7,(SP)      ;
 923  004716  122726  000015                  CMPB    #15,(SP)+       ;
 924  004722  001450                  BEQ     5$              ;
 925  004724  005077  174252                  CLR     @SWR            ;
 926  004730  105777  174254          2$:     TSTB    @TPCSR          ;
 927  004734  100375                  BPL     .-4
 928  004736  016677  177776  174246          MOV     -2(SP),@TPDBR   ;
 929  004744  000241                  CLC                     ;
 930  004746  006177  174230                  ROL     @SWR            ;
 931  004752  006177  174224                  ROL     @SWR            ;
 932  004756  006177  174220                  ROL     @SWR            ;
 933  004762  103735                  BCS     1$              ;ERROR
 934  004764  026627  177776  000060          CMP     -2(SP),#60      ;
 935  004772  002731                  BLT     1$              ;
 936  004774  026627  177776  000067          CMP     -2(SP),#67      ;
 937  005002  003325                  BGT     1$              ;
 938  005004  042766  177770  177776          BIC     #^C<7>,-2(SP)   ;
 939  005012  056677  177776  174162          BIS     -2(SP),@SWR     ;
 940  005020  105777  174160                  TSTB    @TKCSR          ;
 941  005024  100375                  BPL     .-4             ;
 942  005026  017746  174154                  MOV     @TKDBR,-(SP)
 943  005032  042716  000200                  BIC     #BIT7,(SP)
 944  005036  122726  000015                  CMPB    #15,(SP)+
 945  005042  001332                  BNE     2$              ;
 946  005044  104402  005104          5$:     TYPE    ,MCRLF          ;
 947  005050  000207                  RTS     PC
 948
 949  005052  020377  051450  051127  89$:     .ASCIZ  <377>? (SWR)=/?
 950  005060  036451  000057
 951                          .EVEN
 952  005064  000001          88$:    1
 953  005066     006     000                  .BYTE   6.0
 954  005070  005072                  90$
 955  005072  000000          90$:    .WORD   0
 956  005074  036457  000057          91$:    .ASCIZ  ?/=/?
 957                          .EVEN
 958  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 CZDVDC0  /
(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/
```

GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

```
(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  <37>/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
 959 005510     006     003                   .BYTE   6,3
 960 005512  001246                           TEMP1
 961 005514     006     002                   .BYTE   6,2
 962 005516  001250                           TEMP2
 963                                  .EVEN
 964
 965                                          ;BUFFERS FOR INPUT-OUTPUT
 966
 967 005520  000000                  INBUF:   0
 968         005562                  .=.+40
 969 005562  000000                  TEMP:    0
 970         005624                  .=.+40
 971 005624  000000                  MDATA:   0
 972         005666                  .=.+40
```

```
 973
 974
 975                                    ;
 976                                    ;ROUTINE USED TO "CYCLE" THROUGH UP TO EIGHT DV11'S
 977                                    ;THIS ROUTINE SETS UP THE CONTROL ADDRESS FOR THE DIAGNOSTIC
 978                                    ;AND RUNS THE SPECIFIED DV11'S.   THIS ROUTINE *MUST*
 979                                    ;BE RUN FIRST BEFORE ENTERING THE DIAGNOSTIC FOR THE
 980                                    ;SETUP NECESSARY.
 981                                    ;
 982  005666  105737  001300        CYCLE:  TSTB    DVACTV          ;ARE ANY DV11'S TO BE TESTED?
 983  005672  001004                        BNE     1$              ;BR IF OK.
 984  005674  104402  005174                TYPE    ,MERR2          ;NO DV11'S SELECTED!!
 985  005700  000000                        HALT                    ;STOP THE SHOW.
 986  005702  000776                        BR      .-2             ;DISQUALIFY CONT. SW.
 987  005704  133737  001304  001300  1$:    BITB    RUN,DVACTV      ;IS THIS ONE "ACTIVE"
 988  005712  001020                        BNE     2$              ;BR IF GOOD ONE FOUND.
 989  005714  000241                        CLC                     ;CLEAR PROC. CARRY BIT.
 990  005716  106137  001304                ROLB    RUN             ;UPDATE POINTER
 991  005722  105537  001304                ADCB    RUN             ;CATCH CARRY FROM RUN
 992  005726  062737  000024  001306        ADD     #24,CREAM       ;UPDATE ADDRESS POINTER.
 993  005734  022737  001740  001306        CMP     #DV.END,CREAM
 994  005742  001360                        BNE     1$
                                                                    ;KEEP GOING; NOT ALL TESTED FOR.
 995  005744  012737  001500  001306        MOV     #DV.MAP,CREAM   ;RESET ADDRESS POINTER.
 996  005752  000754                        BR      1$              ;KEEP LOOKING FOR ACTIVE DV11
 997  005754  000241                2$:     CLC                     ;CLEAR PROC. CARRY.
 998  005756  106137  001304                ROLB    RUN             ;UPDATE POINTER.
 999  005762  105537  001304                ADCB    RUN             ;CATCH CARRY.
1000  005766  013700  001306                MOV     CREAM,R0        ;GET ADDRESS POINTER.
1001  005772  062737  000024  001306        ADD     #24,CREAM       ;UPDATE.
1002  006000  022737  001740  001306        CMP     #DV.END,CREAM
1003                                                                ;ALL DONE?
1004  006006  001003                        BNE     3$              ;BR IF NO.
1005  006010  012737  001500  001306        MOV     #DV.MAP,CREAM   ;RESTORE POINTER.
1006  006016  012037  001362        3$:     MOV     (R0)+,DVSCR     ;LOAD SYSTEM CTRL. REG
1007  006022  012037  001352                MOV     (R0)+,DVRVEC    ;LOAD VECTOR
1008  006026  012037  001416                MOV     (R0)+,L00.03    ;GET LINE PARAMETERS. 00-03
1009  006032  012037  001426                MOV     (R0)+,SYNC2A    ;
1010  006036  012037  001420                MOV     (R0)+,L04.07    ;                     04-07
1011  006042  012037  001430                MOV     (R0)+,SYNC2B    ;
1012  006046  012037  001422                MOV     (R0)+,L08.11    ;                     08-11
1013  006052  012037  001432                MOV     (R0)+,SYNC2C    ;
1014  006056  012037  001424                MOV     (R0)+,L12.15    ;                     12-15
1015  006062  012037  001434                MOV     (R0)+,SYNC2D    ;
1016  006066  012700  000002                MOV     #2,R0           ;SAVE CORE THIS WAY!
1017  006072  013737  001362  001364        MOV     DVSCR,DVSCRH    ;GET SYS CTRL. REG HIGH BYTE.
1018  006100  005237  001364                INC     DVSCRH          ;GOT IT.
1019  006104  013737  001364  001366        MOV     DVSCRH,DVRIC    ;GET NXT REC. CHAR REG.
1020  006112  005237  001366                INC     DVRIC           ;GOT IT
1021  006116  013737  001366  001370        MOV     DVRIC,DVLCR     ;GET LN. PAR.REG.
1022  006124  060037  001370                ADD     R0,DVLCR        ;GOT IT
1023  006130  013737  001370  001372        MOV     DVLCR,DVSRS     ;GET SEC. REG. SEL. REG.
1024  006136  060037  001372                ADD     R0,DVSRS        ;GOT IT
1025  006142  013737  001372  001374        MOV     DVSRS,DVSRSH    ;GET HIGH BYTE.
1026  006150  005237  001374                INC     DVSRSH          ;GOT IT
1027  006154  013737  001374  001376        MOV     DVSRSH,DVSRA    ;SEC. REG. ACCESS.
1028  006162  005237  001376                INC     DVSRA           ;GOT IT
```

```
1029  006166  013737  001376  001400          MOV     DVSRA,DVSFR     ;SPEC. FUN. REG.
1030  006174  060037  001400                  ADD     R0,DVSFR        ;
1031  006200  013737  001400  001402          MOV     DVSFR,DVNSR     ;NPR STAT. REG.
1032  006206  060037  001402                  ADD     R0,DVNSR        ;
1033  006212  013737  001402  001404          MOV     DVNSR,RESV16    ;RESERVED REG
1034  006220  060037  001404                  ADD     R0,RESV16       ;
1035
1036  006224  013737  001352  001354          MOV     DVRVEC,DVRLVL   ;PTY LVL
1037  006232  060037  001354                  ADD     R0,DVRLVL       ;
1038  006236  013737  001354  001356          MOV     DVRLVL,DVTVEC   ;TX VEC
1039  006244  060037  001356                  ADD     R0,DVTVEC       ;
1040  006250  013737  001356  001360          MOV     DVTVEC,DVTLVL   ;TX LVL
1041  006256  060037  001360                  ADD     R0,DVTLVL
1042
1043  006262  012700  001416                  MOV     #L00.03,R0      ;LOAD STAUS 00-03
1044  006266  012701  001406                  MOV     #MASK.A,R1      ;PREPARE MASK.
1045  006272  012702  001412                  MOV     #CLK.A,R2       ;PREPARE CLOCKS
1046  006276  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1047
1048  006302  012700  001420                  MOV     #L04.07,R0      ;LOAD STAUS 00-03
1049  006306  012701  001407                  MOV     #MASK.B,R1      ;PREPARE MASK.
1050  006312  012702  001413                  MOV     #CLK.B,R2       ;PREPARE CLOCKS
1051  006316  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1052
1053  006322  012700  001422                  MOV     #L08.11,R0      ;LOAD STAUS 00-03
1054  006326  012701  001410                  MOV     #MASK.C,R1      ;PREPARE MASK.
1055  006332  012702  001414                  MOV     #CLK.C,R2       ;PREPARE CLOCKS
1056  006336  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1057
1058  006342  012700  001424                  MOV     #L12.15,R0      ;LOAD STAUS 00-03
1059  006346  012701  001411                  MOV     #MASK.D,R1      ;PREPARE MASK.
1060  006352  012702  001415                  MOV     #CLK.D,R2       ;PREPARE CLOCKS
1061  006356  004737  006516                  JSR     PC,FIX.00       ;GO AND CALCULATE CONFIGURATION.
1062  006362  032777  000002  172612          BIT     #SW01,@SWR
1063  006370  001445                          BEQ     7$
1064  006372                          4$:
1065  006372  005737  000042                  TST     @#42
1066  006376  001042                          BNE     7$
1067  006400  104402  005104                  TYPE    ,MCRLF
1068  006404  104403                          INSTR
1069  006406  005366                          MTSTN
1070  006410  104405                          PARAM
1071  006412  000001                          1
1072  006414  001000                          1000
1073  006416  001226                          TSTNO
1074  006420     000                  .BYTE   0
1075  006421     001                  .BYTE   1
1076  006422  012700  007256                  MOV     #TST1,R0
1077  006426  022710                  5$:     CMP     (PC)+,(R0)
1078  006430  012737                          MOV     (PC)+,@(PC)+
1079  006432  001015                          BNE     6$
1080  006434  023760  001226  000002          CMP     TSTNO,2(R0)
1081  006442  001011                          BNE     6$
1082  006444  022760  001226  000004          CMP     #TSTNO,4(R0)
1083  006452  001005                          BNE     6$
1084  006454  010037  001214                  MOV     R0,RETURN
```

```
1085   006460  104402  005104                  TYPE    ,MCRLF
1086   006464  000412                          BR      8$
1087   006466  005720                  6$:     TST     (R0)+
1088   006470  020027  021152                  CMP     R0,#TLAST+10
1089   006474  001354                          BNE     5$
1090   006476  104402  005100                  TYPE    ,MQM
1091   006502  000733                          BR      4$
1092   006504  012737  007256  001214  7$:     MOV     #TST1,RETURN    ;PREPARE RETURN ADDRESS
1093   006512  000177  172476          8$:     JMP     @RETURN         ;GO START TESTING.
1094
1095   006516  011003                  FIX.00: MOV     (R0),R3         ;GET PARAMETERS.
1096   006520  042703  176377                  BIC     #^C<1400>,R3    ;CLEAR JUNK.
1097   006524  005703                          TST     R3              ;TEST FOR EIGHT BITS.
1098   006526  001004                          BNE     1$              ;BR IF NOT 8 BITS.
1099   006530  105011                          CLRB    (R1)            ;SET
1100   006532  112712  000010                  MOVB    #8.,(R2)        ;
1101   006536  000424                          BR      4$
1102   006540  022703  000400          1$:     CMP     #400,R3         ;CHECK FOR SEVEN BITS.
1103   006544  001005                          BNE     2$              ;BR IF NOT 7 BITS.
1104   006546  112711  000200                  MOVB    #200,(R1)       ;
1105   006552  112712  000007                  MOVB    #7,(R2)         ;
1106   006556  000414                          BR      4$
1107   006560  022703  001000          2$:     CMP     #1000,R3        ;CHECK FOR SIX BITS.
1108   006564  001005                          BNE     3$              ;BR IF NOT SIX BITS.
1109   006566  112711  000300                  MOVB    #300,(R1)       ;
1110   006572  112712  000006                  MOVB    #6,(R2)         ;
1111   006576  000404                          BR      4$
1112   006600  112711  000340          3$:     MOVB    #340,(R1)       ;IF NONE OF THE ABOVE; MUST BE 5 BITS.
1113   006604  112712  000005                  MOVB    #5,(R2)         ;
1114   006610  032710  040000          4$:     BIT     #PARBIT,(R0)    ;PARITY ENABLED?
1115   006614  001401                          BEQ     5$              ;IF =0; THEN NO PARITY.
1116   006616  105212                          INCB    (R2)            ;PLUS ONE TO THE CLOCK!
1117   006620  000207                  5$:     RTS     PC              ;
1118
1119                                           ;*ROUTINE USED TO "AUTO SIZE" THE DV11
1120                                           ;*CSR AND VECTOR.
1121                                           ;*NOTE:  THE CSR MAY BE ANY WHERE IN THE FLOATING
1122                                           ;*       ADDRESS RANGE (175000:175400)
1123                                           ;*       AND THE VECTOR MAY BE ANY WHERE IN THE
1124                                           ;*       FLOATING VECTOR RANGE (300:770)
1125                                           ;*
1126
1127   006622                          AUTO.SIZE:
1128   006622  000005                          RESET                   ;INSURE A BUS INIT.
1129   006624  012702  001500          CSRMAP: MOV     #DV.MAP,R2      ;LOAD MAP POINTER.
1130   006630  005022                  1$:     CLR     (R2)+           ;ZERO ENTIRE MAP
1131   006632  022702  001740                  CMP     #DV.END,R2      ;ALL DONE?
1132   006636  001374                          BNE     1$              ;BR IF NO
1133   006640  105037  001301                  CLRB    DVNUM           ;SET OCTAL NUMBER OF DV11'S TO 0
1134   006644  012702  001500                  MOV     #DV.MAP,R2
1135   006650  012701  175000                  MOV     #175000,R1      ;SET FOR FIRST ADDRESS TO BE TESTED
1136   006654  012737  007074  000004          MOV     #6$,@#4         ;SET FOR NON-EXISTANT DEVICE TIME OUT
1137   006662  005711                  2$:     TST     (R1)            ;IF DV11 DVSCR S/B 0
1138   006664  001037                          BNE     3$              ;IF NO DEV ; TRAP TO 4. IF NO BIT 8 THEN NO DV11
1139   006666  022761  177777  000012          CMP     #177777,12(R1)  ;IF DV11 THEN DVSFR S/B ALL 1'S ON INIT!
1140   006674  001033                          BNE     3$              ;BR IF NOT DV11
```

```
1141  006676  005761  000016                  TST     16(R1)          ;IF DV11 THEN RESV16 S/B ALL 0'S
1142  006702  001030                          BNE     3$              ;BR IF NOT DV11
1143                                  ;AT THIS POINT IT IS ASSUMED THAT R1 HOLDS A DV11 CSR ADDRESS.
1144  006704  010122                          MOV     R1,(R2)+        ;STORE CSR IN CORE TABLE.
1145  006706  005722                          TST     (R2)+           ;POP OVER VECTOR STORE AREA
1146  006710  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 1 STAT AND SYNC
1147  006714  052722  000062                  BIS     #62,(R2)+       ;
1148  006720  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 2 STAT AND SYNC
1149  006724  052722  000062                  BIS     #62,(R2)+       ;
1150  006730  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 3 STAT AND SYNC
1151  006734  052722  000062                  BIS     #62,(R2)+       ;
1152  006740  052722  000226                  BIS     #226,(R2)+      ;SET LINE CARD 4 STAT AND SYNC
1153  006744  052722  000062                  BIS     #62,(R2)+       ;
1154  006750  105237  001301                  INCB    DVNUM           ;UPDATE DEVICE COUNTER
1155  006754  122737  000010  001301          CMPB    #10,DVNUM       ;ARE MAX. NO. OF DEV FOUND?
1156  006762  001405                          BEQ     100$            ;YES DON'T LOOK FOR ANY MORE.
1157  006764  062701  000010          3$:     ADD     #10,R1          ;UPDATE CSR POINTER ADDRESS
1158  006770  022701  175400                  CMP     #175400,R1
1159  006774  001332                          BNE     2$              ;BR IF MORE ADDRESS TO CHECK.
1160  006776  012722  177777          100$:   MOV     #177777,(R2)+   ;TERMINATER.
1161  007002  105037  001300                  CLRB    DVACTV
1162  007006  105737  001301                  TSTB    DVNUM           ;WERE ANY DV11'S FOUND AT ALL?
1163  007012  001423                          BEQ     5$              ;ERROR AUTO SIZER FOUND NO DV11'S IN THIS SYS.
1164  007014  113701  001301                  MOVB    DVNUM,R1
1165  007020  110137  001303                  MOVB    R1,SAVNUM       ;SAVE NUMBER OF DEVICES
1166  007024  000241          4$:     CLC
1167  007026  106137  001300                  ROLB    DVACTV          ;GENERATE ACTIVE REGISTER OF DEVICES.
1168  007032  105237  001300                  INCB    DVACTV          ;SET THE BIT
1169  007036  005301                          DEC     R1
1170  007040  001371                          BNE     4$              ;BR IF MORE TO GENERATE
1171  007042  012737  000006  000004          MOV     #6,@#4          ;RESTORE TRAP VECTOR
1172  007050  113737  001300  001302          MOVB    DVACTV,SAVACT   ;SAVE ACTIVE REGISTER
1173  007056  000137  007102                  JMP     VECMAP          ;GO FIND THE VECTOR NOW.
1174  007062  104402  005174          5$:     TYPE    ,MERR2          ;NOTIFY OPR THAT NO DV11'S FOUND.
1175  007066  005000                          CLR     R0              ;MAKE DATA LIGHTS ZERO
1176  007070  000000                          HALT                    ;STOP THE SHOW
1177  007072  000776                          BR      .-2             ;DISABLE CONT. SW.
1178  007074  012716  006764          6$:     MOV     #3$,(SP)        ;ENTERED BY NON-EXISTANT TIME-OUT.
1179  007100  000002                          RTI                     ;RETURN TO MAINSTREAM
1180
1181  007102  012737  000340  000022  VECMAP: MOV     #340,@#22       ;SET IOT TRAP PRIO TO 7
1182  007110  012737  007232  000020          MOV     #4$,@#20        ;SET IOT TRAP VECTOR
1183  007116  012702  001500                  MOV     #DV.MAP,R2      ;SET SOFTWARE POINTER
1184  007122  012700  000300                  MOV     #300,R0         ;FLOATING VECTORS START HERE.
1185  007126  012701  000302                  MOV     #302,R1         ;PC OF IOT INSTR.
1186  007132  010120          1$:     MOV     R1,(R0)+        ;START FILLING VECTOR AREA
1187  007134  012721  000004                  MOV     #4,(R1)+        ;WITH .+2; IOT
1188  007140  022021                          CMP     (R0)+,(R1)+     ;ADD 2 TO R0 +R1
1189  007142  020127  001000                  CMP     R1,#1000
1190  007146  101771                          BLOS    1$              ;BR IF MORE TO FILL
1191  007150  113737  001300  001246          MOVB    DVACTV,TEMP1    ;STORE TEMPORALLY
1192  007156  006037  001246          2$:     ROR     TEMP1           ;BRING OUT A BIT
1193  007162  103034                          BCC     5$              ;BR IF ALL DONE
1194  007164  005037  177776                  CLR     PS              ;ZERO CPU PRIO
1195  007170  012772  001300  000000          MOV     #BIT9+BIT7+BIT6,@(R2)
1196  007176  005000                          CLR     R0              ;ATTEMPT TO FORCE AN INTERUPT
```

K03


```
1197  007200  005200                        INC     R0              ;STALL
1198  007202  001376                        BNE     .-2             ;       FOR TIME TO INTERUPT
1199  007204  052762  000300  000002        BIS     #300,2(P2)      ;NO INTERUPT ASSUME 300 AND FIX DV11 LATER
1200  007212  042772  176777  000000  3$:   BIC     #^C<BIT9>,@(R2)
1201  007220  005072  000000                CLR     @(R2)
1202  007224  062702  000024                ADD     #24,R2          ;POP SOFTWARE POINTER
1203  007230  000752                        BR      2$              ;KEEP GOING
1204  007232  051662  000002          4$:   BIS     (SP),2(R2)      ;GET VECTOR ADDRESS
1205  007236  042762  000007  000002        BIC     #7,2(R2)        ;CLEAR JUNK
1206  007244  022626                        CMP     (SP)+,(SP)+     ;POP IOT JUNK OFF STACK
1207  007246  012716  007212                MOV     #3$,(SP)        ;SET FOR RETURN
1208  007252  000002                        RTI
1209  007254  000207                  5$:   RTS     PC              ;ALL DONE WITH "AUTO SIZING"
1210
```

```
1211
1212                                    ;************************ TEST 1 *********************************
1213                                    ;*TEST OF TRANSMITTER CONTROL BYTES.
1214                                    ;*TEST OF "NEXT MODE" FOR TRANSMITTER.
1215                                    ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
1216                                    ;:*************************************************************
1217
1218                                ;  TEST 1
1219                                ;-------------
1220  007256  012737  000001  001226 TST1:   MOV     #1,TSTNO
1221  007264  012737  007664  001216         MOV     #TST2,NEXT
1222  007272  012700  000000                 MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1223  007276  013737  001416  001236         MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1224  007304  100402                         BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1225  007306  004737  007374                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1226  007312  012700  000004         100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1227  007316  013737  001420  001236         MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1228  007324  100402                         BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1229  007326  004737  007374                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1230  007332  012700  000010         101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1231  007336  013737  001422  001236         MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1232  007344  100402                         BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1233  007346  004737  007374                 JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1234  007352  012700  000014         102$:   MOV     #12.,R0         ;LOAD LINE NO.
1235  007356  013737  001424  001236         MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1236  007364  100402                         BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1237  007366  004737  007374                 JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1238  007372  104400                 103$:   SCOPE                   ;SCOPE THIS TEST.
1239  007374                         105$:                           ;TEST ENTRANCE.
1240  007374  012737  007422  001220         MOV     #1$,LOCK        ;SET IF SW09=1 (LOCK)
1241  007402  104413                         RAMCLR                  ;CLEAR ALL SEC REGISTERS
1242  007404  005003                         CLR     R3              ;SET IMAGE EXPECTED MODE=0
1243  007406  005001                         CLR     R1              ;SET IMAGE "NEXT MODE"=0
1244  007410  112737  000025  022560         MOVB    #25,TXBAP       ;SET TX DATA CHAR
1245  007416  012702  000004                 MOV     #4,R2           ;SET FOR 4 LINE GROUP
1246  007422  110137  023605          1$:    MOVB    R1,TXTAB+25     ;LOAD CONTROL BYTE(MODE)
1247  007426  010077  171740                 MOV     R0,@DVSRS       ;LOAD LINE NUMBER
1248  007432  004537  022120                 PERFORM ,SETREG         ;
1249  007436     000     001                 .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
1250  007440  022560                         TXBAP                   ;
1251  007442  177777                         -1                      ;
1252  007444  004537  022120                 PERFORM ,SETREG         ;
1253  007450     013     010                 .BYTE   013,010         ;LINE STATE, CNTRL TABLE
1254  007452  000004                         BIT2                    ;TXGO
1255  007454  023560                         TXTAB                   ;
1256  007456  004537  022120                 PERFORM ,SETREG         ;
1257  007462     014     014                 .BYTE   014,014         ;TX MODE REG
1258  007464  000000                         0                       ;MAKE
1259  007466  000000                         0                       ;IT=0
1260  007470  032737  004000  001236         BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
1261  007476  001407                         BEQ     60$             ;#BR IF NO.
1262  007500  004537  022164                 PERFORM ,LOAD.MODE      ;#
1263  007504  015000                         <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
1264  007506  004537  022164                 PERFORM ,LOAD.MODE      ;#
1265  007512  072000                         <BIT14+BIT13+BIT12>+BIT10
1266                                                                  ;#9600 BAUD.
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1267  007514  000403                    BR      61$
1268  007516  004537  022164    60$:    PERFORM ,LOAD.MODE      ;LOAD
1269  007522  014000                    BIT12+BIT11             ;MODE
1270  007524  012737  000340  177776  61$:    MOV     #340,PS         ;LOCK OUT INTERUPTS
1271  007532  012777  007574  171616          MOV     #3$,@DVTVEC     ;SET TRANS VECTOR
1272  007540  012777  000340  171612          MOV     #340,@DVTLVL    ;LOAD PRIO.
1273  007546  052777  020001  171606          BIS     #BIT13+BIT0,@DVSCR      ;SET STATUS IE AND UCPU GO.
1274  007554  005005                          CLR     R5              ;WAIT
1275  007556  104414                    2$:     DELAY                   ;STALL FOR TIME
1276  007560  005037  177776                  CLR     PS              ;ALLOW ITERUPTS (NSR ENTRY)
1277  007564  005205                          INC     R5              ;ENTRY
1278  007566  001373                          BNE     2$              ;
1279  007570  104000                          HLT                     ;NO SILO ENTRY (DVSCR 15 NOT=1)
1280  007572  024646                          CMP     -(SP),-(SP)     ;FAKE INTERUPT BECAUSE NO REAL ONE HAPPENED.
1281  007574  042777  020000  171560  3$:     BIC     #BIT13,@DVSCR   ;CLR IE
1282  007602  005037  177776                  CLR     PS              ;ZERO PSW
1283  007606  022626                          CMP     (SP)+,(SP)+     ;FAKE AN RTI
1284  007610  112777  000014  171556          MOVB    #14,@DVSRSH     ;SEL TX MODE REGISTER
1285  007616  017704  171554                  MOV     @DVSRA,R4       ;READ MODE REG.
1286  007622  010305                          MOV     R3,R5           ;SET EXPECTED
1287  007624  020504                          CMP     R5,R4           ;WAS "NEXT MODE" LOADED CORRECTLY?
1288  007626  001401                          BEQ     4$              ;BR IF YES
1289  007630  104003                          HLT     3               ;TX MODE REGISTER WRONG
1290  007632  104412                    4$:     MSTCLR                  ;INIT DV11
1291  007634  104401                          SCOPI                   ;LOCK ON MODE, LOCK ON LINE?
1292  007636  005203                          INC     R3              ;UPDATE EXPECTED MODE
1293  007640  062701  000040                  ADD     #BIT5,R1        ;UPDATE CNTRL BYTE IMAGE
1294  007644  105701                          TSTB    R1              ;ALL DONE??
1295  007646  001665                          BEQ     1$              ;BR IF NO
1296  007650  005001                          CLR     R1              ;ZERO EXPECTE MODE
1297  007652  005003                          CLR     R3              ;ZERO CNTRL BYTE MODE
1298  007654  005200                          INC     R0              ;UPDATE LINE NO POINTER
1299  007656  005302                          DEC     R2              ;4 LINES DONE
1300  007660  001260                          BNE     1$              ;BR IF YES
1301  007662  000207                          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
1302
1303
1304                                    ;********************** TEST 2 ******************************
1305                                    ;*TEST OF TRANSMITTER IDLE FUNCTIONS.
1306                                    ;*TEST THAT THE TRANSMITTER WILL IDLE
1307                                    ;*SYNC (IDLE) CHARS WHEN BIT 0 OF
1308                                    ;*DLE/PROTOCOL REGISTER IS CLEARED.
1309                                    ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
1310                                    ;:************************************************************
1311
1312                              ;  TEST 2
1313                              ;--------------
1314  007664  012737  000002  001226  TST2:   MOV     #2,TSTNO
1315  007672  012737  010430  001216          MOV     #TST3,NEXT
1316  007700  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1317  007704  113737  001406  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
1318  007712  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1319  007720  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1320  007722  004737  010032                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1321  007726  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1322  007732  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
```

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1323  007740  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1324  007746  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1325  007750  004737  010032                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1326  007754  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1327  007760  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
1328  007766  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1329  007774  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1330  007776  004737  010032                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1331  010002  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
1332  010006  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
1333  010014  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1334  010022  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1335  010024  004737  010032                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1336  010030  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
1337  010032                          105$:                           ;TEST ENTRANCE.
1338  010032  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1339  010040  001401                          BEQ     .+4             ;#BR IF NOT ASYNC .
1340  010042  000207                          RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
1341  010044  012737  010116  001220          MOV     #3$,LOCK        ;SET FOR RETURN IF SW09=1
1342  010052  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
1343  010054  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
1344  010060  012704  030160                  MOV     #RXTAB,R4       ;RECEIVER
1345  010064  005001                          CLR     R1              ;AND
1346  010066  005025                  1$:     CLR     (R5)+           ;TRANSMITTER
1347  010070  005024                          CLR     (R4)+           ;CONTROL
1348  010072  105201                          INCB    R1              ;TABLES
1349  010074  100374                          BPL     1$              ;
1350  010076  012737  000001  022560          MOV     #1,TXBAP        ;LOAD TX
1351  010104  112737  000015  022561          MOVB    #15,TXBAP+1     ;DTA
1352  010112  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
1353  010116  010077  171250          3$:     MOV     R0,@DVSRS       ;LOAD LINE NUMBER
1354  010122  005037  027560                  CLR     RXBA            ;CLEAR
1355  010126  005037  027562                  CLR     RXBA+2          ;RECEIVER
1356  010132  005037  027564                  CLR     RXBA+4          ;BUFFER
1357  010136  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1358  010144  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
1359  010146  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
1360  010152     000     001                  .BYTE   000,001         ;#REGISTERS
1361  010154  022560                          TXBAP                   ;#LOAD FOR ASYNC
1362  010156  177776                          -2                      ;#LOAD FOR ASYNC
1363  010160  000405                          BR      81$             ;#CONTINUE TEST
1364  010162  004537  022120          80$:    PERFORM ,SETREG         ;
1365  010166     000     001                  .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
1366  010170  022556                          SYNC                    ;
1367  010172  177774                          -4                      ;
1368  010174  004537  022120          81$:    PERFORM ,SETREG         ;
1369  010200     004     005                  .BYTE   004,005         ;RX BA, Rx BC
1370  010202  027560                          RXBA                    ;
1371  010204  177772                          -6                      ;
1372  010206  004537  022120                  PERFORM ,SETREG         ;
1373  010212     010     011                  .BYTE   010,011         ;TX TABLE, RXTABLE
1374  010214  023560                          TXTAB                   ;
1375  010216  030160                          RXTAB                   ;
1376  010220  004537  022120                  PERFORM ,SETREG         ;
1377  010224     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
1378  010226  000004                          BIT2                    ;TX GOOD
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1379  010230  000000                          0                       ;DEFAULT-IDLE SYNC
1380  010232  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
1381  010240  001412                          BEQ     60$             ;#BR IF NO.
1382  010242  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
1383  010246  020000                          BIT13                   ;#RECEIVER ENABLE
1384  010250  004537  022164                  PERFORM ,LOAD.MODE      ;#
1385  010254  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
1386  010256  004537  022164                  PERFORM ,LOAD.MODE      ;#
1387  010262  072000                          (BIT14+BIT13+BIT12)+BIT10
1388                                                                  ;#9600 BAUD.
1389  010264  000405                          BR      4$
1390  010266  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
1391  010272  034000                          BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
1392  010274  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
1393  010300  005277  171056          4$:     INC     @DVSCR          ;SET MICRO CPU GO
1394  010304  105777  171052                  TSTB    @DVSCR          ;WAIT FOR
1395  010310  100375                          BPL     .-4             ;DVSCR07=1
1396  010312  005004                          CLR     R4              ;
1397  010314  012705  000001                  MOV     #1,R5           ;SET EXPECTED
1398  010320  113704  027560                  MOVB    RXBA,R4         ;READ 1ST CHAR
1399  010324  020504                          CMP     R5,R4           ;OK?
1400  010326  001401                          BEQ     5$              ;
1401  010330  104001                          HLT     1               ;1ST CHAR S/B=1!
1402  010332  112705  000015          5$:     MOVB    #15,R5          ;SET EXPECTED
1403  010336  113704  027561                  MOVB    RXBA+1,R4       ;GET 2ND CHAR
1404  010342  020504                          CMP     R5,R4           ;
1405  010344  001401                          BEQ     6$              ;
1406  010346  104001                          HLT     1               ;2ND CHAR S/B=15
1407  010350                          6$:
1408  010350  113705  001236                  MOVB    STAT,R5         ;SET EXPECTED=SYNC CHAR
1409  010354  042705  177400                  BIC     #^C<377>,R5     ;CLEAR HIGH BYTE
1410  010360  143705  001244                  BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
1411  010364  012703  000004                  MOV     #4,R3           ;SET TO LOOK AT 4 CHARS
1412  010370  012701  027562                  MOV     #RXBA+2,R1      ;GET RX DATA POINTER
1413  010374  112104          7$:     MOVB    (R1)+,R4        ;GET FOUND DATA
1414  010376  042704  177400                  BIC     #^C<377>,R4     ;CLEAN HIGH BYTE
1415  010402  020504                          CMP     R5,R4           ;
1416  010404  001401                          BEQ     8$              ;
1417  010406  104001                          HLT     1               ;TRANSMITTER IDLED WRONG
1418  010410  005303          8$:     DEC     R3              ;4 CHARS CHECKED?
1419  010412  001370                          BNE     7$              ;BR IF NO
1420  010414  104412                          MSTCLR                  ;INIT DV11
1421  010416  104401                          SCOP1                   ;LOCK ON LINE?
1422  010420  005200                          INC     R0              ;UPDATE LINE POINTER
1423  010422  005302                          DEC     R2              ;4 LINE GROUP DONE?
1424  010424  001234                          BNE     3$              ;BR IF NO
1425  010426  000207                          RTS     PC              ;EXIT FOR NEXT GROUP
1426
1427
1428                                  ;************************ TEST 3 *********************************
1429                                  ;*TEST OF TRANSMITTER IDLE FUNCTIONS.
1430                                  ;*TEST THAT THE TRANSMITTER WILL IDLE
1431                                  ;*MARK STATE (377) WHEN BIT0 IS
1432                                  ;*SET IN THE DLE/PROTOCOL REGISTER.
1433                                  ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
1434                                  ;;*************************************************************************
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1435
1436                                        ;  TEST 3
1437                                        ;--------------
1438  010430  012737  000003  001226  TST3:  MOV     #3,TSTNO
1439  010436  012737  011174  001216         MOV     #TST4,NEXT
1440  010444  012700  000000                 MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1441  010450  113737  001406  001244         MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
1442  010456  013737  001416  001236         MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1443  010464  100402                         BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1444  010466  004737  010576                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1445  010472  012700  000004         100$:  MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1446  010476  113737  001407  001244         MOVB    MASK.B,MASKX    ;GET MASK
1447  010504  013737  001420  001236         MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1448  010512  100402                         BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1449  010514  004737  010576                 JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1450  010520  012700  000010         101$:  MOV     #8.,R0          ;LOAD LINE NUMBER
1451  010524  113737  001410  001244         MOVB    MASK.C,MASKX    ;GET MASK
1452  010532  013737  001422  001236         MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1453  010540  100402                         BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1454  010542  004737  010576                 JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1455  010546  012700  000014         102$:  MOV     #12.,R0         ;LOAD LINE NO.
1456  010552  113737  001411  001244         MOVB    MASK.D,MASKX    ;GET MASKK
1457  010560  013737  001424  001236         MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1458  010566  100402                         BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1459  010570  004737  010576                 JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1460  010574  104400         103$:  SCOPE                           ;SCOPE THIS TEST.
1461  010576                 105$:                                  ;TEST ENTRANCE.
1462  010576  032737  004000  001236         BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1463  010604  001401                         BEQ     .+4             ;#BR IF NOT ASYNC .
1464  010606  000207                         RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
1465  010610  012737  010662  001220         MOV     #3$,LOCK        ;SET FOR RETURN IF SW09=1
1466  010616  104413                         RAMCLR                  ;CLEAR ALL SEC REGISTERS
1467  010620  012705  023560                 MOV     #TXTAB,R5       ;CLEAR
1468  010624  012704  030160                 MOV     #RXTAB,R4       ;RECEIVER
1469  010630  005001                         CLR     R1              ;AND
1470  010632  005025                  1$:    CLR     (R5)+           ;TRANSMITTER
1471  010634  005024                         CLR     (R4)+           ;CONTROL
1472  010636  105201                         INCB    R1              ;TABLES
1473  010640  100374                         BPL     1$              ;
1474  010642  012737  000001  022560         MOV     #1,TXBAP        ;LOAD TX
1475  010650  112737  000015  022561         MOVB    #15,TXBAP+1     ;DTA
1476  010656  012702  000004                 MOV     #4,R2           ;SET FOR 4 LINE GROUP
1477  010662  010077  170504          3$:    MOV     R0,@DVSRS       ;LOAD LINE NUMBER
1478  010666  005037  027560                 CLR     RXBA            ;CLEAR
1479  010672  005037  027562                 CLR     RXBA+2          ;RECEIVER
1480  010676  005037  027564                 CLR     RXBA+4          ;BUFFER
1481  010702  032737  004000  001236         BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1482  010710  001406                         BEQ     80$             ;#BR IF NOT ASYNC.
1483  010712  004537  022120                 PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
1484  010716     000     001                 .BYTE   000,001         ;#REGISTERS
1485  010720  022560                         TXBAP                   ;#LOAD FOR ASYNC
1486  010722  177776                         -2                      ;#LOAD FOR ASYNC
1487  010724  000405                         BR      81$             ;#CONTINUE TEST
1488  010726  004537  022120          80$:   PERFORM ,SETREG         ;
1489  010732     000     001                 .BYTE   000,001         ;TX PRINCIPLE BA, PRINCIPLE BC
1490  010734  022556                         SYNC                    ;
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1491  010736  177774                        -4                      ;
1492  010740  004537  022120          81$:  PERFORM ,SETREG         ;
1493  010744     004     005                .BYTE  004,005          ;RX BA, RX BC
1494  010746  027560                        RXBA                    ;
1495  010750  177772                        -6                      ;
1496  010752  004537  022120                PERFORM ,SETREG         ;
1497  010756     010     011                .BYTE  010,011          ;TX TABLE, RXTABLE
1498  010760  023560                        TXTAB                   ;
1499  010762  030160                        RXTAB                   ;
1500  010764  004537  022120                PERFORM ,SETREG         ;
1501  010770     013     012                .BYTE  013,012          ;LINE STATE, LINE PROTOCOL
1502  010772  000004                        BIT2                    ;TX GOOD
1503  010774  000001                        BIT0                    ;IDLE MARK ON BYTE CNT=0
1504  010776  032737  004000  001236        BIT    #ASYNC,STAT      ;#IS THIS ASYNC LINE CARD?
1505  011004  001412                        BEQ    60$              ;#BR IF NO.
1506  011006  004537  022164                PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
1507  011012  020000                        BIT13                   ;#RECEIVER ENABLE
1508  011014  004537  022164                PERFORM ,LOAD.MODE      ;#
1509  011020  015000                        <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
1510  011022  004537  022164                PERFORM ,LOAD.MODE      ;#
1511  011026  072000                        <BIT14+BIT13+BIT12>+BIT10
1512                                                                ;#9600 BAUD.
1513  011030  000405                        BR     4$
1514  011032  004537  022164          60$:  PERFORM ,LOAD.MODE      ;LOAD
1515  011036  034000                        BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
1516  011040  004537  021706                PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
1517  011044  005277  170312           4$:  INC    @DVSCR           ;SET MICRO CPU GO
1518  011050  105777  170306                TSTB   @DVSCR           ;WAIT FOR
1519  011054  100375                        BPL    .-4              ;DVSCR07=1
1520  011056  005004                        CLR    R4               ;
1521  011060  012705  000001                MOV    #1,R5            ;SET EXPECTED
1522  011064  113704  027560                MOVB   RXBA,R4          ;READ 1ST CHAR
1523  011070  020504                        CMP    R5,R4            ;OK?
1524  011072  001401                        BEQ    5$               ;
1525  011074  104001                        HLT    1                ;1ST CHAR S/B=1!
1526  011076  112705  000015           5$:  MOVB   #15,R5           ;SET EXPECTED
1527  011102  113704  027561                MOVB   RXBA+1,R4        ;GET 2ND CHAR
1528  011106  020504                        CMP    R5,R4            ;
1529  011110  001401                        BEQ    6$               ;
1530  011112  104001                        HLT    1                ;2ND CHAR S/B=15
1531  011114                           6$:
1532  011114  012705  000377                MOV    #377,R5          ;SET EXPECTED=MARK CHAR
1533  011120  042705  177400                BIC    #^C<377>,R5      ;CLEAR HIGH BYTE
1534  011124  143705  001244                BICB   MASKX,R5         ;CLEAR BITS/PER/CHAR MASK.
1535  011130  012703  000004                MOV    #4,R3            ;SET TO LOOK AT 4 CHARS
1536  011134  012701  027562                MOV    #RXBA+2,R1       ;GET RX DATA POINTER
1537  011140  112104                   7$:  MOVB   (R1)+,R4         ;GET FOUND DATA
1538  011142  042704  177400                BIC    #^C<377>,R4      ;CLEAN HIGH BYTE
1539  011146  020504                        CMP    R5,R4            ;
1540  011150  001401                        BEQ    8$               ;
1541  011152  104001                        HLT    1                ;TRANSMITTER IDLED WRONG
1542  011154  005303                   8$:  DEC    R3               ;4 CHARS CHECKED?
1543  011156  001370                        BNE    7$               ;BR IF NO
1544  011160  104412                        MSTCLR                  ;INIT DV11
1545  011162  104401                        SCOPI                   ;LOCK ON LINE?
1546  011164  005200                        INC    R0               ;UPDATE LINE POINTER
```

```
1547  011166  005302                          DEC     R2              ;4 LINE GROUP DONE?
1548  011170  001234                          BNE     3$              ;BR IF NO
1549  011172  000207                          RTS     PC              ;EXIT FOR NEXT GROUP
1550
1551
1552                                          ;************************ TEST 4 *******************************
1553                                          ;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
1554                                          ;*TEST OF THE "STORE/DISCARD" FUNCTIONS.
1555                                          ;*TEST THAT CHARS:
1556                                          ;*      25      STORED
1557                                          ;*      23      DISCARDED
1558                                          ;*      31      STORED
1559                                          ;*      32      DISCARDED
1560                                          ;*SINCE TWO CHRS SHOULD BE THROWN AWAY;
1561                                          ;*THE TX LINE IS SET TO GO BACK TO A MARK STATE;
1562                                          ;*THEREFORE THE RX BUFFER S/B:
1563                                          ;*RXBA  31,25
1564                                          ;*      377,377
1565                                          ;*(AT 8 BITS PER CHAR)
1566                                          ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
1567                                          ;:***********************************************************
1568
1569                                  ;  TEST 4
1570                                  ;--------------
1571  011174  012737  000004  001226  TST4:   MOV     #4,TSTNO
1572  011202  012737  012004  001216          MOV     #TST5,NEXT
1573  011210  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1574  011214  113737  001406  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
1575  011222  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1576  011230  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1577  011232  004737  011342                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1578  011236  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1579  011242  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
1580  011250  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1581  011256  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1582  011260  004737  011342                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1583  011264  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1584  011270  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
1585  011276  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1586  011304  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1587  011306  004737  011342                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1588  011312  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
1589  011316  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
1590  011324  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1591  011332  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1592  011334  004737  011342                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1593  011340  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
1594  011342                          105$:                           ;TEST ENTRANCE.
1595  011342  012737  011442  001220          MOV     #1$,LOCK        ;SET RETURN IF SW09=1
1596  011350  104413                          RAMCLR                  ;CLEAR ALL DV11 SEC REGISTERS
1597  011352  105037  023605                  CLRB    TXTAB+25        ;ZERO
1598  011356  105037  023603                  CLRB    TXTAB+23        ;       USED
1599  011362  105037  023611                  CLRB    TXTAB+31        ;                CONTROL
1600  011366  105037  023612                  CLRB    TXTAB+32        ;                        BYTES
1601  011372  105037  024157                  CLRB    TXTAB+377       ;FOR TRANSMITTER
1602  011376  012705  022560                  MOV     #TXBAP,R5       ;LOAD
```

```
1603  011402  012725                        MOV     (PC)+,(R5)+     ;TRANSMITTER
1604  011404     025      023               .BYTE   25,23           ;DATA
1605  011406  012715                        MOV     (PC)+,(F5)      ;CHARS
1606  011410     031      032               .BYTE   31,32           ;
1607  011412  112737  000020  030203        MOVB    #BIT4,RXTAB+23  ;DSCARD
1608  011420  112737  000020  030212        MOVB    #BIT4,RXTAB+32  ;DSCARD
1609  011426  105037  030205                CLRB    RXTAB+25        ;DEFAULT-STORE
1610  011432  105037  030211                CLRB    RXTAB+31        ;DEFAULT-STORE
1611  011436  012702  000004                MOV     #4,R2           ;SET FOR 4 LINE GROUP
1612  011442  010077  167724        1$:     MOV     R0,@DVSRS       ;LOAD LINE NO.
1613  011446  005037  027560                CLR     RXBA            ;MAKE SURE
1614  011452  005037  027562                CLR     RXBA+2          ;RX BUFFER=0
1615  011456  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1616  011464  001406                        BEQ     80$             ;#BR IF NOT ASYNC.
1617  011466  004537  022120                PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
1618  011472     000      001               .BYTE   000,001         ;#REGISTERS
1619  011474  022560                        TXBAP                   ;#LOAD FOR ASYNC
1620  011476  177774                        -4                      ;#LOAD FOR ASYNC
1621  011500  000405                        BR      81$             ;#CONTINUE TEST
1622  011502  004537  022120        80$:    PERFORM ,SETREG         ;
1623  011506     000      001               .BYTE   000,001         ;TX PRINCIPLE BA, PPINCIPLE BC
1624  011510  022556                        SYNC                    ;SYNC CHAR
1625  011512  177772                        -6                      ;2 SYNC, 4 DATA=6
1626  011514                          81$:
1627  011514  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1628  011522  001406                        BEQ     82$             ;#BR IF NOT ASYNC.
1629  011524  004537  022120                PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
1630  011530     004      005               .BYTE   004,005         ;#REGISTERS
1631  011532  027560                        RXBA                    ;#LOAD FOR ASYNC
1632  011534  177776                        -2                      ;#LOAD FOR ASYNC
1633  011536  000405                        BR      83$             ;#CONTINUE TEST
1634  011540  004537  022120        82$:    PERFORM ,SETREG         ;
1635  011544     004      005               .BYTE   004,005         ;RXBA, RXBC
1636  011546  027560                        RXBA                    ;
1637  011550  177774                        -4                      ;
1638  011552  004537  022120        83$:    PERFORM ,SETREG         ;
1639  011556     010      011               .BYTE   010,011         ;TX TABLE, RX TABLE
1640  011560  023560                        TXTAB                   ;
1641  011562  030160                        RXTAB                   ;
1642  011564  004537  022120                PERFORM ,SETREG         ;
1643  011570     013      012               .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
1644  011572  000004                        BIT2                    ;TX GO
1645  011574  000001                        BIT0                    ;IDLE MARK ON BYTE COUNTS=0
1646  011576  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
1647  011604  001412                        BEQ     60$             ;#BR IF NO.
1648  011606  004537  022164                PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
1649  011612  020000                        BIT13                   ;#RECEIVER ENABLE
1650  011614  004537  022164                PERFORM ,LOAD.MODE      ;#
1651  011620  015000                        <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
1652  011622  004537  022164                PERFORM ,LOAD.MODE      ;#
1653  011626  072000                        <BIT14+BIT13+BIT12>+BIT10
1654                                                                ;#9600 BAUD.
1655  011630  000405                        BR      2$
1656  011632  004537  022164        60$:    PERFORM ,LOAD.MODE      ;LOAD
1657  011636  034000                        BIT13+BIT12+BIT11       ;MODE+RX ENABLE
1658  011640  004537  021706                PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
```

```
1659  011644  005277  167512          2$:     INC     @DVSCR          ;SET MICRO CPU GO
1660  011650  005005                          CLR     R5              ;DELAY
1661  011652  105777  167504          3$:     TSTB    @DVSCR          ;FOR
1662  011656  100404                          BMI     4$              ;RX INTERRUPT (BIT 7,
1663  011660  104414                          DELAY                   ;WASTE TIME
1664  011662  005205                          INC     R5              ;KEEP COUNTING.
1665  011664  001372                          BNE     3$              ;BR
1666  011666  104000                          HLT                     ;BIT 7 OF DVSCR NOT SET!
1667  011670                          4$:
1668  011670  012705  000025                  MOV     #25,R5          ;SET EXPECTED
1669  011674  113704  027560                  MOVB    RXBA,R4         ;GET FOUND
1670  011700  020504                          CMP     R5,R4           ;OK?
1671  011702  001401                          BEQ     5$              ;
1672  011704  104002                          HLT     2               ;'25' NOT FIRST IN RX BUFFER
1673  011706  012705  000031          5$:     MOV     #31,R5          ;NEXT CHAR S/B '31'
1674  011712  113704  027561                  MOVB    RXBA+1,R4       ;GET NEXT CHAR
1675  011716  120504                          CMPB    R5,R4           ;OK
1676  011720  001401                          BEQ     6$              ;
1677  011722  104002                          HLT     2               ;'31' NOT SECOND IN RX BUFFER
1678  011724  032737  004000  001236  6$:     BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
1679  011732  001016                          BNE     8$              ;#BR IF YES.
1680  011734  112705  000377                  MOVB    #377,R5         ;MARK=377 (NEXT CHAR)
1681
1682
1683  011740  143705  001244                  BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
1684  011744  113704  027562                  MOVB    RXBA+2,R4       ;GET FOUND
1685  011750  120504                          CMPB    R5,R4           ;OK
1686  011752  001401                          BEQ     7$              ;
1687  011754  104002                          HLT     2               ;EITHER TX NOT AT MARK (377, OR RX WRONG.
1688  011756  113704  027563          7$:     MOVB    RXBA+3,R4       ;NEXT CHAR
1689  011762  120504                          CMPB    R5,R4           ;
1690  011764  001401                          BEQ     8$              ;
1691  011766  104002                          HLT     2               ;IF ABOVE PASSED; RX WRONG!
1692  011770  104412                  8$:     MSTCLR                  ;INIT DV11
1693  011772  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
1694  011774  005200                          INC R0                  ;UPDATE LINE POINTER
1695  011776  005302                          DEC     R2              ;4 LINES DONE?
1696  012000  001220                          BNE     1$              ;BR IF NO
1697  012002  000207                          RTS     PC              ;EXIT FOR NEXT GROUP
1698
1699
1700                                          ;********************** TEST 5 ******************************
1701                                          ;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
1702                                          ;*TEST OF THE "INCLUDE IN BCC  YES/NO FUNCTION"
1703                                          ;*TEST THAT THE CHAR "031" IS INCLUDED
1704                                          ;*IN THE BCC WHEN AT:
1705                                          ;*LRC8
1706                                          ;*CRC16
1707                                          ;*CRC.CCITT
1708                                          ;*THE RECEIVER BCC STARTS AT 0 AND CALCULATES
1709                                          ;*ONLY ONE CHAR (31).
1710                                          ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
1711                                          ;:***********************************************************
1712
1713                                  ;  TEST 5
1714                                  ;---- ---------
```

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 1715  012004  012737  000005  001226  TST5:   MOV     #5,TSTNO
 1716  012012  012737  012512  001216          MOV     #TST6,NEXT
 1717  012020  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
 1718  012024  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
 1719  012032  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
 1720  012034  004737  012122                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
 1721  012040  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
 1722  012044  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
 1723  012052  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
 1724  012054  004737  012122                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
 1725  012060  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
 1726  012064  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
 1727  012072  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
 1728  012074  004737  012122                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
 1729  012100  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
 1730  012104  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
 1731  012112  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
 1732  012114  004737  012122                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
 1733  012120  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
 1734  012122                          105$:                           ;TEST ENTRANCE.
 1735  012122  012737  012156  001220          MOV     #1$,LOCK        ;SET FOR "LOCK ON LINE".
 1736  012130  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
 1737  012132  105037  023611                  CLRB    TXTAB+31        ;CLEAT CNTRL BYTE (TX)
 1738  012136  112737  000010  030211          MOVB    #BIT3,RXTAB+31  ;SET "INC/BCC" IN RX CNTRL B TE
 1739  012144  112737  000031  022560          MOVB    #31,TXBAP       ;SET TX DATA CHAR
 1740  012152  012702  000004                  MOV     #4,R2           ;4 LINE GROUP
 1741  012156                          1$:
 1742  012156  104412                  64$:    MSTCLR                  ;INIT DV11
 1743  012160  010077  167206                  MOV     R0,@DVSRS       ;LOAD LINE NO.
 1744  012164  004737  022224                  JSR     PC,DV11ON       ;GOSUB DV11ON
 1745  012170  004537  022120                  PERFORM ,SETREG         ;
 1746  012174     007     012                  .BYTE   007,012         ;RXBCC, LINE PROTOCOL
 1747  012176  000000                          0                       ;START BCC AT 0.
 1748  012200  000000                          0                       ;POLONOMINAL SELECT
 1749  012202  005277  167154                  INC     @DVSCR          ;SET MICRO CPU GO
 1750  012206  105777  167150          65$:    TSTB    @DVSCR          ;WAIT FOR
 1751  012212  100375                          BPL     65$             ;BIT 7 OF DVSCR=1
 1752  012214  112777  000007  167152          MOVB    #7,@DVSRSH      ;SEL RX BCC REG
 1753  012222  017704  167150                  MOV     @DVSRA,R4       ;READ BCC
 1754  012226  005037  022116                  CLR     CALBCC          ;SET SOFTWARE BCC=0
 1755  012232  012737  000200  022112          MOV     #LRC8,XPOLY     ;SET SOFTWARE POLONOMINAL
 1756  012240  004537  021740                  JSR     R5,SIMBCC       ;GO GET SOFTWARE BCC
 1757  012244  000010                          8.                      ;SHIFTS
 1758  012246  000031                          31                      ;DATA
 1759  012250  000000                          0                       ;PREVIOUS BCC
 1760  012252  013705  022116                  MOV     CALBCC,R5       ;GET SOFTWARE BCC
 1761  012256  020504                          CMP     R5,R4           ;SOFT=HARD?
 1762  012260  001401                          BEQ     .+4             ;
 1763  012262  104004                          HLT     4               ;RECEIVER BCC INCORRECT!
 1764  012264  104412                  66$:    MSTCLR                  ;INIT DV11
 1765  012266  010077  167100                  MOV     R0,@DVSRS       ;LOAD LINE NO.
 1766  012272  004737  022224                  JSR     PC,DV11ON       ;GOSUB DV11ON
 1767  012276  004537  022120                  PERFORM ,SETREG         ;
 1768  012302     007     012                  .BYTE   007,012         ;RXBCC, LINE PROTOCOL
 1769  012304  000000                          0                       ;START BCC AT 0.
 1770  012306  000010                          BIT3                    ;POLONOMINAL SELECT
```

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1771  012310  005277  167046          67$:  INC     @DVSCR          ;SET MICRO CPU GO
1772  012314  105777  167042                TSTB    @DVSCR          ;WAIT FOR
1773  012320  100375                       BPL     67$             ;BIT 7 OF DVSCR=1
1774  012322  112777  000007  167044       MOVB    #7,@DVSRSH      ;SEL RX BCC REG
1775  012330  017704  167042               MOV     @DVSRA,R4       ;READ BCC
1776  012334  005037  022116               CLR     CALBCC          ;SET SOFTWARE BCC=0
1777  012340  012737  120001  022112       MOV     #CRC16,XPOLY    ;SET SOFTWARE POLONOMINAL
1778  012346  004537  021740               JSR     R5,SIMBCC       ;GO GET SOFTWARE BCC
1779  012352  000010                       8.                      ;SHIFTS
1780  012354  000031                       31                      ;DATA
1781  012356  000000                       0                       ;PREVIOUS BCC
1782  012360  013705  022116               MOV     CALBCC,R5       ;GET SOFTWARE BCC
1783  012364  020504                       CMP     R5,R4           ;SOFT=HARD?
1784  012366  001401                       BEQ     .+4             ;
1785  012370  104004                       HLT     4               ;RECEIVER BCC INCORRECT!
1786  012372  104412          68$:  MSTCLR                          ;INIT DV11
1787  012374  010077  166772               MOV     R0,@DVSRS       ;LOAD LINE NO.
1788  012400  004737  022224               JSR     PC,DV11ON       ;GOSUB DV11ON
1789  012404  004537  022120               PERFORM ,SETREG         ;
1790  012410     007     012               .BYTE   007,012         ;RXBCC, LINE PROTOCOL
1791  012412  000000                       0                       ;START BCC AT 0.
1792  012414  000030                       BIT4+BIT3                       ;POLONOMINAL SELECT
1793  012416  005277  166740               INC     @DVSCR          ;SET MICRO CPU GO
1794  012422  105777  166734          69$:  TSTB    @DVSCR          ;WAIT FOR
1795  012426  100375                       BPL     69$             ;BIT 7 OF DVSCR=1
1796  012430  112777  000007  166736       MOVB    #7,@DVSRSH      ;SEL RX BCC REG
1797  012436  017704  166734               MOV     @DVSRA,R4       ;READ BCC
1798  012442  005037  022116               CLR     CALBCC          ;SET SOFTWARE BCC=0
1799  012446  012737  102010  022112       MOV     #CRC.CCITT,XPOLY        ;SET SOFTWARE POLONOMINAL
1800  012454  004537  021740               JSR     R5,SIMBCC       ;GO GET SOFTWARE BCC
1801  012460  000010                       8.                      ;SHIFTS
1802  012462  000031                       31                      ;DATA
1803  012464  000000                       0                       ;PREVIOUS BCC
1804  012466  013705  022116               MOV     CALBCC,R5       ;GET SOFTWARE BCC
1805  012472  020504                       CMP     R5,R4           ;SOFT=HARD?
1806  012474  001401                       BEQ     .+4             ;
1807  012476  104004                       HLT     4               ;RECEIVER BCC INCORRECT!
1808  012500  104401                       SCOP1                   ;LOCK ON SELECTED LINE^
1809  012502  005200                       INC     R0              ;UPDATE LINE NO. POINTER
1810  012504  005302                       DEC     R2              ;ALL LINES DONE?
1811  012506  001223                       BNE     1$              ;BR IF NO
1812  012510  000207                       RTS     PC              ;EXIT FOR NEXT GROUP
1813
1814
1815                                       ;************************ TEST 6 *******************************
1816                                       ;*TEST OF RECEIVER CONTROL BYTE OPERATIONS.
1817                                       ;*TEST OF THE "NEXT MODE" FUNCTION.
1818                                       ;*TEST THAT THE NEXT MODE REGISTER (015)
1819                                       ;*CAN BE LOADED FROM THE CONTROL BYTES.
1820                                       ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
1821                                       ;:***************************************************************
1822
1823                                 ;  TEST 6
1824                                 ;--------------
1825  012512  012737  000006  001226 TST6:  MOV     #6,TSTNO
1826  012520  012737  012772  001216       MOV     #TST7,NEXT
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1827  012526  012700  000000            MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1828  012532  013737  001416  001236    MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1829  012540  100402                    BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1830  012542  004737  012630            JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1831  012546  012700  000004    100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1832  012552  013737  001420  001236    MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1833  012560  100402                    BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1834  012562  004737  012630            JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1835  012566  012700  000010    101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1836  012572  013737  001422  001236    MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1837  012600  100402                    BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1838  012602  004737  012630            JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1839  012606  012700  000014    102$:   MOV     #12.,R0         ;LOAD LINE NO.
1840  012612  013737  001424  001236    MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1841  012620  100402                    BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1842  012622  004737  012630            JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1843  012626  104400            103$:   SCOPE                   ;SCOPE THIS TEST.
1844  012630                    105$:                           ;TEST ENTRANCE.
1845  012630  012737  012662  001220    MOV     #1$,LOCK        ;SET IF SW09=1
1846  012636  104413                    RAMCLR                  ;CLEAR ALL SEC REGISTERS
1847  012640  005003                    CLR     R3              ;SET EXPECT RESULTS OF MODE REGISTER
1848  012642  005001                    CLR     R1              ;SET CNTRL BYTE MODE
1849  012644  012702  000004            MOV     #4,R2           ;SET FOR4 LINE GROUP
1850  012650  012737  000031  022560    MOV     #31,TXBAP       ;LOAD TX DATA CHAR
1851  012656  105037  023611            CLRB    TXTAB+31        ;ZERO TX CNTRL BYTE
1852  012662  110137  030211    1$:     MOVB    R1,RXTAB+31     ;LOAD RX CNTRL BYTE (WITH MODE)
1853  012666  004737  022224            JSR     PC,DV11ON       ;GO SETUP ROUTINE THINGS (BA,BC,LS,LP)
1854  012672  004537  022120            PERFORM ,SETREG         ;ZERO
1855  012676     015     015            .BYTE   015,015         ;RECEIVER
1856  012700  000000                    0                       ;MODE
1857  012702  000000                    0                       ;REGISTER
1858  012704  005277  166452            INC     @DVSCR          ;SET MICRO CPU GO
1859  012710  105777  166446            TSTB    @DVSCR          ;WAIT FOR
1860  012714  100375                    BPL     .-4             ;DVSCR07=1
1861  012716  112777  000015  166450    MOVB    #15,@DVSRSH     ;SEL RX MODE REGISTER
1862  012724  017704  166446            MOV     @DVSRA,R4       ;READ MODE REGISTER
1863  012730  010305                    MOV     R3,R5           ;SET EXPECTED MODE
1864  012732  020504                    CMP     R5,R4           ;
1865  012734  001401                    BEQ     3$              ;
1866  012736  104002                    HLT     2               ;RX MODE REGISTER WRONG
1867  012740  104412            3$:     MSTCLR                  ;INIT DV11
1868  012742  005203                    INC     R3              ;UPDATE EXPECTED MODE
1869  012744  062701  000040            ADD     #BIT5,R1        ;UPDATE LOADED (NEXT) MODE
1870  012750  105701                    TSTB    R1              ;ALL DONE?
1871  012752  001743                    BEQ     1$              ;BR IF NO
1872  012754  005001                    CLR     R1              ;ZERO LOAD MODE
1873  012756  005003                    CLR     R3              ;ZERO EXPECTED MODE
1874  012760  104401                    SCOP1                   ;LOCK ON SELECTED LINE?
1875  012762  005200                    INC     R0              ;UPDATE LINE POINTER
1876  012764  005302                    DEC     R2              ;4 LINE GROUP DONE?
1877  012766  001335                    BNE     1$              ;BR IF NO
1878  012770  000207                    RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
1879
1880
1881                                    ;************************ TEST 7 *********************************
1882                                    ;*TEST OF TRANSMITTER CONTROL BYTE OPERATIONS.
```

```
1883                                            ;*TEST OF THE "SEND DLE NEXT" FUNCTION
1884                                            ;*THE "TRANSMITTER DLE REGISTER" IS LOADED
1885                                            ;*WITH CHAR "025". THE RECEIVER IS SET TO RECEIVE
1886                                            ;*ONE CHAR (THE DLE) SO RX BA S/B=25
1887                                            ;*THE TRANSMITTER DATA CHAR IS "031".
1888                                            ;:*****************************************************************
1889
1890                                    ;  TEST 7
1891                                    ;--------------
1892  012772  012737  000007  001226  TST7:  MOV     #7,TSTNO
1893  013000  012737  013244  001216          MOV     #TST10,NEXT
1894  013006  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1895  013012  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1896  013020  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1897  013022  004737  013110                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1898  013026  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1899  013032  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1900  013040  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1901  013042  004737  013110                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1902  013046  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1903  013052  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1904  013060  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1905  013062  004737  013110                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1906  013066  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
1907  013072  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1908  013100  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1909  013102  004737  013110                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1910  013106  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
1911  013110                          105$:                           ;TEST ENTRANCE.
1912  013110  012737  013144  001220          MOV     #1$,LOCK        ;SET IF SW09=1
1913  013116  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
1914  013120  112737  000002  023611          MOVB    #BIT1,TXTAB+31  ;SET "SND/DLE" IN CNTRL BYTE
1915  013126  112737  000031  022560          MOVB    #31,TXBAP       ;SET TX DATA CHAR
1916  013134  105037  030211                  CLRB    RXTAB+31        ;ZERO RX CNTRL BYTE
1917  013140  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
1918  013144  004737  022224          1$:     JSR     PC,DV11ON       ;SET ROUTINE THING
1919  013150  004537  022120                  PERFORM ,SETREG
1920  013154     012     012                  .BYTE   012,012         ;LINE PROTOCOL REG
1921  013156  012400                          25*400                  ;PUT 25
1922  013160  012400                          25*400                  ;IN HIGH BYTE
1923  013162  005037  027560                  CLR     RXBA            ;ZERO RX BUFFER
1924  013166  005277  166170                  INC     @DVSCR          ;SET MICRO CPU GO
1925  013172  105777  166164                  TSTB    @DVSCR          ;WAIT FOR
1926  013176  100375                          BPL     .-4             ;DVSCR07=1
1927  013200  013704  027560                  MOV     RXBA,R4         ;GET DATA
1928  013204  012705  000025                  MOV     #25,R5          ;LOAD DLE INTO EXPECTED
1929  013210  020504                          CMP     R5,R4           ;
1930  013212  001401                          BEQ     2$              ;
1931  013214  104003                          HLT     3               ;25 (DLE) NOT 1ST IN RX BUFFER
1932  013216  104412                  2$:     MSTCLR                  ;INIT DV11
1933  013220  112777  000012  166146          MOVB    #12,@DVSRSH     ;SEL LINE PROTOCOL
1934  013226  005077  166144                  CLR     @DVSRA          ;ZERO IT.
1935  013232  104401                          SCOP1                   ;LOCK ON SELECTED LINE?
1936  013234  005200                          INC     R0              ;UPDATE LINE POINTER
1937  013236  005302                          DEC     R2              ;4 LINE GROUP DONE?
1938  013240  001341                          BNE     1$              ;BR IF NO
```

```
1939  013242  000207                          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
1940
1941
1942                                          ;************************ TEST 10 *********************************
1943                                          ;*TEST OF BOTH BITS 6 AND 5  OF THE LINE PROTOCOL REG.
1944                                          ;*TEST THAT NEITHER THE TRANSMITTER OR RECEIVER
1945                                          ;*CONTROL BYTES ARE USED AND THAT
1946                                          ;*THE CHARS ARE AUTOMATICALLY INCLUDED INTO THE BCC.
1947                                          ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
1948                                          ;:*************************************************************
1949
1950                                  ;  TEST 10
1951                                  ;--------------
1952  013244  012737  000010  001226  TST10:  MOV     #10,TSTNO
1953  013252  012737  013554  001216          MOV     #TST11,NEXT
1954  013260  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
1955  013264  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
1956  013272  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
1957  013274  004737  013362                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
1958  013300  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
1959  013304  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
1960  013312  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
1961  013314  004737  013362                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
1962  013320  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
1963  013324  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
1964  013332  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
1965  013334  004737  013362                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
1966  013340  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
1967  013344  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
1968  013352  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
1969  013354  004737  013362                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
1970  013360  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
1971  013362                          105$:                           ;TEST ENTRANCE.
1972  013362  012737  013412  001220          MOV     #1$,LOCK        ;SET RETURN IF SW09=1
1973  013370  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
1974  013372  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
1975  013376  112737  000340  023575          MOVB    #BIT7+BIT6+BIT5,TXTAB+15
1976  013404  113737  023575  030175          MOVB    TXTAB+15,RXTAB+15       ;SET RX AND TX NEXT MODE=7
1977  013412  004737  022224          1$:     JSR     PC,DV11ON       ;SET UP MINOR DETAILS
1978  013416  112777  000012  165750          MOVB    #12,@DVSRSH     ;GET LINE PROTOCOL REGISTER
1979  013424  052777  000140  165744          BIS     #BIT6+BIT5,@DVSRA       ;SET TX AND RX DDCMP MODE
1980  013432  112737  000015  022560          MOVB    #15,TXBAP       ;LOAD DATA CHAR
1981  013440  005277  165716                  INC     @DVSCR          ;SET MICRO CPU GO
1982  013444  105777  165712                  TSTB    @DVSCR          ;WAIT FOR
1983  013450  100375                          BPL     .-4             ;DVSCR07=1
1984  013452  005005                          CLR     R5              ;EXPECTED=0
1985  013454  112777  000014  165712          MOVB    #14,@DVSRSH     ;GET TX MODE REG
1986  013462  017704  165710                  MOV     @DVSRA,R4       ;READ MODE REG
1987  013466  001401                          BEQ     .+4             ;S/B=0
1988  013470  104001                          HLT     1               ;TX MODE REG S/B=0
1989  013472  105277  165676                  INCB    @DVSRSH         ;GET RX MODE REG
1990  013476  017704  165674                  MOV     @DVSRA,R4       ;READ RX MODE
1991  013502  001401                          BEQ     3$              ;
1992  013504  104001                          HLT     1               ;RX MODE REG S/B=0
1993  013506  112777  000006  165660  3$:     MOVB    #6,@DVSRSH      ;TX BCC REG.
1994  013514  017704  165656                  MOV     @DVSRA,R4       ;READ TXBCC REG.
```

```
1995  013520  001001                        BNE     4$              ;S/B NOT=0
1996  013522  104000                        HLT     0               ;NOTHING IN BCC!! (TX)
1997  013524  105277  165644          4$:   INCB    @DVSRSH         ;GET RX BCC REG
1998  013530  017704  165642                MOV     @DVSRA,R4       ;READ INTO R4
1999  013534  001001                        BNE     5$              ;
2000  013536  104000                        HLT     0               ;NOTHING IN RXBCC!!
2001  013540  104412                  5$:   MSTCLR                  ;INIT DV11
2002  013542  104401                        SCOPI                   ;LOCK ON SELECTED LINE?
2003  013544  005200                        INC     R0              ;UPDATE LINE POINTER
2004  013546  005302                        DEC     R2              ;4 LINES DONE?
2005  013550  001320                        BNE     1$              ;BR IF NO
2006  013552  000207                        RTS     PC              ;EXIT FOR NEXT 4 LINE GROUP
2007
2008
2009                                        ;************************ TEST 11 *********************************
2010                                        ;*TEST OF BIT 1 IN LINE PROTOCOL PARAMETER REGISTER.
2011                                        ;*TEST OF "STRIP LEADING SYNCS".
2012                                        ;*TEST TO XMIT 10. SYNC CHARS, 1 NON-SYNC, AND 2 SYNCS
2013                                        ;*[13 CHARS TOTAL].
2014                                        ;*DV11 SHOULD RECEIVE 1 NON-SYNC,AND TWO SYNCS.
2015                                        ;*[ 3 CHARS TOTAL].
2016                                        ;*THE TEN LEADING SYNCS S/B STRIPPED
2017                                        ;*THIS TEST IS DONE FOR SYNC LINE CARDS ONLY.
2018                                        ;:*************************************************************************
2019
2020                                  ;  TEST 11
2021                                  ;--------------
2022  013554  012737  000011  001226  TST11:  MOV     #11,TSTNO
2023  013562  012737  014166  001216          MOV     #TST12,NEXT
2024  013570  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2025  013574  113737  001406  001244          MOVB    MASK.A,MASKX    ;PLACE "MASK"FOR CHARS INTO MASKX
2026  013602  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2027  013610  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2028  013612  004737  013722                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2029  013616  012700  000004            100$: MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2030  013622  113737  001407  001244          MOVB    MASK.B,MASKX    ;GET MASK
2031  013630  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2032  013636  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2033  013640  004737  013722                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2034  013644  012700  000010            101$: MOV     #8.,R0          ;LOAD LINE NUMBER
2035  013650  113737  001410  001244          MOVB    MASK.C,MASKX    ;GET MASK
2036  013656  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2037  013664  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2038  013666  004737  013722                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2039  013672  012700  000014            102$: MOV     #12.,R0         ;LOAD LINE NO.
2040  013676  113737  001411  001244          MOVB    MASK.D,MASKX    ;GET MASKK
2041  013704  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2042  013712  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2043  013714  004737  013722                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2044  013720  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2045  013722                          105$:                           ;TEST ENTRANCE.
2046  013722  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2047  013730  001401                          BEQ     .+4             ;#BR IF NOT ASYNC LINE CARD.
2048  013732  000207                          RTS     PC              ;#EXIT TEST. (ASYNC LINE CARD NOT TESTED)
2049  013734  012737  014004  001220          MOV     #2$,LOCK        ;SET RETURN IF SW09=1
2050  013742  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
```

```
2051  013744  012702  000004                    MOV     #4,R2           ;4 LINE GROUP
2052  013750  012704  000010                    MOV     #8.,R4          ;LOAD TX BUFFER
2053  013754  012705  022560                    MOV     #TXBAP,R5       ;WITH
2054  013760  113725  001236          1$:       MOVB    STAT,(R5)+      ;8. SYNC
2055  013764  005304                            DEC     R4              ;CHARS
2056  013766  001374                            BNE     1$              ;
2057  013770  112725  000005                    MOVB    #5,(R5)+        ;LOAD "NON-SYNC" CHAR
2058  013774  113725  001236                    MOVB    STAT,(R5)+      ;SYNC
2059  014000  113725  001236                    MOVB    STAT,(R5)+      ;SYNC
2060  014004  004737  022224          2$:       JSR     PC,DV11ON       ;MINOR DETAIL SETUP
2061  014010  005037  027560                    CLR     RXBA            ;CLEAR
2062  014014  005037  027562                    CLR     RXBA+2          ;RX BUFFER
2063  014020  004537  022120                    PERFORM ,SETREG         ;
2064  014024     001     005                    .BYTE   001,005         ;TX PRINCIPLE BC, RX BC
2065  014026  177763                            -13.
2066  014030  177775                            -3
2067  014032  112777  000012  165334            MOVB    #12,@DVSRSH     ;LINE PROTOCOL REG
2068  014040  012777  000143  165330            MOV     #BIT6+BIT5+BIT1+BIT0,@DVSRA
2069  014046  005277  165310                    INC     @DVSCR          ;LP=TX+RX DDCMP, STRIP SYNC, IDLE MARK
2070  014052  105777  165304                    TSTB    @DVSCR          ;WAIT FOR
2071  014056  100375                            BPL     .-4             ;DVSCR07=1
2072  014060  012705  000005                    MOV     #5,R5           ;1ST DATA S/B=15
2073  014064  113704  027560                    MOVB    RXBA,R4         ;GET DATA
2074  014070  042704  177400                    BIC     #^C<377>,R4     ;STRIP HIGH BYTE
2075  014074  020504                            CMP     R5,R4           ;OK
2076  014076  001401                            BEQ     3$              ;
2077  014100  104001                            HLT     1               ;1ST CHAR NOT=15
2078  014102  113705  001236          3$:       MOVB    STAT,R5         ;LOAD SYNC INTO EXPECTED
2079  014106  042705  177400                    BIC     #^C<377>,R5     ;STRIP HIGH BYTE
2080  014112  143705  001244                    BICB    MASKX,R5        ;CLEAR BITS/PER/CHAR MASK.
2081  014116  113704  027561                    MOVB    RXBA+1,R4       ;GET 2ND CHAR
2082  014122  042704  177400                    BIC     #^C<377>,R4     ;STRIP HIGH BYTE
2083  014126  020504                            CMP     R5,R4           ;WERE *ONLY* LOADING SYNC STRIPPED?
2084  014130  001401                            BEQ     4$              ;
2085  014132  104001                            HLT     1               ;JUST *LEADING* SYNCS ARE TO BE STRIPPED
2086  014134  113704  027562          4$:       MOVB    RXBA+2,R4       ;GET 3RD CHAR
2087  014140  042704  177400                    BIC     #^C<377>,R4     ;STRIP HIGH BYTE
2088  014144  020504                            CMP     R5,R4           ;OK?
2089  014146  001401                            BEQ     5$              ;
2090  014150  104001                            HLT     1               ;JUST *LEADING* SYNCS ARE TO BE STRIPPED
2091  014152  104412                5$:         MSTCLR                  ;INIT DV11
2092  014154  104401                            SCOPI                   ;LOCK ON SELECTED LINES?
2093  014156  005200                            INC     R0              ;UPDATE LINE POINTER
2094  014160  005302                            DEC     R2              ;4 LINE GROUP DONE?
2095  014162  001310                            BNE     2$              ;BR IF NO
2096  014164  000207                            RTS     PC              ;EXIT FOR NEXT GROUP
2097
2098
2099                                    ;************************* TEST 12 *********************************
2100                                    ;*TEST OF BIT08 OF DVSCR.
2101                                    ;*TEST OF "RECEIVER INTERUPT RESPONSE COMPLETE"
2102                                    ;*TEST TO RECEIVE 6 CHARS INTERUPTING
2103                                    ;*ON EACH CHAR HAVING IT BEING A "SPECIAL CHAR"
2104                                    ;*AND THE RESTARTING THE MICRO PROCESSOR AFTER EACH
2105                                    ;*INTERUPT FLAG.
2106                                    ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
```

DV11 DEVICE DIAGNOSTICS.

```
                                                ;;*****************************************************************
                                                ;
                                                ;  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$:   MOV     #8.,R0          ;LOAD LINE NUMBER
014246  013737  001422  001236         MOV     L08.11,STAT     ;LOAD LINE CARD STATUS IT 0 STAT
014254  100402                         BMI     102$            ;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$:   MOV     #12.,R0         ;LOAD LINE NO.
014266  013737  0C1424  001236         MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
014274  100402                         BMI     103$            ;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$:    JSR     PC,DV11ON       ;SET UP DV11
014366  004537  022120                 PERFORM  SETREG         ;
014372     001     005                 .BYTE   001,005         ;TX PRINCIPLE BC, RX BC
014374  177770                         -8.                     ;
014376  177772                         -6                      ;
014400  112777  000012  164766         MOVB    #12,@DVSRSH     ;LINE PROTOCOL
014406  052777  000100  164762         BIS     #BIT6,@DVSRA    ;TX DDCMP
014414  012737  000340  177776         MOV     #340,PS         ;LOCK OUT INTERUPTS
014422  012777  014472  164722         MOV     #67$,@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
```

```
2163  014464  001372                          BNE     .-12            ;BR  BACK
2164  014466  104000                          HLT                     ;NO INTERUPT OCCURED.
2165  014470  024646                          CMP     -(SP),-(SP)     ;FAKE AN INTERUPT
2166  014472  010005                  67$:    MOV     R0,R5           ;LOAD LINE NO.
2167  014474  000305                          SWAB    R5              ;PUT IN HIGH BYTE
2168  014476  050305                          BIS     R3,R5           ;SET DATA
2169  014500  017704  164662                  MOV     @DVRIC,R4       ;READ FOUND RESULT
2170  014504  020504                          CMP     R5,R4           ;
2171  014506  001401                          BEQ     4$              ;
2172  014510  104001                          HLT     1               ;DVRIC WRONG!
2173  014512  052777  000400  164642  4$:     BIS     #BIT8,@DVSCR    ;SET "RECEIVER INT RESP COMP"
2174  014520  005203                          INC     R3              ;UPDATE DATA IMAGE
2175  014522  022703  000006                  CMP     #6,R3           ;ALL DONE?
2176  014526  001403                          BEQ     70$             ;BR IF YES
2177  014530  012716  014446                  MOV     #3$,(SP)        ;SET RETURN
2178  014534  000002                          RTI                     ;CONTINUE
2179  014536  042777  000100  164616  70$:    BIC     #BIT6,@DVSCR    ;NO MORE INTERUPTS.
2180  014544  012716  014552                  MOV     #68$,(SP)       ;SET RETURN
2181  014550  000002                          RTI                     ;CONT.
2182  014552  105777  164604          68$:    TSTB    @DVSCR          ;WAIT FOR
2183  014556  100375                          BPL     .-4             ;DVSCR07=1
2184  014560  010005                          MOV     R0,R5           ;LOAD LINE NO.
2185  014562  000305                          SWAB    R5              ;PUT IN HIGH BYTE
2186  014564  052705  040005                  BIS     #BIT14+5,R5     ;"BYTE CNT WARNING + DATA"
2187  014570  017704  164572                  MOV     @DVRIC,R4       ;READ RESULTS
2188  014574  020504                          CMP     R5,R4           ;
2189  014576  001401                          BEQ     5$              ;
2190  014600  104001                          HLT     1               ;DVRIC WRONG!
2191  014602  012701  027560          5$:     MOV     #RXBA,R1        ;GET RX POINTER
2192  014606  005005                          CLR     R5              ;
2193  014610  005004                          CLR     R4              ;
2194  014612  112104                  6$:     MOVB    (R1)+,R4        ;GET RX DATA (INCORE)
2195  014614  020504                          CMP     R5,R4           ;
2196  014616  001401                          BEQ     7$              ;
2197  014620  104001                          HLT     1               ;RECEIVER PLACED DATA IN CORE WRONG
2198  014622  005205                  7$:     INC     R5              ;UPDATE DATA IMAGE
2199  014624  022705  000006                  CMP     #6,R5           ;ALL DONE?
2200  014630  001370                          BNE     6$              ;BR IF NO
2201  014632  104412                          MSTCLR                  ;INIT DV11
2202  014634  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
2203  014636  005200                          INC     R0              ;UPDATE LINE POINTER
2204  014640  005302                          DEC     R2              ;4 LINE GROUP DONE?
2205  014642  001247                          BNE     66$             ;BR IF NO
2206  014644  000207                          RTS     PC              ;EXIT FOR NEXT GROUP OF LINES
2207  014646  000000                  69$:    0
2208
2209
2210                                          ;************************ TEST 13 *********************************
2211                                          ;*TEST OF THE "MARKED BYTE COUNT".
2212                                          ;*TEST THAT WHEN BIT15=0 FOR THE RECEIVER THAT
2213                                          ;*BITS 13,14,15 OF LINE STATE OCCUR IN
2214                                          ;*THE RECEIVER MODE BITS REGISTER.
2215                                          ;*TEST THAT WHEN BIT15=0 FOR THE TRANSMITTER
2216                                          ;*THAT BITS 13,14,15 OF THE LINE PROGRESS REGISTER
2217                                          ;*OCCUR INT THE TRANSMITTER MODE REG.
2218                                          ;*ALSO VERIFY THAT BIT10=1 IN LINE STATE MAKES
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                                        ;*RECEIVER "EXPECT THE BCC"
                                        ;*AND THAT BIT10 IN LINE PROGRESS TELL TX TO SEND BCC.
                                        ;*THIS TEST USES CRC-CCIIT 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
```

```
2275  015112  001374                        BNE     3$              ;WITH "INC/BCC"
2276  015114  010077  164252        65$:    MOV     R0,@DVSRS       ;LOAD LINE NO.
2277  015120  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2278  015126  001406                        BEQ     80$             ;#BR IF NOT ASYNC.
2279  015130  004537  022120                PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2280  015134     000     001                .BYTE   000,001         ;#REGISTERS
2281  015136  022560                        TXBAP                   ;#LOAD FOR ASYNC
2282  015140  077766                        <-10.>-BIT15                    ;#LOAD FOR ASYNC
2283  015142  000405                        BR      81$             ;#CONTINUE TEST
2284  015144  004537  022120        80$:    PERFORM ,SETREG         ;
2285  015150     000     001                .BYTE   000,001         ;TX PRINCIPLE BA, BC
2286  015152  022556                        SYNC                    ;
2287  015154  077764                        <-12.>-BIT15            ;MARKED BC!
2288  015156  004537  022120        81$:    PERFORM ,SETREG         ;
2289  015162     004     005                .BYTE   004,005         ;RX BA, BC
2290  015164  027560                        RXBA                    ;
2291  015166  077766                        <-10.>-BIT15            ;MARKED BC!
2292  015170  004537  022120                PERFORM ,SETREG         ;
2293  015174     010     011                .BYTE   010,011         ;TX TABLE, RX TABLE
2294  015176  023560                        TXTAB
2295  015200  030160                        RXTAB
2296  015202  004537  022120                PERFORM ,SETREG
2297  015206     012     013                .BYTE   012,013         ;LINE PROTOCOL, LINE STATE
2298  015210  000031                        BIT4+BIT3+BIT0  ;CRC.CCITT, IDLE MARK
2299  015212  162004                        BIT15+BIT14+BIT13+BIT10+BIT2
2300  015214  004537  022120                PERFORM ,SETREG         ;MODE 7,  TXGO
2301  015220     016     017                .BYTE   016,017         ;LINE PROGRESS REC, REC CNTR STORE
2302  015222  162000                        BIT15+BIT14+BIT13+BIT10 ;NEXT MODE=7
2303  015224  000000                        0                       ;ZERO
2304  015226  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
2305  015234  001412                        BEQ     60$             ;#BR IF NO.
2306  015236  004537  022164                PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
2307  015242  020000                        BIT13                   ;#RECEIVER ENABLE
2308  015244  004537  022164                PERFORM ,LOAD.MODE      ;#
2309  015250  015000                        <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
2310  015252  004537  022164                PERFORM ,LOAD.MODE      ;#
2311  015256  072000                        <BIT14+BIT13+BIT12>+BIT10
2312                                                                ;#9600 BAUD.
2313  015260  000405                        BR      61$
2314  015262  004537  022164        60$:    PERFORM ,LOAD.MODE      ;LOAD
2315  015266  034000                        BIT13+BIT12+BIT11       ;MODE AND RECV ENABLE
2316  015270  004537  021706                PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
2317  015274  005277  164062        61$:    INC     @DVSCR          ;SET MICRO CPU GO
2318  015300  105777  164056                TSTB    @DVSCR          ;WAIT FOR
2319  015304  100375                        BPL     .-4             ;DVSCR07=1
2320  015306  017704  164054                MOV     @DVRIC,R4       ;READ RESULT
2321  015312  010005                        MOV     R0,R5           ;LOAD LINE NUMBER
2322  015314  000305                        SWAB    R5              ;PUT IN HIGH BYTE
2323  015316  052705  050000                BIS     #BIT14+BIT12,R5 ;SET "BLOCK CHECK COMPLETE"
2324  015322  020504                        CMP     R5,R4           ;RIC OK
2325  015324  001401                        BEQ     4$              ;
2326  015326  104001                        HLT     1               ;DVRIC INCORRECT
2327  015330  112777  000014  164036  4$:    MOVB    #14,@DVSRSH     ;GET TX MODE REGISTER
2328  015336  017704  164034                MOV     @DVSRA,R4       ;
2329  015342  012705  000007                MOV     #BIT2+BIT1+BIT0,R5      ;WAS NEXT MODE PICKED UP?
2330  015346  020504                        CMP     R5,R4           ;
```

```
                                        BEQ     5$                      ;
                                        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$:     RAMCLR                          ;CLEAR ALL SEC REG
015430  104401                          SCOP1                           ;LOCK ON CURRENT LINE?
015432  005200                          INC     R0                      ;UPDATE LINE POINTER
015434  005302                          DEC     R2                      ;4 LINE GROUP DONE?
015436  001226                          BNE     65$                     ;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.
```

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2387  015542  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2388  015550  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2389  015552  004737  015560                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2390  015556  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2391  015560                          105$:                           ;TEST ENTRANCE.
2392  015560  012737  015674  001220          MOV     #65$,LOCK       ;SET RETURN IF SW09=1
2393  015566  104413                          RAMCLR                  ;CLEAR ALL SECONDARY REGISTERS
2394  015570  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
2395  015574  012704  000012                  MOV     #10.,R4         ;LOAD 10 BYTES
2396  015600  012705  023560                  MOV     #TXTAB,R5       ;WITH
2397  015604  112725  000010          1$:     MOVB    #BIT3,(R5)+     ;INC/BCC
2398  015610  005304                          DEC     R4              ;
2399  015612  001374                          BNE     1$              ;
2400  015614  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
2401  015620  013704  001236                  MOV     STAT,R4         ;SYNC
2402  015624  042704  177400                  BIC     #^C<377>,R4     ;CONTROL
2403  015630  060405                          ADD     R4,R5           ;BYTE
2404  015632  105015                          CLRB    (R5)            ;
2405  015634  012705  022560                  MOV     #TXBAP,R5       ;LOAD
2406  015640  005004                          CLR     R4              ;DATA
2407  015642  110425                  2$:     MOVB    R4,(R5)+        ;INTO
2408  015644  005204                          INC     R4              ;TRANSMITTER BUFFER
2409  015646  022704  000013                  CMP     #11.,R4         ;
2410  015652  001373                          BNE     2$              ;
2411  015654  012705  030160                  MOV     #RXTAB,R5       ;LOAD
2412  015660  012704  000012                  MOV     #10.,R4         ;10
2413  015664  112725  000010          3$:     MOVB    #BIT3,(R5)+     ;RECEIVER
2414  015670  005304                          DEC     R4              ;CONTROL BYTES
2415  015672  001374                          BNE     3$              ;WITH "INC/BCC"
2416  015674  010077  163472          65$:    MOV     R0,@DVSRS       ;LOAD LINE NO.
2417  015700  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2418  015706  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
2419  015710  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2420  015714     000     001                  .BYTE   000,001         ;#REGISTERS
2421  015716  022560                  .       TXBAP                   ;#LOAD FOR ASYNC
2422  015720  077766                          <-10.>-BIT15                    ;#LOAD FOR ASYNC
2423  015722  000405                          BR      81$             ;#CONTINUE TEST
2424  015724  004537  022120          80$:    PERFORM ,SETREG         ;
2425  015730     000     001                  .BYTE   000,001         ;TX PRINCIPLE BA, BC
2426  015732  022556                          SYNC                    ;
2427  015734  077764                          <-12.>-BIT15            ;MARKED BC!
2428  015736  004537  022120          81$:    PERFORM ,SETREG         ;
2429  015742     004     005                  .BYTE   004,005         ;RX BA, BC
2430  015744  027560                          RXBA                    ;
2431  015746  077766                          <-10.>-BIT15            ;MARKED BC!
2432  015750  004537  022120                  PERFORM ,SETREG         ;
2433  015754     010     011                  .BYTE   010,011         ;TX TABLE, RX TABLE
2434  015756  023560                          TXTAB                   ;
2435  015760  030160                          RXTAB                   ;
2436  015762  004537  022120                  PERFORM ,SETREG         ;
2437  015766     012     013                  .BYTE   012,013         ;LINE PROTOCOL, LINE STATE
2438  015770  000001                          BIT0            ;LRCC, IDLE MARK
2439  015772  162004                          BIT15+BIT14+BIT13+BIT10+BIT2
2440  015774  004537  022120                  PERFORM ,SETREG         ;MODE 7, , TXGO
2441  016000     016     017                  .BYTE   016,017         ;LINE PROGRESS REC, REC CNTR STORE
2442  016002  162000                          BIT15+BIT14+BIT13+BIT10 ;NEXT MODE=7
```

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2443  016004  000000                          0                       ;ZERO
2444  016006  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
2445  016014  001412                          BEQ     60$             ;#BR IF NO
2446  016016  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
2447  016022  020000                          BIT13                   ;#RECEIVER ENABLE
2448  016024  004537  022164                  PERFORM ,LOAD.MODE      ;#
2449  016030  015000                          (BIT12+BIT11)+BIT9      ;#8 BITS/PER/CHAR
2450  016032  004537  022164                  PERFORM ,LOAD.MODE      ;#
2451  016036  072000                          (BIT14+BIT13+BIT12)+BIT10
2452                                                                  ;#9600 BAUD.
2453  016040  000405                          BR      61$
2454  016042  004537  022164          60$.    PERFORM ,LOAD.MODE      ;LOAD
2455  016046  034000                          BIT13+BIT12+BIT11       ;MODE AND RECV ENABLE
2456  016050  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
2457  016054  005277  163302          61$:    INC     @DVSCR          ;SET MICRO CPU GO
2458  016060  105777  163276                  TSTB    @DVSCR          ;WAIT FOR
2459  016064  100375                          BPL     .-4             ;DVSCR07=1
2460  016066  017704  163274                  MOV     @DVRIC,R4       ;READ RESULT
2461  016072  010005                          MOV     R0,R5           ;LOAD LINE NUMBER
2462  016074  000305                          SWAB    R5              ;PUT IN HIGH BYTE
2463  016076  052705  050000                  BIS     #BIT14+BIT12,R5 ;SET "BLOCK CHECK COMPLETE"
2464  016102  020504                          CMP     R5,R4           ;RIC OK
2465  016104  001401                          BEQ     4$              ;
2466  016106  104001                          HLT     1               ;DVRIC INCORRECT
2467  016110  112777  000014  163256  4$:     MOVB    #14,@DVSRSH     ;GET TX MODE REGISTER
2468  016116  017704  163254                  MOV     @DVSRA,R4       ;
2469  016122  012705  000007                  MOV     #BIT2+BIT1+BIT0,R5      ;WAS NEXT MODE PICKED UP?
2470  016126  020504                          CMP     R5,R4           ;
2471  016130  001401                          BEQ     5$              ;
2472  016132  104001                          HLT     1               ;NEXT MODE INCORRECT/ S/B=7
2473  016134  105277  163234          5$:     INCB    @DVSRSH         ;SEL RX MODE REG
2474  016140  017704  163232                  MOV     @DVSRA,R4       ;READ
2475  016144  020504                          CMP     R5,R4           ;
2476  016146  001401                          BEQ     6$              ;
2477  016150  104001                          HLT     1               ;RX MODE REGISTER INCORRECT. S/B=7
2478  016152  005005                  6$:     CLR     R5              ;SET EXPECTED=0
2479  016154  112777  000006  163212          MOVB    #6,@DVSRSH      ;SEL TX BCC REG
2480  016162  017704  163210                  MOV     @DVSRA,R4       ;READ
2481  016166  001401                          BEQ     7$              ;BR IF=0
2482  016170  104001                          HLT     1               ;IF BCC WAS SENT; BCC S/B=0
2483  016172  105277  163176          7$:     INCB    @DVSRSH         ;SEL RX BCC REG
2484  016176  017704  163174                  MOV     @DVSRA,R4       ;READ IT
2485  016202  001401                          BEQ     8$              ;
2486  016204  104001                          HLT     1               ;IF RX RECVED GOOD BCC; BCC S B=0
2487  016206  104413                  8$:     RAMCLR                  ;CLEAR ALL SEC REG
2488  016210  104401                          SCOPI                   ;LOCK ON CURRENT LINE?
2489  016212  005200                          INC     R0              ;UPDATE LINE POINTER
2490  016214  005302                          DEC     R2              ;4 LINE GROUP DONE?
2491  016216  001226                          BNE     65$             ;BR IF NO
2492  016220  000207                          RTS     PC              ;EXIT FOR NEXT 4 LINE GROUP
2493
2494
2495                                          ;************************ TEST 15 *******************************
2496                                          ;*TEST OF RECIEVER AND TRANSMITTER MODE BITS.
2497                                          ;*TEST TO TRANSMIT AND RECEIVE
2498                                          ;*A DIFFERENT CHAR FROM EACH
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```
                                        ;*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
```

```
2555  016410  113705  001236                  MOVB    STAT,R5         ;CLEAR
2556  016414  042705  177400                  BIC     #^C<377>,R5     ;SYNC
2557  016420  012704  023560                  MOV     #TXTAB,R4       ;ENTRY
2558  016424  060504                          ADD     R5,R4           ;IN
2559  016426  105014                          CLRB    (R4)            ;CONTROL TABLE
2560  016430  112737  000040  023575          MOVB    #BIT5,TXTAB+15
2561  016436  112737  000100  024176          MOVB    #BIT6,TXTAB+BIT8+16
2562  016444  112737  000140  024601          MOVB    #BIT6+BIT5,TXTAB+BIT9+21
2563  016452  112737  000200  025203          MOVB    #BIT7,TXTAB+BIT9+BIT8+23
2564  016460  112737  000240  025605          MOVB    #BIT7+BIT5,TXTAB+BIT10+25
2565  016466  112737  000300  026167          MOVB    #BIT7+BIT6,TXTAB+BIT10+BIT8+7
2566  016474  112737  000340  026614          MOVB    #BIT7+BIT6+BIT5,TXTAB+BIT10+BIT9+34
2567  016502  112737  000340  027212          MOVB    #BIT7+BIT6+BIT5,TXTAB+BIT10+BIT9+BIT8+32
2568  016510  112737  000340  027216          MOVB    #BIT7+BIT6+BIT5,TXTAB+BIT10+BIT9+BIT8+36
2569
2570  016516  112737  000040  030175          MOVB    #BIT5,RXTAB+15
2571  016524  112737  000100  030576          MOVB    #BIT6,RXTAB+BIT8+16
2572  016532  112737  000140  031201          MOVB    #BIT6+BIT5,RXTAB+BIT9+21
2573  016540  112737  000200  031603          MOVB    #BIT7,RXTAB+BIT9+BIT8+23
2574  016546  112737  000240  032205          MOVB    #BIT7+BIT5,RXTAB+BIT10+25
2575  016554  112737  000300  032567          MOVB    #BIT7+BIT6,RXTAB+BIT10+BIT8+7
2576  016562  112737  000340  033214          MOVB    #BIT7+BIT6+BIT5,RXTAB+BIT10+BIT9+34
2577  016570  112737  000340  033612          MOVB    #BIT7+BIT6+BIT5,RXTAB+BIT10+BIT9+BIT8+32
2578  016576  112737  000340  033616          MOVB    #BIT7+BIT6+BIT5,RXTAB+BIT10+BIT9+BIT8+36
2579  016604  012705  027560          12$:    MOV     #RXBA,R5        ;SET RX POINTER
2580  016610  005025                          CLR     (R5)+           ;Z
2581  016612  005025                          CLR     (R5)+           ; E
2582  016614  005025                          CLR     (R5)+           ;  R
2583  016616  005025                          CLR     (R5)+           ;   O
2584  016620  005025                          CLR     (R5)+           ;BUFFER!
2585  016622  012705  022560                  MOV     #TXBAP,R5       ;L
2586  016626  012725                          MOV     (PC)+,(R5)+     ; O
2587  016630      015      016                .BYTE   15,16           ;  A
2588  016632  012725                          MOV     (PC)+,(R5)+     ;   D
2589  016634      021      023                .BYTE   21,23           ;T
2590  016636  012725                          MOV     (PC)+,(R5)+     ; R
2591  016640      025      007                .BYTE   25,7            ;  A
2592  016642  012725                          MOV     (PC)+,(R5)+     ;   N
2593  016644      034      032                .BYTE   34,32           ;    S
2594  016646  112725  000036                  MOVB    #36.,(R5)+      ;BUFFER
2595  016652  010077  162514                  MOV     R0,@DVSR5       ;LOAD LINE NO.
2596  016656  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2597  016664  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
2598  016666  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2599  016672      000      001                .BYTE   000,001         ;#REGISTERS
2600  016674  022560                          TXBAP                   ;#LOAD FOR ASYNC
2601  016676  177767                          -9.                     ;#LOAD FOR ASYNC
2602  016700  000405                          BR      81$             ;#CONTINUE TEST
2603  016702  004537  022120          80$:    PERFORM ,SETREG         ;
2604  016706      000      001                .BYTE   000,001         ;PRINCIPLE BA, BC
2605  016710  022556                          SYNC                    ;
2606  016712  177765                          -11.                    ;
2607  016714  004537  022120          81$:    PERFORM ,SETREG         ;
2608  016720      004      005                .BYTE   004,005         ;RX BA, BC
2609  016722  027560                          RXBA            ;       ;
2610  016724  177767                          -9.                     ;
```

```
2611  016726  004537  022120                    PERFORM ,SETREG          ;
2612  016732     010     011                    .BYTE   010,011          ;TX TABLE, RX TAB
2613  016734  023560                            TXTAB                    ;
2614  016736  030160                            RXTAB                    ;
2615  016740  004537  022120                    PERFORM ,SETREG          ;
2616  016744     012     013                    .BYTE   012,013          ;LINE PROTOCOL, LINE STATE
2617  016746  014400                            31*400                   ;31 IN HIGH BYTE
2618  016750  000004                            BIT2                     ;TX GO
2619  016752  032737  004000  001236            BIT     #ASYNC,STAT      ;#IS THIS ASYNC LINE CARD?
2620  016760  001412                            BEQ     60$              ;#BR IF NO.
2621  016762  004537  022164                    PERFORM ,LOAD.MODE       ;#LOAD PARAMETERS.
2622  016766  020000                            BIT13                    ;#RECEIVER ENABLE
2623  016770  004537  022164                    PERFORM ,LOAD.MODE       ;#
2624  016774  015000                            (BIT12+BIT11)+BIT9       ;#8 BITS/PER/CHAR
2625  016776  004537  022164                    PERFORM ,LOAD.MODE       ;#
2626  017002  072000                            (BIT14+BIT13+BIT12)+BIT10
2627                                                                     ;#9600 BAUD.
2628  017004  000403                            BR      61$
2629  017006  004537  022164          60$:      PERFORM ,LOAD.MODE       ;LOAD
2630  017012  034000                            BIT13+BIT12+BIT11        ;MODE AND RX ENABLE
2631  017014  005277  162342          61$:      INC     @DVSCR           ;SET MICRO CPU GO
2632  017020  105777  162336                    TSTB    @DVSCR           ;WAIT FOR
2633  017024  100375                            BPL     .-4              ;DVSCR07=1
2634  017026  012701  022560                    MOV     #TXBAP,R1        ;SET TX POINTER
2635  017032  012703  027560                    MOV     #RXBA,R3         ;SET RX POINTER
2636  017036  012737  000011  001246            MOV     #9.,TEMP1        ;CHECK 9. CHAR
2637  017044  005005                            CLR     R5               ;
2638  017046  005004                            CLR     R4               ;
2639  017050  112105          3$:               MOVB    (R1)+,R5         ;SET EXPECTED
2640  017052  112304                            MOVB    (R3)+,R4         ;SET FOUND
2641  017054  020504                            CMP     R5,R4            ;GOOD?
2642  017056  001401                            BEQ     4$               ;
2643  017060  104001                            HLT     1                ;DATA COMPARE ERROR (IS IT IDLE)?
2644  017062  005337  001246          4$:       DEC     TEMP1            ;ALL CHARS DONE?
2645  017066  001370                            BNE     3$               ;BR IF NO
2646  017070  005005                            CLR     R5               ;
2647  017072  112777  000007  162274            MOVB    #7,@DVSRSH       ;SEL RX BCC REG
2648  017100  017704  162272                    MOV     @DVSRA,R4        ;READ IT
2649  017104  001401                            BEQ     5$               ;IF RX WENT TO GOOD CNTRL BYTE;
2650  017106  104001                            HLT     1                ;RX BCC S/B=0
2651  017110  012705  000007          5$:       MOV     #7,R5            ;SET MODE=0
2652  017114  112777  000014  162252            MOVB    #14,@DVSRSH      ;SEL TX MODE REG
2653  017122  017704  162250                    MOV     @DVSRA,R4        ;READ TX MODE REG
2654  017126  020504                            CMP     R5,R4            ;
2655  017130  001401                            BEQ     6$               ;
2656  017132  104001                            HLT     1                ;TX MODE NOT=7!
2657  017134  105277  162234          6$:       INCB    @DVSRSH          ;SEL RX MODE REG
2658  017140  017704  162232                    MOV     @DVSRA,R4        ;READ IT
2659  017144  020504                            CMP     R5,R4            ;
2660  017146  001401                            BEQ     7$               ;
2661  017150  104001                            HLT     1                ;RX MODE NOT=7!
2662  017152  104412          7$:               MSTCLR                   ;INIT DV11
2663  017154  104401                            SCOP1                    ;LOCK ON CURRENT LINE.
2664  017156  005200                            INC     R0               ;INC LINE POINTER
2665  017160  005302                            DEC     R2               ;4 LINE GROUP DONE?
2666  017162  001210                            BNE     12$              ;BR IF NO
```

```
                                        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$,LOCK        ;RETURN IF SW09=1
017312  032737  001400  001236          BIT     #BIT9+BIT8,STAT ;"8 BITS/PER/CHAR ?"
017320  001401                          BEQ     .+4             ;BR IF YES
017322  000207                          RTS     PC              ;EXIT TEST FOR THIS LINE CARD!
017324  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
017326  012705  023560                  MOV     #TXTAB,R5       ;CLEAR
017332  012703  030160                  MOV     #RXTAB,R3       ;TRANSMITTER
017336  005004                          CLR     R4              ;AND
017340  005025          1$:             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
```

```
2723  017370  152737  000002  023562          BISB    #BIT1,TXTAB+2   ;        SND/DLE
2724  017376  110537  023563                  MOVB    R5,TXTAB+3      ;INC/BCC
2725  017402  112737  000002  023564          MOVB    #BIT1,TXTAB+4   ;SND/DLE
2726  017410  110537  023565                  MOVB    R5,TXTAB+5      ;INC/BCC
2727  017414  110537  023566                  MOVB    R5,TXTAB+6      ;INC/BCC
2728  017420  052737  000344  023566          BIS     #BIT7+BIT6+BIT5+BIT2,TXTAB+6    ;INC/BCC SND/BCC MOD=7
2729  017426  110537  030160                  MOVB    R5,RXTAB        ;INC/BCC
2730  017432  110537  030161                  MOVB    R5,RXTAB+1      ;INC/BCC
2731  017436  152737  000020  030161          BISB    #BIT4,RXTAB+1   ;        DSCARD
2732  017444  110537  030162                  MOVB    R5,RXTAB+2      ;INC/BCC
2733  017450  110537  030163                  MOVB    R5,RXTAB+3      ;INC/BCC
2734  017454  105037  030164                  CLRB    RXTAB+4         ;NO FUNC.
2735  017460  110537  030165                  MOVB    R5,RXTAB+5      ;INC/BCC
2736  017464  152737  000020  030165          BISB    #BIT4,RXTAB+5   ;        DSCARD
2737  017472  112737  000354  030166          MOVB    #BIT7+BIT6+BIT5+BIT3+BIT2,RXTAB+6       ;INC/BCC EXP/BCC MODE=7
2738  017500  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
2739  017504  005037  027560          3$:     CLR     RXBA            ;ZERO
2740  017510  005037  027562                  CLR     RXBA+2          ;RX
2741  017514  005037  027564                  CLR     RXBA+4          ;BUFFER
2742  017520  005037  027566                  CLR     RXBA+6          ;AREA
2743  017524  010077  161642                  MOV     R0,3DVSRS       ;LOAD LINE NO.
2744  017530  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2745  017536  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
2746  017540  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2747  017544     000     001                  .BYTE   000,001         ;#REGISTERS
2748  017546  022560                          TXBAP                   ;#LOAD FOR ASYNC
2749  017550  177771                          -7.                     ;#LOAD FOR ASYNC
2750  017552  000405                          BR      81$             ;#CONTINUE TEST
2751  017554  004537  022120          80$:    PERFORM ,SETREG         ;
2752  017560     000     001                  .BYTE   000,001         ;PRINCIPLE BA, BC
2753  017562  022556                          SYNC                    ;
2754  017564  177767                          -9.                     ;
2755  017566  004537  022120          81$:    PERFORM ,SETREG         ;
2756  017572     004     005                  .BYTE   004,005         ;RX BA, BC
2757  017574  027560                          RXBA                    ;
2758  017576  177766                          -10.                    ;
2759  017600  004537  022120                  PERFORM ,SETREG         ;
2760  017604     010     011                  .BYTE   010,011         ;TX TAB, RXTAB
2761  017606  023560                          TXTAB                   ;
2762  017610  030160                          RXTAB                   ;
2763  017612  004537  022120                  PERFORM ,SETREG         ;
2764  017616     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL
2765  017620  000004                          BIT2                    ;TX GO
2766  017622  010031                          <20*400>+BIT4+BIT3+BIT0 ;DLE(20 HIGH BYTE),CRC.CCITT, IDLE MARK
2767  017624  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
2768  017632  001412                          BEQ     60$             ;#BR IF NO.
2769  017634  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
2770  017640  020000                          BIT13                   ;#RECEIVER ENABLE
2771  017642  004537  022164                  PERFORM ,LOAD.MODE      ;#
2772  017646  015000                          <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
2773  017650  004537  022164                  PERFORM ,LOAD.MODE      ;#
2774  017654  072000                          <BIT14+BIT13+BIT12>+BIT10
2775                                                                  ;#9600 BAUD.
2776  017656  000405                          BR      4$
2777  017660  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
2778  017664  034000                          BIT13+BIT12+BIT11       ;MODE AND RX ENABLE
```

```
2779  017666  004537  021706                 PERFORM  SETSYNC          ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
2780  017672  005004                  4$:    CLR      R4               ;LOAD
2781  017674  012705  022560                 MOV      #TXBAP,R5        ;TX
2782  017700  110425                  5$:    MOVB     R4,(R5)+         ;DATA
2783  017702  005204                         INC      R4               ;
2784  017704  020427  000007                 CMP      R4,#7            ;
2785  017710  001373                         BNE      5$               ;
2786  017712  005277  161444                 INC      @DVSCR           ;SET MICRO CODE GO
2787  017716  105777  161440                 TSTB     @DVSCR           ;WAIT FOR
2788  017722  100375                         BPL      .-4              ;DVSCR07=1
2789  017724  012701  027560                 MOV      #RXBA,R1         ;GET RX POINTER
2790  017730  012703  020134                 MOV      #50$,R3          ;GET DATA EXPECTED POINTER
2791  017734  012737  000007  001252         MOV      #7.,TEMP3        ;CHECK 7 CHARS
2792  017742  112104                  6$:    MOVB     (R1)+,R4         ;GET RECEIVED CHAR
2793  017744  112305                         MOVB     (R3)+,R5         ;GET EXPECTED CHAR
2794  017746  020504                         CMP      R5,R4            ;OK?
2795  017750  001401                         BEQ      7$               ;YES
2796  017752  104001                         HLT      1                ;DATA IS WRONG!!
2797  017754  005337  001252          7$:    DEC      TEMP3            ;ALL CHARS DONE?
2798  017760  001370                         BNE      6$               ;BR IF NO
2799  017762  112777  000014  161404         MOVB     #14,@DVSRSH      ;GET TX MODE REG.
2800  017770  017704  161402                 MOV      @DVSRA,R4        ;
2801  017774  042704  177770                 BIC      #^C<BIT2+BIT1+BIT0>,R4  ;CLEAR JUNK
2802  020000  012705  000007                 MOV      #7,R5            ;SET EXPECTED=7
2803  020004  020504                         CMP      R5,R4            ;
2804  020006  001401                         BEQ      8$               ;
2805  020010  104001                         HLT      1                ;TX MODE REG NOT=7
2806  020012  105277  161356          8$:    INCB     @DVSRSH          ;RX MODE REG
2807  020016  017704  161354                 MOV      @DVSRA,R4        ;
2808  020022  042704  177770                 BIC      #^C<BIT2+BIT1+BIT0>,R4  ;
2809  020026  020504                         CMP      R5,R4            ;
2810  020030  001401                         BEQ      9$               ;
2811  020032  104001                         HLT      1                ;RX MODE REG NOT=7
2812  020034  112777  000006  161332  9$:    MOVB     #6,@DVSRSH       ;TX BCC REG
2813  020042  017704  161330                 MOV      @DVSRA,R4        ;
2814  020046  001402                         BEQ      10$              ;
2815  020050  005005                         CLR      R5               ;
2816  020052  104001                         HLT      1                ;TX BCC REG S/B=0
2817  020054  105277  161314         10$:    INCB     @DVSRSH          ;TXBCC
2818  020060  017704  161312                 MOV      @DVSRA,R4        ;
2819  020064  001402                         BEQ      11$              ;
2820  020066  005005                         CLR      R5               ;
2821  020070  104001                         HLT      1                ;RX BCC REG S/B=0
2822  020072  010005                 11$:    MOV      R0,R5            ;LOAD LINE NO.
2823  020074  000305                         SWAB     R5               ;PUT IN HIGH BYTE
2824  020076  052705  050000                 BIS      #BIT14+BIT12,R5  ;SET BCC COMPLETE
2825  020102  017704  161260                 MOV      @DVRIC,R4        ;READ RIC
2826  020106  020504                         CMP      R5,R4            ;
2827  020110  001401                         BEQ      12$              ;
2828  020112  104001                         HLT      1                ;DVRIC INCORRECT
2829  020114  104413                 12$:    RESMCLR                   ;CLEAR ALL SEC REGS
2830  020116  104401                         SCOPE                     ;RETURN WITH SAME LINE
2831  020120  005200                         INC      R0               ;UPDATE LINE POINTER
2832  020122  005302                         DEC      R2               ;4 LINES DONE?
2833  020124  001402                         BEQ      .+6              ;BR IF NO
2834  020126  000137  017504                 JMP      3$               ;JMP IF YES
```

```
2835  020132  000207                          RTS     PC              ;EXIT
2836  020134     000      020        50$:     .BYTE   0,20
2837  020136     002      003                 .BYTE   2,3
2838  020140     020      004                 .BYTE   20,4
2839  020142     006      000                 .BYTE   6,0
2840
2841                                          ;************************ TEST 17 *********************************
2842                                          ;*TEST OF RECEIVER RESYNC
2843                                          ;*TEST TO TRANSMITT A BLOCK OD
2844                                          ;*DATA (SYN,SYN,1,2,3,4,5)
2845                                          ;*HAVING CHAR "1" BEING A "SPECIAL CHAR" TO THE RECEIVER
2846                                          ;*AT WHICH TIME A "RE-SYNC " PULSE WILL BE ISSUED
2847                                          ;*AND A RESTART CHAR PROC. (DVSCR08=1) WILL BE DONE.
2848                                          ;*WHEN THE TRANSMITTER IS DONE (DVSCR15=1) A SECOND
2849                                          ;*BLOCK OF DATA (SYN,SYN,SYN,SYN,6,7,10)
2850                                          ;*WILL BE SENT EXPECTING THAT THE NEXT TIME DVSCR07=1
2851                                          ;*THAT THE DVRIC WILL HAVE:
2852                                          ;*14=1      11:08=LINE NO.    07:00= "10"
2853                                          ;*RXBUFFER (CORE) S/B= 1,6,7,10.
2854                                          ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
2855                                          ;:*************************************************************
2856
2857                                  ;  TEST 17
2858                                  ;--------------
2859  020144  012737  000017  001226  TST17:  MOV     #17,TSTNO
2860  020152  012737  021142  001216          MOV     #TST20,NEXT
2861  020160  012700  000000                  MOV     #0.,R0          ;PLACE LINE NUMBER INTO R0
2862  020164  013737  001416  001236          MOV     L00.03,STAT     ;LOAD LINE CARD STATUS INTO STAT
2863  020172  100402                          BMI     100$            ;BR IF LINE CARD NOT TO BE TESTED
2864  020174  004737  020262                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 1
2865  020200  012700  000004          100$:   MOV     #4.,R0          ;PLACE LINE NUMBER INTO R0
2866  020204  013737  001420  001236          MOV     L04.07,STAT     ;LOAD LINE CARD STATUS INTO STAT
2867  020212  100402                          BMI     101$            ;BR IF LINE CARD NOT TO BE TESTED
2868  020214  004737  020262                  JSR     PC,105$         ;GO DO THE TEST FOR LINE CARD 2
2869  020220  012700  000010          101$:   MOV     #8.,R0          ;LOAD LINE NUMBER
2870  020224  013737  001422  001236          MOV     L08.11,STAT     ;LOAD LINE CARD STATUS INTO STAT
2871  020232  100402                          BMI     102$            ;BR IF LINE CARD NOT TO BE TESTED
2872  020234  004737  020262                  JSR     PC,105$         ;DO THE TEST FOR LINE CARD 3
2873  020240  012700  000014          102$:   MOV     #12.,R0         ;LOAD LINE NO.
2874  020244  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
2875  020252  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
2876  020254  004737  020262                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
2877  020260  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
2878  020262                          105$:                           ;TEST ENTRANCE.
2879  020262  012737  020314  001220          MOV     #1$,LOCK        ;SET RETURN
2880  020270  104413                          RAMCLR                  ;CLEAR ALL SEC. REGS
2881  020272  112737  000001  030161          MOVB    #BIT0,RXTAB+1   ;SET "SPECIAL CHAR" CNTRL BYTE
2882  020300  005037  030166                  CLR     RXTAB+6         ;CLEAR
2883  020304  005037  030170                  CLR     RXTAB+10        ;OTHER CNTRL BYTES
2884  020310  012702  000004                  MOV     #4,R2           ;SET FOR 4 LINE GROUP
2885  020314  010077  161052          1$:     MOV     R0,@DVSRS       ;LOAD LINE NUMBER
2886  020320  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2887  020326  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
2888  020330  004537  022120                  PERFORM  ,SETREG        ;#ADJUST FOR ASYNC LINE CARD
2889  020334     000      001                 .BYTE   000,001         ;#REGISTERS
2890  020336  022560                          TXBAP                   ;#LOAD FOR ASYNC
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2891   020340  177773                          -5                      ;#LOAD FOR ASYNC
2892   020342  000405                          BR      81$             ;#CONTINUE TEST
2893   020344  004537  022120          80$:    PERFORM ,SETREG         ;
2894   020350     000     001                  .BYTE   000,001         ;RX BA P, RX BC P
2895   020352  022556                          SYNC                    ;
2896   020354  177771                          -7                      ;
2897   020356  004537  022120          81$:    PERFORM ,SETREG         ;
2898   020362     004     005                  .BYTE   004,005         ;RX BA  RX BC
2899   020364  027560                          RXBA                    ;
2900   020366  177774                          -4                      ;
2901   020370  004537  022120                  PERFORM ,SETREG         ;
2902   020374     010     011                  .BYTE   010,011         ;RX CNTRL TAB, RX CNTRL TAB
2903   020376  023560                          TXTAB                   ;
2904   020400  030160                          RXTAB                   ;
2905   020402  004537  022120                  PERFORM ,SETREG         ;
2906   020406     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL PARAMS.
2907   020410  000004                          BIT2                    ;TX GO
2908   020412  000101                          BIT6+BIT0               ;TX,DDCMP, IDLE MARK
2909   020414  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
2910   020422  001412                          BEQ     60$             ;#BR IF NO.
2911   020424  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
2912   020430  020000                          BIT13                   ;#RECEIVER ENABLE
2913   020432  004537  022164                  PERFORM ,LOAD.MODE      ;#
2914   020436  015000                          <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
2915   020440  004537  022164                  PERFORM ,LOAD.MODE      ;#
2916   020444  072000                          <BIT14+BIT13+BIT12>+BIT10
2917                                                                   ;#9600 BAUD.
2918   020446  000403                          BR      61$
2919   020450  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
2920   020454  034000                          BIT13+BIT12+BIT11       ;MODE + RX ENABLE
2921   020456  005037  027560          61$:    CLR     RXBA            ;CLEAR
2922   020462  005037  027562                  CLR     RXBA+2          ;RX BUFFER
2923   020466  012705  022560                  MOV     #TXBAP,R5       ;SET TX POINTER
2924   020472  005004                          CLR     R4              ;LOAD
2925   020474  005204                  2$:     INC     R4              ;DATA
2926   020476  110425                          MOVB    R4,(R5)+        ;INTO
2927   020500  022704  000005                  CMP     #5,R4           ;TX BUFFER
2928   020504  001373                          BNE     2$              ;(1-5)
2929   020506  004537  021706                  PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
2930   020512  005277  160644                  INC     @DVSCR          ;SET UCPU GO
2931   020516  005005                          CLR     R5              ;SET COUNTER TO 0
2932   020520  105777  160636                  TSTB    @DVSCR          ;WAIT FOR DVSCR07=1
2933   020524  100404                          BMI     .+12            ;BR IF SET.
2934   020526  104414                          DELAY                   ;STALL TIME
2935   020530  005205                          INC     R5              ;UPDATE
2936   020532  001372                          BNE     .-12            ;WAIT
2937   020534  104000                          HLT                     ;DVSCR07 NOT SET.
2938   020536  005005                          CLR     R5              ;SET COUNTER TO 0
2939   020540  005777  160616                  TST     @DVSCR          ;TX DONE?
2940   020544  100404                          BMI     .+12            ;BR IF DVSCR15=1
2941   020546  104414                          DELAY                   ;STALL TIME
2942   020550  005205                          INC     R5              ;UPDATE
2943   020552  001372                          BNE     .-12            ;
2944   020554  104000                          HLT                     ;DVSCR15 NOT SET.
2945   020556  012705  022560                  MOV     #TXBAP,R5       ;SET TX POINTER
2946   020562  113725  001236                  MOVB    STAT,(R5)+      ;SYNC
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2947  020566  113725  001236              MOVB    STAT,(R5)+      ;SYNC
2948  020572  012704  000006              MOV     #6,R4           ;SET 1ST DATA TO 6
2949  020576  110425                3$:    MOVB    R4,(R5)+        ;LOAD
2950  020600  005204                       INC     R4              ;DATA
2951  020602  022704  000011              CMP     #11,R4          ;ALL DONE?
2952  020606  001373                       BNE     3$              ;BR IF NO
2953  020610  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
2954  020616  001406                       BEQ     82$             ;#BR IF NOT ASYNC.
2955  020620  004537  022120              PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
2956  020624     000     001              .BYTE   000,001         ;#REGISTERS
2957  020626  022562                       TXBAP+2                 ;#LOAD FOR ASYNC
2958  020630  177775                       -3                      ;#LOAD FOR ASYNC
2959  020632  000405                       BR      83$             ;#CONTINUE TEST
2960  020634  004537  022120        82$:   PERFORM ,SETREG
2961  020640     000     001              .BYTE   000,001         ;TX BA P, TX BC P
2962  020642  022556                       SYNC                    ;
2963  020644  177771                       -7                      ;
2964  020646  032737  004000  001236  83$:  BIT     #ASYNC,STAT     ;#ASYNC LINE CARD?
2965  020654  001403                       BEQ     .+10            ;#BR IF NO
2966  020656  004537  022164              PERFORM ,LOAD.MODE      ;#CLEAR RX ENABLE
2967  020662  000000                       0                       ;#
2968  020664  112777  000013  160502        MOVB    #13,@DVSRSH     ;LINE STATE
2969  020672  042777  000200  160476        BIC     #BIT7,@DVSRA    ;CLEAR "USE SEC TABLES"
2970  020700  052777  000002  160470        BIS     #BIT1,@DVSRA    ;SET RE-SYNC
2971  020706  112777  000012  160460        MOVB    #12,@DVSRSH     ;SEL LINE PROTOCOL PARAM.
2972  020714  052777  000002  160454        BIS     #BIT1,@DVSRA    ;SET STRIP LEADING SYNC
2973  020722  012737  006000  020732        MOV     #6000,84$       ;GIVE UCPU TIME
2974  020730  005327                       DEC     (PC)+           ;TO RESYNC SILO
2975  020732  000000                84$:   0
2976  020734  001375                       BNE     .-4
2977  020736  032737  004000  001236        BIT     #ASYNC,STAT     ;#ASYNC LINE CARD?
2978  020744  001403                       BEQ     .+10            ;#BR IF NOT ASYNC LINE CARD.
2979  020746  004537  022164              PERFORM ,LOAD.MODE      ;#SET RX ENABLE FOR ASYNC LINE CARD
2980  020752  020000                       BIT13                   ;#RX ENABLE
2981  020754  112777  000013  160412        MOVB    #13,@DVSRSH     ;SEL LINE STATE.
2982  020762  052777  000004  160406        BIS     #BIT2,@DVSRA    ;SET TX GO.
2983  020770  052777  000400  160364        BIS     #BIT8,@DVSCR    ;RESTART CPU
2984  020776  005004                       CLR     R4              ;SET FOR TIME OUT.
2985  021000  105777  160356              TSTB    @DVSCR          ;RX DONE?
2986  021004  100404                       BMI     .+12            ;BR IF YES
2987  021006  104414                       DELAY                   ;WASTE TIME
2988  021010  005204                       INC     R4              ;LOOP DONE?
2989  021012  001372                       BNE     .-12            ;BR IF NO
2990  021014  104000                       HLT                     ;DVSCR07 NOT SET AFTER RESYNC.
2991  021016  017704  160344              MOV     @DVRIC,R4       ;READ DVRIC
2992  021022  010005                       MOV     R0,R5           ;LOAD LINE NO
2993  021024  000305                       SWAB    R5              ;PLACE IN HIGH BYTE
2994  021026  052705  040010              BIS     #BIT14+10,R5    ;SET BC WARNING + CHAR 10
2995  021032  020504                       CMP     R5,R4           ;RIC OK
2996  021034  001401                       BEQ     4$              ;
2997  021036  104001                       HLT     1               ;DVRIC WRONG
2998  021040  012703  027560          4$:  MOV     #RXBA,R3        ;CHECK RX DATA
2999  021044  112304                       MOVB    (R3)+,R4        ;
3000  021046  012705  000001              MOV     #1,R5           ;
3001  021052  020504                       CMP     R5,R4           ;
3002  021054  001401                       BEQ     5$              ;
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3003  021056  104001                    HLT     1                ;1ST CHAR NOT "1"!
3004  021060  112304            5$:     MOVB    (R3)+,R4         ;
3005  021062  012705  000006            MOV     #6,R5            ;
3006  021066  020504                    CMP     R5,R4            ;
3007  021070  001401                    BEQ     6$               ;
3008  021072  104001                    HLT     1                ;2ND CHAR NOT "6"!
3009  021074  112304            6$:     MOVB    (R3)+,R4         ;
3010  021076  012705  000007            MOV     #7,R5            ;
3011  021102  020504                    CMP     R5,R4            ;
3012  021104  001401                    BEQ     7$               ;
3013  021106  104001                    HLT     1                ;3RD CHAR NOT "7"!
3014  021110  005205            7$:     INC     R5               ;
3015  021112  112304                    MOVB    (R3)+,R4         ;
3016  021114  020504                    CMP     R5,R4            ;
3017  021116  001401                    BEQ     8$               ;
3018  021120  104001                    HLT     1                ;4TH CHAR NOT "10"!
3019  021122  104412            8$:     MSTCLR                   ;RESET DV11
3020  021124  104401                    SCOP1                    ;LOCK ON CURRENT LINE?
3021  021126  005200                    INC     R0               ;UPDATE LINE NO.
3022  021130  005302                    DEC     R2               ;4 LINES DONE
3023  021132  001402                    BEQ     .+6              ;BR IF YES
3024  021134  000137  020314            JMP     1$               ;JMP IF NO
3025  021140  000207                    RTS     PC               ;EXIT FOR NEXT 4 LINE GROUP
3026
3027                                    ;********************** TEST 20 ******************************
3028                                    ;*TEST OF RECEIVER OVERRUN.
3029                                    ;*TEST TO TXMIT 134. CHARS AND RECV 129
3030                                    ;*SERVICEING THE FIRST CHAR AS A SPECIAL CHAR
3031                                    ;*AND STOPING THE CHAR PROCESSOR.
3032                                    ;*WHEN THE TRANSMITTER FINISHES ALL 134. CHARS
3033                                    ;*THE RECEIVER IS RESTARTED AND THE NEXT ENTRY
3034                                    ;*IN THE RIC REG S/B OVER RUN ON CHAR 202(8).
3035                                    ;*THIS TEST IS DONE FOR BOTH ASYNC AND SYNC LINE CARDS.
3036                                    ;:*************************************************************
3037
3038                            ;  TEST 20
3039                            ;--------------
3040  021142  012737  000020  001226  TST20:  MOV     #20,TSTNO
3041  021150  012737  002436  001216          MOV     #.EOP,NEXT
3042  021156  012700  000000                  MOV     #0.,R0           ;PLACE LINE NUMBER INTO R0
3043  021162  113737  001406  001244          MOVB    MASK.A,MASKX     ;PLACE "MASK"FOR CHARS INTO MASKX
3044  021170  013737  001416  001236          MOV     L00.03,STAT      ;LOAD LINE CARD STATUS INTO STAT
3045  021176  100402                          BMI     100$             ;BR IF LINE CARD NOT TO BE TESTED
3046  021200  004737  021310                  JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 1
3047  021204  012700  000004          100$:   MOV     #4.,R0           ;PLACE LINE NUMBER INTO R0
3048  021210  113737  001407  001244          MOVB    MASK.B,MASKX     ;GET MASK
3049  021216  013737  001420  001236          MOV     L04.07,STAT      ;LOAD LINE CARD STATUS INTO STAT
3050  021224  100402                          BMI     101$             ;BR IF LINE CARD NOT TO BE TESTED
3051  021226  004737  021310                  JSR     PC,105$          ;GO DO THE TEST FOR LINE CARD 2
3052  021232  012700  000010          101$:   MOV     #8.,R0           ;LOAD LINE NUMBER
3053  021236  113737  001410  001244          MOVB    MASK.C,MASKX     ;GET MASK
3054  021244  013737  001422  001236          MOV     L08.11,STAT      ;LOAD LINE CARD STATUS INTO STAT
3055  021252  100402                          BMI     102$             ;BR IF LINE CARD NOT TO BE TESTED
3056  021254  004737  021310                  JSR     PC,105$          ;DO THE TEST FOR LINE CARD 3
3057  021260  012700  000014          102$:   MOV     #12.,R0          ;LOAD LINE NO.
3058  021264  113737  001411  001244          MOVB    MASK.D,MASKX     ;GET MASKK
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3059  021272  013737  001424  001236          MOV     L12.15,STAT     ;LOAD LINE CARD STATUS
3060  021300  100402                          BMI     103$            ;BR IF LINE CARD NOT TO BE TESTED
3061  021302  004737  021310                  JSR     PC,105$         ;DO THE TESTS FOR LINE CARD 4
3062  021306  104400                  103$:   SCOPE                   ;SCOPE THIS TEST.
3063  021310                          105$:                           ;TEST ENTRANCE.
3064  021310  012737  021346  001220          MOV     #1$,LOCK        ;RETURN FOR SW09
3065  021316  104413                          RAMCLR                  ;CLEAR ALL SEC REGISTERS
3066  021320  005004                          CLR     R4              ;CLEAR
3067  021322  012705  030160                  MOV     #RXTAB,R5       ;THE
3068  021326  005025                          CLR     (R5)+           ;RECEIVER
3069  021330  105204                          INCB    R4              ;CONTROL
3070  021332  100375                          BPL     .-4             ;TABLE
3071  021334  112737  000001  030161          MOVB    #BIT0,RXTAB+1   ;SET "SPECIAL CHAR"(1)
3072  021342  012702  000004                  MOV     #4,R2           ;4 LINE GROUP
3073  021346  010077  160020          1$:     MOV     R0,@DVSR5       ;LOAD LINE NO.
3074  021352  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE C ARD?
3075  021360  001406                          BEQ     80$             ;#BR IF NOT ASYNC.
3076  021362  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
3077  021366     000     001                  .BYTE   000,001         ;#REGISTERS
3078  021370  022560                          TXBAP                   ;#LOAD FOR ASYNC
3079  021372  177573                          -133.                   ;#LOAD FOR ASYNC
3080  021374  000405                          BR      81$             ;#CONTINUE TEST
3081  021376  004537  022120          80$:    PERFORM ,SETREG         ;
3082  021402     000     001                  .BYTE   000,001         ;TX BA P, TX BC P
3083  021404  022556                          SYNC                    ;
3084  021406  177572                          -134.                   ;
3085  021410                          81$:                            ;
3086  021410  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
3087  021416  001406                          BEQ     82$             ;#BR IF NOT ASYNC.
3088  021420  004537  022120                  PERFORM ,SETREG         ;#ADJUST FOR ASYNC LINE CARD
3089  021424     004     005                  .BYTE   004,005         ;#REGISTERS
3090  021426  027560                          RXBA                    ;#LOAD FOR ASYNC
3091  021430  177576                          -130.                   ;#LOAD FOR ASYNC
3092  021432  000405                          BR      83$             ;#CONTINUE TEST
3093  021434  004537  022120          82$:    PERFORM ,SETREG         ;
3094  021440     004     005                  .BYTE   004,005         ;RX BA, RX BC
3095  021442  027560                          RXBA                    ;
3096  021444  177577                          -129.                   ;
3097  021446  004537  022120          83$:    PERFORM ,SETREG         ;
3098  021452     010     011                  .BYTE   010,011         ;TX TAB, RX TAB
3099  021454  023560                          TXTAB                   ;
3100  021456  030160                          RXTAB                   ;
3101  021460  004537  022120                  PERFORM ,SETREG         ;
3102  021464     013     012                  .BYTE   013,012         ;LINE STATE, LINE PROTOCOL PARAM
3103  021466  000004                          BIT2                    ;TX GO
3104  021470  000101                          BIT6+BIT0               ;TX DDCMP + IDLE MARK
3105  021472  032737  004000  001236          BIT     #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
3106  021500  001412                          BEQ     60$             ;#BR IF NO.
3107  021502  004537  022164                  PERFORM ,LOAD.MODE      ;#LOAD PARAMETERS.
3108  021506  020000                          BIT13                   ;#RECEIVER ENABLE
3109  021510  004537  022164                  PERFORM ,LOAD.MODE      ;#
3110  021514  015000                          <BIT12+BIT11>+BIT9      ;#8 BITS/PER/CHAR
3111  021516  004537  022164                  PERFORM ,LOAD.MODE      ;#
3112  021522  072000                          <BIT14+BIT13+BIT12>+BIT10
3113                                                                  ;#9600 BAUD.
3114  021524  000403                          BR      61$
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3115  021526  004537  022164          60$:    PERFORM ,LOAD.MODE      ;LOAD
3116  021532  034000                          BIT13+BIT12+BIT11       ;MODE
3117  021534  012705  022560          61$:    MOV     #TXBAP,F5       ;LOAD
3118  021540  005004                          CLR     R4              ;TX
3119  021542  105204                  2$:     INCB    R4              ;DATA
3120  021544  001402                          BEQ     21$             ;BUFFER
3121  021546  110425                          MOVB    R4,(R5)+        ;
3122  021550  000774                          BR      2$              ;
3123  021552  004537  021706          21$:    PERFORM ,SETSYNC        ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
3124  021556  005277  157600                  INC     @DVSCR          ;SET UCPU GO
3125  021562  105777  157574                  TSTB    @DVSCR          ;DVSCR07=1?
3126  021566  100375                          BPL     .-4             ;BR IF NO
3127  021570  005777  157566                  TST     @DVSCR          ;DVSCR15=1?
3128  021574  100375                          BPL     .-4             ;BR IF NO
3129  021576  112777  000012  157570        MOVB    #12,@DVSRSH     ;LINE PROTOCOL PARAM.
3130  021604  052777  000040  157564        BIS     #BIT5,@DVSRA    ;SET RX DDCMP
3131  021612  052777  000400  157542        BIS     #BIT8,@DVSCR    ;RESTART
3132  021620  105777  157536                  TSTB    @DVSCR          ;DVSCR07=1?
3133  021624  100375                          BPL     .-4             ;BR IF NO
3134  021626  017704  157534                  MOV     @DVRIC,R4       ;READ RIC
3135  021632  010005                          MOV     R0,R5           ;LINE
3136  021634  000305                          SWAB    R5              ;HIGH BYTE
3137  021636  052705  020202                  BIS     #BIT13+202,R5   ;130.
3138  021642  032737  004000  001236        BIT     #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
3139  021650  001401                          BEQ     .+4             ;#BR IF NOT ASYNC
3140  021652  005205                          INC     R5              ;#ADJUST FOR ASYNC. DOUBLE BUFFER CAUSES
3141                                                                  ;#CHAR TO BE ONE MORE THAN SYNC LINE CARD.
3142  021654  143705  001244                  BICB    MASKX,R5        ;CLEAR UNUSED BITS
3143  021660  020504                          CMP     R5,R4           ;RIC OK?
3144  021662  001401                          BEQ     3$              ;
3145  021664  104001                          HLT     1               ;NO OVER-RUN; OR ON WRONG CHAR!
3146  021666  104412                  3$:     MSTCLR                  ;RESET DVA
3147  021670  104401                          SCOP1                   ;LOCK ON CURRENT LINE?
3148  021672  005200                          INC     R0              ;UPDATE LINE NO.
3149  021674  005302                          DEC     R2              ;4 LINES DONE
3150  021676  001402                          BEQ     .+6             ;BR IF YES
3151  021700  000137  021346                  JMP     1$              ;JMP IF YES
3152  021704  000207                          RTS     PC              ;EXIT
3153
3154  021706                          SETSYNC:
3155  021706  113737  001236  022556          MOVB    STAT,SYNC       ;SET SYNC FOR THIS LINE.
3156  021714  113737  022556  022557          MOVB    SYNC,SYNC+1     ;PLACE SYNC IN HIGH BYTE
3157  021722  032737  010000  001236          BIT     #TWOSYN,STAT    ;ONE SYNC OR TWO?
3158  021730  001402                          BEQ     1$              ;BR IF JUMPERED FOR TWO.
3159  021732  105037  022556                  CLRB    SYNC            ;SET FIRST SYNC TO NON-SYNC
3160  021736  000205                  1$:     EXIT
3161  021740  010046                  SIMBCC: MOV     R0,-(SP)
3162  021742  010146                          MOV     R1,-(SP)
3163  021744  010246                          MOV     R2,-(SP)
3164  021746  012537  001246                  MOV     (R5)+,TEMP1
3165  021752  012537  001250                  MOV     (R5)+,TEMP2
3166  021756  012537  001252                  MOV     (R5)+,TEMP3
3167  021762  005037  022114          1$:     CLR     BCCFBK
3168  021766  013700  001252                  MOV     TEMP3,R0
3169  021772  006037  001250                  ROR     TEMP2
3170  021776  005500                          ADC     R0
```

```
3171  022000  032700  000001              BIT     #BIT0,R0
3172  022004  001402                      BEQ     2$
3173  022006  005137  022114              COM     BCCFBK
3174  022012  013700  022112      2$:     MOV     XPOLY,R0
3175  022016  005100                      COM     R0
3176  022020  040037  022114              BIC     R0,BCCFBK
3177  022024  000241                      CLC
3178  022026  006037  001252              ROR     TEMP3
3179  022032  013700  022114              MOV     BCCFBK,R0
3180  022036  013701  001252              MOV     TEMP3,R1
3181  022042  010102                      MOV     R1,R2
3182  022044  040100                      BIC     R1,R0
3183  022046  043702  022114              BIC     BCCFBK,R2
3184  022052  050200                      BIS     R2,R0
3185  022054  043737  022112  001252      BIC     XPOLY,TEMP3
3186  022062  050037  001252              BIS     R0,TEMP3
3187  022066  005337  001246              DEC     TEMP1
3188  022072  001333                      BNE     1$
3189  022074  013737  001252  022116      MOV     TEMP3,CALBCC
3190  022102  012602                      MOV     (SP)+,R2
3191  022104  012601                      MOV     (SP)+,R1
3192  022106  012600                      MOV     (SP)+,R0
3193  022110  000205                      RTS     R5
3194  022112  000000              XPOLY:  0
3195  022114  000000              BCCFBK: 0
3196  022116  000000              CALBCC: 0
3197          000200              LRC8=200
3198          120001              CRC16=120001
3199          102010              CRC.CCITT=102010
3200
3201
3202  022120  010046              SETREG: MOV     R0,-(SP)
3203  022122  010146                      MOV     R1,-(SP)
3204  022124  112500                      MOVB    (R5)+,R0
3205  022126  112501                      MOVB    (R5)+,R1
3206  022130  110077  157240              MOVB    R0,@DVSRSH
3207  022134  012577  157236              MOV     (R5)+,@DVSRA
3208  022140  042777  000060  157214      BIC     #BIT5+BIT4,@DVSCR
3209  022146  110177  157222              MOVB    R1,@DVSRSH
3210  022152  012577  157220              MOV     (R5)+,@DVSRA
3211  022156  012601                      MOV     (SP)+,R1
3212  022160  012600                      MOV     (SP)+,R0
3213  022162  000205                      EXIT
3214
3215  022164              LOAD.MODE:
3216  022164  012577  157200              MOV     (R5)+,@DVLCR
3217  022170  052777  100000  157172      BIS     #BIT15,@DVLCR
3218  022176  010046                      MOV     R0,-(SP)
3219  022200  005000                      CLR     R0
3220  022202  005777  157162      1$:     TST     @DVLCR
3221  022206  100004                      BPL     2$
3222  022210  104414                      DELAY
3223  022212  005200                      INC     R0
3224  022214  001372                      BNE     1$
3225  022216  104000                      HLT     0                   ;BIT 15 FAILED TO CLEAR
3226  022220  012600              2$:     MOV     (SP)+,R0
```

```
3227  022222  000205                          EXIT
3228
3229                                          ;SUBROUTINE.
3230                                          ;CORE TABLES ALREAY SET UP
3231                                          ;XMIT 3 CHARS 2SYNC+ 1 DATA
3232                                          ;RCV  1 CHAR
3233  022224  010077  157142          DV11ON: MOV   R0,@DVSRS
3234  022230  032737  004000  001236          BIT   #ASYNC,STAT     ;#IS THIS AN ASYNC LINE CARD?
3235  022236  001406                          BEQ   80$             ;#BR IF NOT ASYNC.
3236  022240  004537  022120                  PERFORM ,SETREG       ;#ADJUST FOR ASYNC LINE CARD
3237  022244     000     001                  .BYTE 000,001         ;#REGISTERS
3238  022246  022560                          TXBAP                 ;#LOAD FOR ASYNC
3239  022250  177777                          -1                    ;#LOAD FOR ASYNC
3240  022252  000405                          BR    81$             ;#CONTINUE TEST
3241  022254  004537  022120          80$:    PERFORM ,SETREG
3242  022260     000     001                  .BYTE 000,001
3243  022262  022556                          SYNC
3244  022264  177775                          -3
3245  022266  004537  022120          81$:    PERFORM ,SETREG
3246  022272     004     005                  .BYTE 004,005
3247  022274  027560                          RXBA
3248  022276  177777                          -1
3249  022300  004537  022120                  PERFORM ,SETREG
3250  022304     010     011                  .BYTE 010,011
3251  022306  023560                          TXTAB
3252  022310  030160                          RXTAB
3253  022312  004537  022120                  PERFORM ,SETREG
3254  022316     013     012                  .BYTE 013,012
3255  022320  000004                          BIT2
3256  022322  000001                          BIT0
3257  022324  032737  004000  001236          BIT   #ASYNC,STAT     ;#IS THIS ASYNC LINE CARD?
3258  022332  001412                          BEQ   60$             ;#BR IF NO.
3259  022334  004537  022164                  PERFORM ,LOAD.MODE    ;#LOAD PARAMETERS.
3260  022340  020000                          BIT13                 ;#RECEIVER ENABLE
3261  022342  004537  022164                  PERFORM ,LOAD.MODE    ;#
3262  022346  015000                          <BIT12+BIT11>+BIT9    ;#8 BITS/PER/CHAR
3263  022350  004537  022164                  PERFORM ,LOAD.MODE    ;#
3264  022354  072000                          <BIT14+BIT13+BIT12>+BIT10
3265                                                                ;#9600 BAUD.
3266  022356  000405                          BR    61$
3267  022360  004537  022164          60$:    PERFORM ,LOAD.MODE
3268  022364  034000                          BIT13+BIT12+BIT11
3269  022366  004537  021706                  PERFORM ,SETSYNC      ;GET SYNC CHARS AND ADJUST FOR ONE OR TWO.
3270  022372  000207                  61$:    RTS   PC
3271
3272
3273  022374                          SETSCAN:
3274  022374  010346                          MOV   R3,-(SP)
3275  022376  052777  000010  156756          BIS   #BIT3,@DVSCR
3276  022404  012503                          MOV   (R5)+,R3
3277  022406  001414                          BEQ   2$
3278  022410  012777  050102  156762  1$:     MOV   #BIT14+BIT12+BIT6+BIT1,@DVSFR
3279  022416  104415                          ROMCLK
3280  022420  005201                          INC   R1
3281  022422  012777  050102  156750          MOV   #BIT14+BIT12+BIT6+BIT1,@DVSFR
3282  022430  104415                          ROMCLK
```

```
                                                    INC     R1
                                                    DEC     R3
                                                    BNE     1$
                                        2$:         MOV     (SP)+,R3
                                                    MOV     R1,R0
                                                    CLC
                                                    ROR     R0
                                                    EXIT

                                        REGBUF:     .BLKW   34.
                                        SYNC:       .BLKW   1
                                        TXBAP:      .BLKB   400
                                        TXBAS:      .BLKB   400
                                        TXTAB:      .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                        RXBA:       .BLKB   400
                                        RXTAB:      .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                                    .BLKB   400
                                        DATA:       0
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                        DTi:        3
034370     006       004                          .BYTE   6,4
034372  001272                                    SAVR5
034374     006       002                          .BYTE   6,2
034376  001270                                    SAVR4
034400     002       001                          .BYTE   2,1
034402  001260                                    SAVR0

034404                                .ERRTAB:
034404  000000                                    0
034406  000000                                    0
034410  000000                                    0
034412  034162                                    EM1
034414  034333                                    DH1       ;HALT    1
034416  034366                                    DTi
034420  034212                                    EM2
034422  034333                                    DH1       ;HALT 2
034424  034366                                    DTi
034426  034247                                    EM3
```

```
  3333  034430  034333                        DH1      ;HALT 3
  3334  034432  034366                        DT1
  3335  034434  034307                        EM4
  3336  034436  034333                        DH1      ;HALT 4
  3337  034440  034366                        DT1
  3338                                ;;**********************************************************************
  3339  034442                       CORMAX:
  3340          000001                .END
```

```
ADRCNT= 003443   617*   653*   662*
ALU   = 010000    73#
ASYNC = 004000    81#  1260  1338  1357  1380  1462  1481  1504  1615  1627  1646  1678  2046
                2277  2304  2417  2444  2596  2619  2744  2767  2886  2909  2953  2964  2977
                3074  3086  3105  3138  3234  3257
AUTO.S  006622  1127#
BCC   = 060000    78#
BCCFBK  022114  3167*  3173*  3176*  3179  3183  3195#
BINWRD  003746   703*   704   741#
BIT0  = 000001    71#   884  1273  1503  1645  2068  2143  2156  2298  2329  2438  2469  2766
                2801  2808  2881  2908  3071  3104  3171  3256
BIT1  = 000002    70#   884   895  1914  2068  2329  2469  2549  2723  2725  2801  2808  2970
                2972  3278  3281
BIT10 = 002000    61#   884  1265  1387  1511  1653  2299  2302  2311  2439  2442  2451  2564*
                2565* 2566* 2567* 2568* 2574* 2575* 2576* 2577* 2578*  2626  2774  2916  3112
                3264
BIT11 = 004000    60#   884  1263  1269  1385  1391  1509  1515  1651  1657  2309  2315  2449
                2455  2624  2630  2772  2778  2914  2920  3110  3116  3262  3268
BIT12 = 010000    59#    73    75    77    79  1263  1265  1269  1385  1387  1391  1509  1511
                1515  1651  1653  1657  2309  2311  2315  2323  2449  2451  2455  2463  2624
                2626  2630  2772  2774  2778  2824  2914  2916  2920  3110  3112  3116  3262
                3264  3268  3278  3281
BIT13 = 020000    58#    74    75    78    79  1265  1273  1281  1383  1387  1391  1507  1511
                1515  1649  1653  1657  2299  2302  2307  2311  2315  2439  2442  2447  2451
                2455  2622  2626  2630  2770  2774  2778  2912  2916  2920  2980  3108  3112
                3116  3137  3260  3264  3268
BIT14 = 040000    57#    76    77    78    79   524  1265  1387  1511  1653  2186  2299  2302
                2311  2323  2439  2442  2451  2463  2626  2774  2824  2916  2994  3112  3264
                3278  3281
BIT15 = 100000    56#  2282  2287  2291  2299  2302  2422  2427  2431  2439  2442  3217
BIT2  = 000004    69#   451   884  1254  1378  1502  1644  2299  2329  2439  2469  2618  2728
                2737  2765  2801  2808  2907  2982  3103  3255
BIT3  = 000010    68#   884  1738  1770  1792  2257  2273  2298  2397  2413  2550  2719  2737
                2766  3275
BIT4  = 000020    67#  1607  1608  1792  2298  2731  2736  2766  3208
BIT5  = 000040    66#  1293  1869  1975  1979  2068  2560  2562  2564  2566  2567  2568  2573
                2572  2574  2576  2577  2578  2728  2737  3130  3208
BIT6  = 000100    65#  1195  1975  1979  2068  2152  2156  2179  2561  2562  2565  2566  2567
                2568  2571  2572  2575  2576  2577  2578  2728  2737  2908  3104  3278  3281
BIT7  = 000200    64#   518   765   922   943  1195  1975  2563  2564  2565  2566  2567  2568
                2573  2574  2575  2576  2577  2578  2728  2737  2969
BIT8  = 000400    63#   884   901  2173  2250  2561* 2563* 2565* 2567* 2568* 2571* 2573* 2575*
                2577* 2578* 2708  2983  3131
BIT9  = 001000    62#   884  1195  1200  1263  1385  1509  1651  2250  2309  2449  2562* 2563*
                2566* 2567* 2568* 2572* 2573* 2576* 2577* 2578*  2624  2708  2772  2914  3110
                3262
BRB   = 070000    79#
BRW     003014   457   546#
BRX     003016   458   547#
CALBCC  022116  1754* 1760  1776* 1782  1798* 1804  3189* 3196#
CHRCNT  003744   701*  705   721*  739#  740
CLKX    001242   150#
CLK.A   001412   250#  1045
CLK.B   001413   251#  1050
CLK.C   001414   252#  1055
CLK.D   001415   253#  1060
```

```
CNVRT = 104411   209#  476   478   480   482   802   804   860   917
CONVRT= 104410   207#  416   818
CORMAX  034442  3339#  3340
CRC.CC= 102010  1799   3199#
CRC16 = 120001  1777   3198#
CREAM   001306   171#   385#   992#   993   995#  1000  1001#  1002  1005#
CSRMAP  006624   410   1129#
CYCLE   005666   460   496   497   982#
DATA    034160  3313#
DATABP  004276   791#   794   816   819#
DATACL= 104416   219#
DATAHD  004264   790#   812   815#
DELAY = 104414   215#  1275  1663  2161  2934  2941  2987  3222
DEVADR  003440   615#   650   660#
DH1     034333  3314#  3327  3330  3333  3336
DT1     034366  3314#  3328  3331  3334  3337
DVACTV  001300   165#   432#   433   982   987  1161#  1167#  1168#  1172  1191
DVCR00  001500   281#
DVCR01  001524   292#
DVCR02  001550   303#
DVCR03  001574   314#
DVCR04  001620   325#
DVCR05  001644   336#
DVCR06  001670   347#
DVCR07  001714   358#
DVLCR   001370   233#   901#   902  1021#  1022#  1023  3216#  3217#  3220
DVNSR   001402   238#  1031#  1032#  1033
DVNUM   001301   166#   381   486  1133#  1154#  1155  1162  1164
DVRIC   001366   232#  1019#  1020#  1021  2169  2187  2320  2460  2825  2991  3134
DVRLVL  001354   227#  1036#  1037#  1038  2155#
DVRVEC  001352   226#   503  1007#  1036  2154#
DVSCR   001362   230#   500   878#   891#   895#  1006#  1017  1273#  1281#  1393#  1394  1517#  1518
                1659#  1661  1749#  1750  1771#  1772  1793#  1794  1858#  1859  1924#  1925  1981#
                1982  2069#  2070  2156#  2173#  2179#  2182  2317#  2318  2457#  2458  2631#  2632
                2786#  2787  2930#  2932  2939  2983#  2985  3124#  3125  3127  3131#  3132  3208#
                3275#
DVSCRH  001364   231#  1017#  1018#  1019
DVSFR   001400   237#  1029#  1030#  1031  3278#  3281#
DVSRA   001376   236#   882  1027#  1028#  1029  1285  1753  1775  1797  1862  1934#  1979#  1986
                1990  1994  1998  2068#  2152#  2328  2334  2340  2344  2468  2474  2480  2484
                2648  2653  2658  2800  2807  2813  2818  2969#  2970#  2972#  2982#  3130#  3207#
                3210#
DVSRS   001372   234#   881  1023#  1024#  1025  1247#  1353#  1477#  1612#  1743#  1765#  1787#  2276#
                2416#  2595#  2743#  2885#  3073#  3233#
DVSRSH  001374   235#  1025#  1026#  1027  1284#  1752#  1774#  1796#  1861#  1933#  1978#  1985#  1989#
                1993#  1997#  2067#  2151#  2327#  2333#  2339#  2343#  2467#  2473#  2479#  2483#  2647#
                2652#  2657#  2799#  2806#  2812#  2817#  2968#  2971#  2981#  3129#  3206#  3209#
DVTLVL  001360   229#  1040#  1041#  1272#
DVTR00  001502   282#
DVTR01  001526   293#
DVTR02  001552   304#
DVTR03  001576   315#
DVTR04  001622   326#
DVTR05  001646   337#
DVTR06  001672   348#
DVTR07  001716   359#
```

```
DVTVEC  001356            228#   1038*  1039*  1040   1271*
DV.END  001740            369#    993   1002   1131
DV.MAP  001500            171     280#   385    412    995   1005   1129   1134   1183
DV00.A  001504            283#
DV00.B  001510            285#
DV00.C  001514            287#
DV00.D  001520            289#
DV01.A  001530            294#
DV01.B  001534            296#
DV01.C  001540            298#
DV01.D  001544            300#
DV02.A  001554            305#
DV02.B  001560            307#
DV02.C  001564            309#
DV02.D  001570            311#
DV03.A  001600            316#
DV03.B  001604            318#
DV03.C  001610            320#
DV03.D  001614            322#
DV04.A  001624            327#
DV04.B  001630            329#
DV04.C  001634            331#
DV04.D  001640            333#
DV05.A  001650            338#
DV05.B  001654            340#
DV05.C  001660            342#
DV05.D  001664            344#
DV06.A  001674            349#
DV06.B  001700            351#
DV06.C  001704            353#
DV06.D  001710            355#
DV07.A  001720            360#
DV07.B  001724            362#
DV07.C  001730            364#
DV07.D  001734            366#
DV11ON  022224           1744    1766   1788   1853   1918   1977   2060   2146   3233#
EM1     034162           3314#   3326
EM2     034212           3314#   3329
EM3     034247           3314#   3332
EM4     034307           3314#   3335
ERRCNT  001232            142#    387*   509    827*
ERRFLG  001311            177#    383*   471*   538*   779*   792    806*   861*
ERRMSG  004252            789*    807    810#
ERTABO  004366            804     836#
EXIT  = 000205             81#   3160   3213   3227   3290
EXITER  004322            822     827#
FIX.00  006516           1046    1051   1056   1061   1095#
HALTS   004302            775     821#
HILIM   003436            614*    641    659#
ICOUNT  001222            138#    536    541*
INBUF   005520            584     620    967#
INIFLG  001310            176#    392    407*
INSTER= 104404            199#    635
INSTR = 104403            197#   1068
INSTR2  003236            591     603#
LIGHT   000174            110#    402
```

```
LIGHTS  001200            121#    402*    473*
LIMITS  003364            630     641#
LOAD.M  022164           1262    1264    1268    1382    1384    1386    1390    1506    1508    1510    1514    1648    1650
                         1652    1656    2306    2308    2310    2314    2446    2448    2450    2454    2621    2623    2625
                         2629    2769    2771    2773    2777    2911    2913    2915    2919    2966    2979    3107    3109
                         3111    3115    3215#   3259    3261    3263    3267
LOBITS  003442            616*    645     661#    662
LOCK    001220            137#    540*    554     556     798    1240*   1341*   1465*   1595*   1735*   1845*   1912*   1972*
                         2049*   2131*   2249*   2392*   2544*   2707*   2879*   3064*
LOGICA  002560            107     490#
LOKFLG  001312            178#
LOLIM   003434            613*    643     658#
LPCNT   001224            139#    535*    536     539*
LRCB    = 000200         1755    3197#
LSTERR  001234            143#    388*    470*    522*    776     778*    862*
LOO.03  001416            255#   1008*   1043    1223    1318    1442    1575    1718    1828    .895    1955    2026    2114
                         2232    2375    2527    2690    2862    3044
LO4.07  001420            256#   1010*   1048    1227    1323    1447    1580    1722    1832    1899    1959    2031    2118
                         2236    2379    2531    2694    2866    3049
LO8 11  001422            257#   1012*   1053    1231    1328    1452    1585    1726    1836    1903    1963    2036    2122
                         2240    2383    2535    2698    2870    3054
L12.15  001424            258#   1014*   1058    1235    1333    1457    1590    1730    1840    1907    1967    2041    2126
                         2244    2387    2539    2702    2874    3059
MASKX   001244            151#   1317*   1322*   1327*   1332*   1410    1441*   1446*   1451*   1456*   1534    1574*   1579*
                         1584*   1589*   1683    2025*   2030*   2035*   2040*   2080    3043*   3048*   3053*   3058*   3142
MASK.A  001406            245#   1044    1317    1441    1574    2025    3043
MASK.B  001407            246#   1049    1322    1446    1579    2030    3048
MASK.C  001410            247#   1054    1327    1451    1584    2035    3053
MASK.D  001411            248#   1059    1332    1456    1589    2040    3058
MASTEK  005400            800     958#
MCRLF   005104            569     692     796     797     805     946     958#    1067    1085
MCSRX   005330            475     958#
MDATA   005624            719     729     971#
MEPASS  005145            474     958#
MERRPC  005454            803     958#
MERRX   005355            481     958#
MERR2   005174            958#    984    1174
MERR3   005243            429     958#
MLOCK   005301            453     958#
MNEW    005402            424     958#
MPASSX  005344            479     958#
MPFAIL  005107            859     958#
MQM     005100            599     958#   1090
MR      005171            461     958#
MRESET= 004000             81#    878     891
MSTCLR= 104412            211#    863    1290    1420    1544    1692    1742    1764    1786    1867    1932    2001    2091
                         2201    2662    3019    3146
MTITLE  001000            119#    406
MTSTN   005366            801     958#   1069
MTSTPC  005267            958#
MVECX   005336            477     958#
NEXT    001216            136#    542     832    1221*   1315*   1439*   1572*   1716*   1826*   1893*   1953*   2023*   2112*
                         2230*   2373*   2525*   2688*   2860*   3041*
NOLIST= ****** U            1
NPR     = 040000           76#
PARAM   = 104405           201#   1070
```

```
PARAM1  003304  619# 636
PARBIT= 040000   81# 1114
PARERR  003360  622  624  626  635# 642  644  646
PASCNT  001230  141# 382# 472# 473  506
PERFOR= 004537   81# 1248 1252 1256 1262 1264 1268 1359 1364 1368 1372 1376 1382
                1384 1386 1390 1392 1483 1488 1492 1496 1500 1506 1508 1510 1514
                1516 1617 1622 1629 1634 1638 1642 1648 1650 1652 1656 1658 1745
                1767 1789 1854 1919 2063 2147 2279 2284 2288 2292 2296 2300 2306
                2308 2310 2314 2316 2419 2424 2428 2432 2436 2440 2446 2448 2450
                2454 2456 2553 2598 2603 2607 2611 2615 2621 2623 2625 2629 2746
                2751 2755 2759 2763 2769 2771 2773 2777 2779 2888 2893 2897 2901
                2905 2911 2913 2915 2919 2929 2955 2960 2966 2979 3076 3081 3088
                3093 3097 3101 3107 3109 3111 3115 3123 3236 3241 3245 3249 3253
                3259 3261 3263 3267 3269
PFTAB   004470  860  866#
POPRO = 012600   55# 826
POP1SP= 005726   55#
POP2SP= 022626   55# 544
PS    = 177776   53# 378# 447# 1194# 1270# 1276# 1282# 2153# 2160#
PUSHR0= 010046   55# 823
PUSH1S= 005746   55#
PUSH2S= 024646   55#
QV.FLG  001313  179# 384# 485# 533
RAM   = 020000   74#
RAMCLR= 104413  213# 864  1241 1342 1466 1596 1736 1846 1913 1973 2050 2132 2253
                2347 2393 2487 2545 2711 2829 2880 3065
REGBUF  022452 3292#
RESREG  004300  817  820#
RESTAR  004414  847  853#
RESTRT  002572  484  488  496#
RESV16  001404  239# 1033# 1034#
RESOS = 104407  205# 820
RETURN  001214  135# 390# 460# 462  496# 542# 545  832# 834  865  1084# 1092# 1093
ROMCLK= 104415  217# 3279 3282
RUN     001304  169# 386# 987  990# 991# 998# 999#
RXBA    027560 1354# 1355# 1356# 1370 1398 1403 1412 1478# 1479# 1480# 1494 1522 1527
                1536 1613# 1614# 1631 1636 1669 1674 1684 1688 1923# 1927 2061# 2062#
                2073 2081 2086 2191 2290 2430 2579 2609 2635 2739# 2740# 2741# 2742#
                2757 2789 2899 2921# 2922# 2998 3090 3095 3247 3304#
RXTAB   030160 1344 1375 1468 1499 1607# 1608# 1609# 1610# 1641 1738# 1852# 1916# 1976#
                2142 2271 2295 2411 2435 2547 2570# 2571# 2572# 2573# 2574# 2575# 2576#
                2577# 2578# 2614 2713 2729# 2730# 2731# 2732# 2733# 2734# 2735# 2736# 2737#
                2762 2881# 2882# 2883# 2904 3067 3071# 3100 3252 3305#
SAVACT  001302  167#  427  1172#
SAVNUM  001303  168#  381#  483#  486#  1165#
SAVPC   001276  164#  667#  838
SAVR0   001260  157#  676#  681  3320
SAVR1   001262  158#  675#  682
SAVR2   001264  159#  674#  683
SAVR3   001266  160#  673#  684
SAVR4   001270  161#  672#  685  3318
SAVR5   001272  162#  671#  686  3316
SAVSP   001274  163#
SAVOS = 104406  203#  780
SCOPE = 104400  191# 1238 1336 1460 1593 1733 1843 1910 1970 2044 2129 2247 2390
                2542 2705 2877 3062
```

```
SCOP1 = 104401          193#  1291  1421  1545  1693  1808  1874  1935  2002  2092  2202  2348  2488
                       2663  2830  3020  3147
SERV.C  004640          521   768   912#  913
SETREG  022120         1248  1252  1256  1359  1364  1368  1372  1376  1483   146  1492  1496  1500
                       1617  1622  1629  1634  1638  1642  1745  1767  1789  1854  1919  2063  2147
                       2279  2284  2288  2292  2296  2300  2419  2424  2428  2432  2436  2440  2598
                       2603  2607  2611  2615  2746  2751  2755  2759  2763  2888  2893  2897  2901
                       2905  2955  2960  3076  3081  3088  3093  3097  3101  3202#  3236  3241  3245
                       3249  3253
SETSCA  022374         3273#
SETSYN  021706         1392  1516  1658  2316  2456  2553  2779  2929  3123  3154#  3269
SIM8CC  021740         1756  1778  1800  3161#
SPACNT= 003745          702#  723   726#  740#
SSWR    000176          112#  403
STACK = 001200           54#  379   448   833   855
STAT    001236          148#  1223# 1227# 1231# 1235# 1260  1318# 1323# 1328#  .333# 1338  1357  1380
                       1408  1442# 1447# 1452# 1457# 1462  1481  1504  1575#  1580# 1585# 1590# 1615
                       1627  1646  1678  1718# 1722# 1726# 1730# 1828# 1832#  1836# 1840# 1895# 1899#
                       1903# 1907# 1955# 1959# 1963# 1967# 2026# 2031# 2036#  2041# 2046  2054  2058
                       2059  2078  2114# 2118# 2122# 2126# 2232# 2236# 2240#  2244# 2250  2261  2277
                       2304  2375# 2379# 2383# 2387# 2401  2417  2444  2527#  2531# 2535# 2539# 2555
                       2596  2619  2690# 2694# 2698# 2702# 2708  2744  2767   2862# 2866# 2870# 2874#
                       2886  2909  2946  2947  2953  2964  2977  3044# 3049#  3054# 3059# 3074  3086
                       3105  3133  3155  3157  3234  3257
SVOS    003452          671#
SWR     001202          123#   398   403#  408   422   427   432   451   515   524   531   552   565
                        762   769   774   821   828   830   914   915#  925#  930#  931#  932#  939#
                       1062
SW00  = 000001           34#   422
SW01  = 000002           33#  1062
SW02  = 000004           32#
SW03  = 000010           31#
SW04  = 000020           30#
SW05  = 000040           29#
SW06  = 000100           28#
SW07  = 000200           27#
SW08  = 000400           26#   828
SW09  = 001000           25#   552
SW10  = 002000           24#   830
SW11  = 004000           23#   531
SW12  = 010000           22#   565   769
SW13  = 020000           21#   774
SW14  = 040000           20#
SW15  = 100000           19#
SYNA00  001506          284#
SYNA01  001532          295#
SYNA02  001556          306#
SYNA03  001602          317#
SYNA04  001626          328#
SYNA05  001652          339#
SYNA06  001676          350#
SYNA07  001722          361#
SYNB00  001512          286#
SYNB01  001536          297#
SYNB02  001562          308#
SYNB03  001606          319#
```

```
SYNB04  001632            330#
SYNB05  001656            341#
SYNB06  001702            352#
SYNB07  001726            363#
SYNC    022556           1366    1490    1624    2286    2426    2605    2753    2895    2982    3083    3155#   3156#   3159#
                         3243    3293#
SYNCX   001240            149#
SYNC00  001516            288#
SYNC01  001542            299#
SYNC02  001566            310#
SYNC03  001612            321#
SYNC04  001636            332#
SYNC05  001662            343#
SYNC06  001706            354#
SYNC07  001732            365#
SYNC2A  001426            260#    1009#
SYNC2B  001430            261#    1011#
SYNC2C  001432            262#    1013#
SYNC2D  001434            263#    1015#
SYND00  001522            290#
SYND01  001546            301#
SYND02  001572            312#
SYND03  001616            323#
SYND04  001642            334#
SYND05  001666            345#
SYND06  001712            356#
SYND07  001736            367#
S.C   = 050000             77#
TEMP    005562            706     856#    857#    969#
TEMP1   001246            152#    412#    413     418#    960     1191#   1192#   2636#   2644#   3164#   3187#
TEMP2   001250            153#    413#    414     962     3165#   3169#
TEMP3   001252            154#   2791#   2797#   3166#   3168    3178#   3180    3185#   3186#   3189
TEMP4   001254            155#
TEMP5   001256            156#
TKCSR   001204            127#    527     586     912     919     940
TKDBR   001206            128#    517     529     588     594     764     921     942
TLAST = 021142           1088    3314#
TPCSR   001210            129#    570     592     771     926
TPDBR   001212            130#    572#    594#    773#    928#
TRPOK   003762            752#
TSTNO   001226            140#    389#    841     868     1073    1080    1082    1220#   1314#   1438#   1571#   1715#   1825#
                         1892#   1952#   2022#   2111#   2229#   2372#   2524#   2687#   2859#   3040#
TST1    007256           1076    1092    1220#
TST10   013244           1893    1952#
TST11   013554           1953    2022#
TST12   014166           2023    2111#
TST13   014650           2112    2229#
TST14   015442           2230    2372#
TST15   016222           2373    2524#
TST16   017166           2525    2687#
TST17   020144           2688    2859#
TST2    007664           1221    1314#
TST20   021142           2860    3040#   3314
TST21 = ****** U         3041
TST3    010430           1315    1438#
TST4    011174           1439    1571#
```

SEQ 0083

CROSS REFERENCE TABLE -- USER SYMBOLS

```
TST5     012004            1572    1715#
TST6     012512            1716    1825#
TST7     012772            1826    1892#
TTST     002702             454#    455#    457#    458#    525#
TWOSYN=  010000              81#    3157
TXBAP    022560            1244#   1250    1350#   1351#   1361    1474#   1475#   1485    1602    1619    1739#   1850#   1915#
                           1980#   2053    2136    2265    2261    2405    2421    2585    2600    2634    2748    2781    2890
                           2923    2945    2957    3078    3117    3238    3294#
TXBAS    023160            3295#
TXTAB    023560            1246#   1255    1343    1374    1467    1498    1597#   1598#   1599#   1600#   1601#   1640    1737#
                           1851#   1914#   1975#   1976    2256    2260    2294    2396    2400    2434    2546    2557    2560#
                           2561#   2562#   2563#   2564#   2565#   2566#   2567#   2568#   2613    2712    2720#   2721#   2722#
                           2723#   2724#   2725#   2726#   2727#   2728#   2761    2903    3099    3251    3296#
TYPDAT   004266             795     813     816#
TYPE   = 104402             195#    406     411     424     429     453     461     474     475     477     479     481     569
                            582     599     692     729     796     797     800     801     803     805     809     814     859
                            916     918     946     984    1067    1085    1090    1174
TYPMSG   004166             793     796#
VECMAP   007102            1173    1181#
WRDCNT   003742             700#    730#    738#
WRKO.F   004254             808     811#
XBX      004060             770     772     774#
XCSR     002604             476     498#
XERR     002626             482     507#
XFR    = 030000              75#
XHEAD    005461             411     958#
XPASS    002620             480     504#
XPOLY    022112            1755#   1777#   1799#   3174    3185    3194#
XSTATQ   005506             417     958#
XTSTN    004374             802     839#
XVEC     002612             478     501#
$CRAP  = 177777               1#    1212#   1216#   1304#   1310#   1428#   1434#   1552#   1567#   1700#   1711#   1815#   1821#
                           1881#   1888#   1942#   1948#   2009#   2018#   2099#   2107#   2210#   2225#   2355#   2368#   2495#
                           2520#   2669#   2683#   2841#   2855#   3027#   3036#
$E     = 000022               1#    1221    1222#   1315    1316#   1439    1440#   1572    1573#   1716    1717#   1826    1827#
                           1893    1894#   1953    1954#   2023    2024#   2112    2113#   2230    2231#   2373    2374#   2525
                           2526#   2688    2689#   2860    2861#   3041    3042#
$N     = 000020               1#    1212    1218    1222#   1304    1312    1316#   1428    1436    1440#   1552    1569    1573#
                           1700    1713    1717#   1815    1823    1827#   1881    1890    1894#   1942    1950    1954#   2009
                           2020    2024#   2099    2109    2113#   2210    2227    2231#   2355    2370    2374#   2495    2522
                           2526#   2669    2685    2689#   2841    2857    2861#   3027    3038    3042#   3314#
$T     = 000017               1#    182#    191     193#    195#    197#    199#    201#    203#    205#    207#    209#    211#
                            213#   215#    217#    219#    221#
.      = 034442              92#     93      96#    103#    104#    105#    106#    109#    111#    114#    118#    120#    165#
                            166#   167#    168#    169#    170#    279#    281#    282#    283#    284#    285#    286#    287#
                            288#   289#    290#    292#    293#    294#    295#    296#    297#    298#    299#    300#    301#
                            303#   304#    305#    306#    307#    308#    309#    310#    311#    312#    314#    315#    316#
                            317#   318#    319#    320#    321#    322#    323#    325#    326#    327#    328#    329#    330#
                            331#   332#    333#    334#    336#    337#    338#    339#    340#    341#    342#    343#    344#
                            345#   347#    348#    349#    350#    351#    352#    353#    354#    355#    356#    358#    359#
                            360#   361#    362#    363#    364#    365#    366#    367#    431     520     767     849     858
                            872    910#    920     927     941     968#    970#    972#    986    1177    1198    1339    1395
                           1463   1519    1762    1784    1806    1860    1926    1983    1987    2047    2071    2163    2183
                           2251   2319    2459    2633    2709    2788    2833    2933    2936    2940    2943    2965    2976
                           2978   2986    2989    3023    3070    3126    3128    3133    3139    3150    3292#   3293#   3294#
                           3295#  3296#   3297#   3298#   3299#   3300#   3301#   3302#   3303#   3304#   3305#   3306#   3307#
```

```
                        3308#   3309#   3310#   3311#   3312#
.BEGIN  002332           447#
.CNVRT  003542           210     693#
.CONVR  003536           208     692#
.DATAC  004576           220     898#
.DELAY  004476           216     869#
.EOP    002436           469#   3041
.ERRTA  034404           788    3322#
.HLT    004002            99     761#
.INSTE  003224           200     599#
.INSTR  003120           198     578#
.INST1  003140           582#    602
.MSC    003142           580#    583#
.MSTCL  004556           212     890#
.PARAM  003244           202     610#
.PFAIL  004402            97     380     846#    854
.RAMCL  004516           214     877#
.RESOS  003504           206     681#
.ROMCL  004566           218     894#
.SAVOS  003444           204     667#
.SCOPE  002634           192     514#
.SCOPI  003020           194     552#
.START  001742           115     378#    390
.TRPSR  003750           101     749#
.TRPTA  001314           190#    754
.TYPE   003044           196     562#
```

CROSS REFERENCE TABLE -- MACRO NAMES

```
DVEND      1#    463
DVFRNT     1#
HLT       55#    907   1279   1289   1401   1406   1417   1525   1530   1541   1666   1672   1677   1687   1631
        1763     1785   1807   1866   1931   1988   1992   1996   2000   2077   2085   2090   2164   2172   2190
        2197     2326   2332   2337   2342   2346   2466   2472   2477   2482   2486   2643   2650   2656   2661
        2796     2805   2811   2816   2821   2828   2937   2944   2990   2997   3003   3008   3013   3018   3145
        3225
$ADJUS     1#   1357   1481   1615   1627   2277   2417   2596   2744   2886   2953   3074   3086   3234
$BEAK      1#   1742   1764   1786
$BUFFE     1#    964
$CK15      1#
$CK150     1#
$CLR.T     1#
$CYCLE     1#    973
$EOP       1#    463
$FINI      1#   3314
$GETFL     1#
$GETPA     1#   1068
$HEADE     1#
$LC16      1#   1211
$LC16A     1#   1303   1427
$LC17      1#   1551
$LC18      1#   1699
$LC19      1#   1941
$LC20      1#   2008
$LC21      1#   2098
$LC22      1#   2209   2354
$LC30      1#   2494
$LC31      1#   2669
$LC32      1#   2840
$LC33      1#   3026
$MSG       1#    958
$PFAIL     1#    842
$RAMCL     1#    869
$RXSHI     1#
$SCOPE     1#    510
$SETAS     1#   1260   1380   1504   1646   2304   2444   2619   2767   2909   3105   3257
$SETLI     1#   1218   1312   1436   1569   1713   1823   1890   1950   2020   2107   2227   2370   2522   2685
        2857     3038
$SETSC     1#   3272
$SETSY     1#   3154
$SET.T     1#
$SILOI     1#
$SIMBC     1#   3161
$TRPDE     1#    191    193    195    197    199    201    203    205    207    209    211    213    215    217
         219
$TSTN      1#   1218   1312   1436   1569   1713   1823   1890   1950   2020   2109   2227   2370   2522   2685
        2857     3038
$TXSHI     1#
$VARIA     1#    117
$XZ        1#   1212   1216   1304   1310   1428   1434   1552   1567   1700   1711   1815   1821   1881   1888
        1942     1948   2009   2018   2099   2107   2210   2225   2355   2368   2495   2520   2669   2683   2841
        2855     3027   3036

. ABS.  034442    000
```

ERRORS DETECTED: 0

CZDVDC,CZDVDC/SOL/CRF=CZDVDC.MAC,CZDVDC.P11
RUN-TIME: 9 13 1 SECONDS
RUN-TIME RATIO: 112/24=4.6
CORE USED: 25K (49 PAGES)