

# DQ11

SEQUENCE REGISTER TEST  
CZDQFE0

AH-8628E-MC  
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FICHE 1 OF 1

JAN 1979  
**digital**  
MADE IN USA

This microfiche card contains a grid of frames. The first column of frames contains a vertical list of test identifiers, including: 00000000, 00000001, 00000002, 00000003, 00000004, 00000005, 00000006, 00000007, 00000008, 00000009, 0000000A, 0000000B, 0000000C, 0000000D, 0000000E, 0000000F, 00000010, 00000011, 00000012, 00000013, 00000014, 00000015, 00000016, 00000017, 00000018, 00000019, 0000001A, 0000001B, 0000001C, 0000001D, 0000001E, 0000001F, 00000020, 00000021, 00000022, 00000023, 00000024, 00000025, 00000026, 00000027, 00000028, 00000029, 0000002A, 0000002B, 0000002C, 0000002D, 0000002E, 0000002F, 00000030, 00000031, 00000032, 00000033, 00000034, 00000035, 00000036, 00000037, 00000038, 00000039, 0000003A, 0000003B, 0000003C, 0000003D, 0000003E, 0000003F, 00000040, 00000041, 00000042, 00000043, 00000044, 00000045, 00000046, 00000047, 00000048, 00000049, 0000004A, 0000004B, 0000004C, 0000004D, 0000004E, 0000004F, 00000050, 00000051, 00000052, 00000053, 00000054, 00000055, 00000056, 00000057, 00000058, 00000059, 0000005A, 0000005B, 0000005C, 0000005D, 0000005E, 0000005F, 00000060, 00000061, 00000062, 00000063, 00000064, 00000065, 00000066, 00000067, 00000068, 00000069, 0000006A, 0000006B, 0000006C, 0000006D, 0000006E, 0000006F, 00000070, 00000071, 00000072, 00000073, 00000074, 00000075, 00000076, 00000077, 00000078, 00000079, 0000007A, 0000007B, 0000007C, 0000007D, 0000007E, 0000007F, 00000080, 00000081, 00000082, 00000083, 00000084, 00000085, 00000086, 00000087, 00000088, 00000089, 0000008A, 0000008B, 0000008C, 0000008D, 0000008E, 0000008F, 00000090, 00000091, 00000092, 00000093, 00000094, 00000095, 00000096, 00000097, 00000098, 00000099, 0000009A, 0000009B, 0000009C, 0000009D, 0000009E, 0000009F, 000000A0, 000000A1, 000000A2, 000000A3, 000000A4, 000000A5, 000000A6, 000000A7, 000000A8, 000000A9, 000000AA, 000000AB, 000000AC, 000000AD, 000000AE, 000000AF, 000000B0, 000000B1, 000000B2, 000000B3, 000000B4, 000000B5, 000000B6, 000000B7, 000000B8, 000000B9, 000000BA, 000000BB, 000000BC, 000000BD, 000000BE, 000000BF, 000000C0, 000000C1, 000000C2, 000000C3, 000000C4, 000000C5, 000000C6, 000000C7, 000000C8, 000000C9, 000000CA, 000000CB, 000000CC, 000000CD, 000000CE, 000000CF, 000000D0, 000000D1, 000000D2, 000000D3, 000000D4, 000000D5, 000000D6, 000000D7, 000000D8, 000000D9, 000000DA, 000000DB, 000000DC, 000000DD, 000000DE, 000000DF, 000000E0, 000000E1, 000000E2, 000000E3, 000000E4, 000000E5, 000000E6, 000000E7, 000000E8, 000000E9, 000000EA, 000000EB, 000000EC, 000000ED, 000000EE, 000000EF, 000000F0, 000000F1, 000000F2, 000000F3, 000000F4, 000000F5, 000000F6, 000000F7, 000000F8, 000000F9, 000000FA, 000000FB, 000000FC, 000000FD, 000000FE, 000000FF. The remaining frames in the grid contain test data, including binary sequences and hexadecimal values.



IDENTIFICATION  
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PRODUCT CODE: AC-8626F-MC  
PRODUCT NAME: CZDQFEO SEQ REG TSTS  
DATE: JUNE 1978  
MAINTAINER: DIAGNOSTIC GROUP

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1. ABSTRACT

THE FUNCTION OF THE DQ11 DIAGNOSTICS ARE TO VERIFY THAT THE OPTION OPERATES ACCORDING TO SPECIFICATIONS.

CURRENTLY THERE ARE SEVEN 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 SEVEN DIAGNOSTICS ARE:

1. CZDQA [REV] BASIS R/W TEST #1
2. CZDQB [REV] BASIC R/W TEST #2
3. CZDQC [REV] BASIC NPR AND INTERRUPT TEST
4. CZDQD [REV] RECEIVER TRANSMITTER EXERCISER TEST
5. CZDQE [REV] MISC. RX AND TX TESTS. PLUS BCC TESTS.
6. CZDQF [REV] CHARACTER DETECT TESTS.
7. CZDQH [REV] CHARACTER LENGTH AND INTERRUPT TESTS.

THERE IS ALSO AN ONLINE TEST TO BE DISCUSSED LATER.

1. CZDQO [REV] ONLINE TEST. (ITEP OVERLAY)

AND A PARAMETER INPUT PROGRAM IS AVAILABLE

1. CZDQG [REV] DQ11 TRIAL PROGRAM (PARAMETER INPUT)

REQUIREMENTS

EQUIPMENT

ANY PDP11 FAMILY CPU (WITH MINIMUM 4K MEMORY)-WITH OR WITHOUT A HARDWARE SWITCH REGISTER (LOC. 177570) ASR 33 (OR EQUIVALENT)  
DQ11  
SYNC MODEM (ONLY REQUIRED FOR ONLINE TEST)

STORAGE

PROGRAM WILL LOAD AND RUN IN 4K OF MEMORY.  
LOCATION 1400 THRU 1600 ARE ESPECIALLY TO BE NOTED AND TO BE UNTOUCHED BY OPERATOR AFTER DQ11 TRIAL PROGRAM HAS BEEN EXECUTED. OR AFTER THE "AUTO SIZING" HAS BEEN DONE.

LOADING PROCEEDURE

METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND

ARE LOADED USING THE ABSOLUTE LOADER.

ABSOLUTE LOADER STARTING ADDRESS \*500

MEMORY \*  
SIZE

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

3.1.1 LOAD THE ADDRESS OF ABS. LOADER (LOC.XXX500)

3.1.2 THEN START

4. STARTING PROCEEDURE

A. LOAD LOC. 200

B. SET SWR TO ZERO FOR 'AUTO SIZING' OR LEAVE  
LEAVE SWR BIT 7=1 TO USE EXISTING PARAMETERS SET UP  
BY DQ11 TRIAL PROGRAM OR A PREVIOUSLY RUN DQ11 DIAGNOSTIC  
THAT USED THE 'AUTO SIZING'.

\*\*\*\*REFER TO SECTION 4.1 FOR SOFTWARE SWITCH REGISTER OPERATION  
AND OPTIONS.\*\*\*\*

NOTE:THE SOFTWARE SWITCH REGISTER IS LOCATED AT LOC.176  
SOFTWARE DISPLAY REGISTER IS LOCATED AT LOC.174

C.THEN START

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 DQ11 STATUS'  
1400 160010  
1402 152300  
1404 160020  
1406 150310

THE ABOVE IS ONLY AN EXAMPLE.

THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD.  
1400 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.

\*\*\*\*IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING  
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:  
SWR=XXXXXX NEW= (REFER TO SECTION 4.1 FOR OPERATOR'S OPTION)\*\*\*\*  
NOTE:IF USING THE SOFTWARE SWITCH REGISTER WHEN A HARDWARE  
SWITCH REGISTER IS AVAILABLE THE PROGRAM WILL NOT  
TYPE OUT THE TITLE.

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

4. CONTROL SWITCH SETTINGS

IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED WHICH ALLOWS THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER. IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH REGISTER (LOC. 176) IS USED.

CONTROL:

THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY DOING THE FOLLOWING:

- 1) TYPE CONTROL G <^G>: THIS WILL ALLOW THE TTY TO ENTER DATA INTO LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.
- 2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS OF THE SOFTWARE SWITCH REGISTER.)
- 3) AFTER THE "NEW=" HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE OF THE FOLLOWING AT THE TTY:
  - A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>. (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS WILL BE ALLOWED) IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH REGISTER CONTENTS WILL NOT BE CHANGED.
  - B) IF A CONTROL U <^U> IS DEPRESSED THEN THE PROGRAM WILL SEND YOU BACK TO STEP 2.

SW 15	SET: HALT ON ERROR
SW 14	SET: LOOP ON CURRENT TEST
SW 13	SET: INHIBIT ERROR PRINT OUT
SW 12	SET: INHIBIT TYPE OUT/BELL ON ERROR.
SW 11	SET: INHIBIT ITERATIONS
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:
SW 05	SET:
SW 04	SET:
SW 03	SET:
SW 02	SET: LOCK ON SELECTED TEST
SW 01	SET: RESTART PROGRAM AT SELECTED TEST
SW 00	SET: RESELECT DQ11'S DESIRED ACTION.

#### 4.1.2 SWITCH REGISTER RESTRICTIONS

SW 00 RESELECT DQ11'S DESIRED ACTIVE.  
PLEASE NOTE THAT A MESSAGE IS TYPED  
OUT FOR SWITCH REGISTER BEING EQUAL TO DQ11'S  
ACTIVE. THIS MEANS IF THE SYSTEM HAS  
FOUR DQ11S; BITS 00,01,02,03 WILL  
BE SET IN LOC 'DQACTV'. USING THIS  
SWITCH ALTERS THAT LOCATION; THEREFORE  
IF FOUR DQ11S 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  
DQ11S 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: CONTINUE THE BINARY NUMBER OF DQ11S DESIRED ACTIVE  
EXAMPLE: 1=1 DQ11; 3 2 DQ11; 7=3 DQ11; 17=4 DQ11 37=5 DQ11 ETC.  
E: NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05, 11/04, 11/34)  
F: CONTINUE WITH ANY OTHER SWITCH SETTINGS DESIRED.

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

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

#### 4.1.3 SWITCH REGISTER PRIORITYS

##### ERROR SWITCHES

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

\*\*\*HLT (ERROR) ROUTINE SUPPORTS <^G> OPERATION\*\*\*

##### SCOPE SWITCHES

1. SW 09 (IF ENABLED BY 'SCOPI')
2. SW 14
3. SW 11

\*\*\*\*SCOPE ROUTINE WILL SUPPORT <^G> OPERATION\*\*\*\*

#### 4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200  
THERE ARE NO OTHER STARTING ADDRESSES  
FOR THE DQ11 DIAGNOSTICS PREVIOUSLY MENTIONED

NOTE: IF ADDRESS 000042 IS NON-ZERO  
THE PROGRAM ASSUMES IT IS UNDER  
ACT11 OR DDP CONTROL AND WILL ACT ACCORDINGLY  
AFTER \*ALL\* AVAILABLE DQ11'S ARE TESTED  
THE PROGRAM WILL RETURN TO 'DDP2' 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

#### 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 THE THE ERROR MESSAGE  
WHICH IS TO GIVE THE OPERATOR AN INDICATION OF THE  
ERROR.

#### 6.2 ERROR RECOVERY

IF FOR SOME REASON THE DQ11 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 1226) 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 DQ11 WAS DOING AT THE TIME OF THE ERROR.

6.3 \*\*\*\*HALT RECOVERY WHEN USING SOFTWARE SWITCH REGISTER\*\*\*\*

IF THE SOFTWARE SWITCH REGISTER IS TO BE CHANGED AFTER A HALT  
THE OPERATOR IS REQUIRED TO TYPE A <^G> BEFORE DEPRESSING CONTINUE.  
THE FOLLOWING WILL BE TYPED:  
SWR=XXXXXX NEW (REFER TO SECTION 4.1 FOR OPERATOR OPTION)

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4. (PLEASE)

7.2 OPERATING RESTRICTIONS

DQ11 TRIAL PROGRAM MUST BE RUN PRIOR TO THE  
FIRST AND ONLY THE FIRST RUNNING OF ANY DQ11 DIAGNOSTIC  
NOTE: IF NO PROGRAM OTHER THAN A  
DQ11 DIAGNOSTIC WAS LOADED AFTER DQ11 TRIAL OR  
IF CORE MEMORY HAS NOT BEEN CHANGED; OR IF THERE  
IS NO DQ11 CONFIGURATION CHANGES; THE  
DQ11 TRIAL PROGRAM NEED NEVER BE RUN AGAIN.  
HOWEVER IF ANY OF THE ABOVE HAVE BEEN VIOLATED  
THE DQ11 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.

8. MISCELLANEOUS

8.1 EXECUTION TIME

8.2 PASS COMPLETE

WHEN THE DIAGNOSTIC HAS COMPLETED  
A PASS THE FOLLOWING IS AN EXAMPLE  
OF THE PRINT OUT TO BE EXPECTED.

END PASS AC-2626E-MC CSR: 160000 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.

8.3 TST1 (MINI MONITOR)

THE VERY FIRST 'TEST' (TST1)  
IS \*NOT\* A TEST OF THE DQ11 HARDWARE  
IT IS A MINI-MONITOR USED TO CYCLE DQ11 IN THE  
SYSTEM THROUGH THE DIAGNOSTIC.

REMEMBER: TST1 IS NOT A TEST OF DQ11 HARDWARE!!!!!!!

8.4 KEY LOCATIONS

RETURN (1214) CONTAINS THE ADDRESS WHERE PROGRAM WILL  
RETURN WHEN ITERATION COUNT IS REACHED  
OR IF LOOP ON TEST IS ASSERTED.  
NEXT (1216) CONTAINS THE ADDRESS OF THE NEXT TEST  
TO BE PERFORMED.  
TSTNO (1226) CONTAINS THE NUMBER OF THE TEST NOW  
BEING PERFORMED.  
RUN (1304) THE BIT IN 'RUN' ALWAYS POINTS ONE  
PAST THE DQ11 CURRENTLY BEING TESTED.  
EXAMPLE:  
(RUN) 1304/0000000001000000  
MEANS THAT DQ11 NO.05 IS THE DQ11 NOW  
RUNNING.

DQCR00-DQCR17  
DQST00-DQST17  
(1400)-(1476)

THESE LOCATIONS CONTAIN THE INFORMATION  
NEEDED TO TEST UP TO 16 (DECIMAL) DQ11S  
SEQUENTIALLY. THEY CONTAIN THE CSR, VECTOR  
AND STATUS CONCERNING THE CONFIGURATION  
OF EACH DQ11.

DQACTV (1500) EACH BIT SET IN THIS LOCATION INDICATES  
THAT THE ASSOCIATED DQ11 WILL BE TESTED  
IN TURN.  
EXAMPLE:  
(DQACTV) 1500/0000000000011111  
MEANS THAT DQ11 NO. 00,01,02,03,04  
WILL BE TESTED.

EXAMPLE:  
(DQACTV) 1500/0000000000010001  
MEANS THAT DQ11 NO. 00,04  
WILL BE TESTED.

DQCSR (1506) CONTAINS THE RECEIVER CSR OF THE  
CURRENT DQ11 UNDER TEST.

DQSTAT (1510) CONTAINS THE STATUS OF THE CURRENT  
DQ11 UNDER TEST.

BIT 15 SET: TWO SYNC CHARS/ONE SYNC CHAR  
BIT 14 SET: TEST JUMPER INSTALLED/NOT INSTALLED  
BIT 13 SET: BB OPTION INSTALLED/NOT INSTALLED  
BIT 12 SET: BA OPTION INSTALLED/NOT INSTALLED  
BIT 11 SET: ACTIVE ON FIRST NON-SYNC/ACTIVE AFTER NO. OF SYNC  
BIT 10 SET: AB OPTION INSTALLED/NOT INSTALLED  
BIT 09 SET: ODD VRC/EVEN VRC

BIT 00-08 VECTOR 'A' OF DEVICE

8.5 \*\*\* METHOD OF AUTO SIZING \*\*\*

8.5.1 FINDING THE CONTROL STATUS REGISTER.

WHEN LOOKING FOR THE CSR IT IS NECESSARY TO TAKE CARE THAT WHEN A CSR IS FOUND THAT IT IS INDEED A DQ11. THAT IS THE METHOD OF MY MADNESS FOR THIS ROUTINE. AN ATTEMPT TO CLEAR THE MISC. REGISTER IS TRIED IF A TIME-OUT TRAP OCCURES POINTERS ARE UPDATED AND ATTEMPTED AGAIN. IF NO TIME-OUT; THE RECEIVER 'ACTIVE BIT' (BIT 12) IS SET AND A \*COMPARE\* FOR BOTH SYNC1 AND SYNC 2 IS DONE AT THE MISC. REGISTER. IF THEY ARE THERE THIS IS A DQ11. THE INFORMATION IS STORED AWAY.

8.5.2 ONE SYNC BIT OR TWO?

SINCE TOO MUCH HARDWARE MUST BE TURNED ON TO SENSE THE PRESENTS OF ONE SYNC OR TWO. THE PROGRAM ASSUMES TWO SYNC CHARS. NOTE: THIS ASSUMPTION MAY BE ALTERED AFTER AUTO SIZING BY ALTERING BIT 15 IN APPRIOATE DGSTXX: LOCATION.

8.5.3 'BB' OPTION INSTALLED?

TO SENSE FOR THE 'BB' OPTION THE PROGRAM SELECTS THE CHARACTER DET. REGISTER AND THE LOADS IN ALL 1'S; IF ANY ONE OR COMBINATION OF BITS ARE SET THE BB OPTION IS ASSUMED TO EXIST.

8.5.4 'AB' OPTION INSTALLED?

TO SENSE FOR THE 'AB' OPTION THE PROGRAM SELECTS THE POLYNOMIAL REGISTER AND WRITES ALL 1'S INTO IT; IF ANY ONE OR COMBINATION OF BITS ARE SET THE AB OPTION IS ASSUMED TO EXIST.

8.5.5 'BA' OPTION INSTALLED?

TO SENSE FOR 'BA' OPTION REQUEST TO SEND AND DATA TERMINAL READY ARE SET; IF EITHER ONE OR BOTH ARE SET THE PROGRAM ASSUMES THE BA OPTION EXISTES

8.5.6 JUMPER ON END OF CABLE? \*\*\*NOTE:CZDQE ONLY\*\*\*

THE PROGRAM CHECKS TO SEE IF EITHER OR BOTH CLEAR TO SEND AND CARRIER ARE SET; IF SO THE PROGRAM ASSUMES THE TEST JUMPER IS ON THE END OF THE CABLE.

8.5.7 ACTIVE ON FIRST NON-SYNC?

SINCE TOO MUCH HARDWARE MUST BE TURNED ON TO SENSE FOR WHEN THE DQ11 GOES ACTIVE THE PROGRAM ASSUMES 'ACTIVE ON FIRST NON-SYNC'. NOTE: THIS CAN BE CHANGED BY ALTERING BIT 11 IN THE APPRIOATE DGSTXX: AFTER AUTC SIZING

8.5.8 SET FOR ODD OR EVEN PARITY?

AS ABOVE TOO MUCH HARDWARE IS NEED TO SENSE WHICH PARITY WAS SELECTED. SO THE PROGRAM ASSEMES ODD PARITY.  
NOTE: THIS CAN BE CHANGED BY ALTERING BIT 9 IN APPRIORATE DQSTXX: LOCATION. AFTER AUTO SIZING

8.5.9 FINDING THE VECTOR.

THE PROGRAM SETS 'PRIMARY DONE', 'SECONDAY DONE', AND 'INTERUPT ENABLE' AND LOOKS FOR AN INTERUPT. IF IT INTERUPTS IT IS PICKED UP AND STORED AWAY. IF NO INTERUPT OCCURES THE PROGRAM ASSUMES VECTOR =300. THIS PROBLEM WILL BE FIXED IN ONE OF THE DIAGNOSTICS AND \*AUTO SIZING\* SHOULD BE REDONE TO GET THE CORRECT VECTOR.

9. PROGRAM DESCRIPTION

CONTAINED WITHIN LISTING

10. LISTING

FOLLOWING

```
522  
523 :CZDQFE0/<377>/SEQ REG TSTS  
524 :COPYRIGHT 1975, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754  
525  
526 :REVISED 16-DEC-76 BY R. BLACK  
527 : A)SUPPORTS SOFTWARE SWITCH REGISTER  
528 : B)SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER  
529 : BY <^G>  
530 :STARTING PROCEDURE  
531 :LOAD PROGRAM  
532 :LOAD ADDRESS 000200  
533 :PRESS START  
534 :PROGRAM WILL TYPE 'CZDQFE0/<377>/SEQ REG TSTS'  
535 :PROGRAM WILL TYPE 'R' TO INDICATE THAT TESTING HAS STARTED  
536 :AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE  
537 :AND THEN RESUME TESTING  
538  
539  
540 :SWITCH REGISTER OPTIONS  
541  
542 100000 SW15=100000 : 1,HALT ON ERROR  
543 040000 SW14=40000 :-1,LOOP ON CURRENT TEST  
544 020000 SW13=20000 :=-1,INHIBIT ERROR TYPEOUT  
545 010000 SW12=10000 :=-1,DELETE TYPEOUT/BELL ON ERROR.  
546 004000 SW11=4000 :=-1,INHIBIT ITERATIONS  
547 002000 SW10=2000 :=-1,ESCAPE TO NEXT TEST ON ERROR  
548 001000 SW09=1000 :=-1,LOOP WITH CURRENT DATA  
549 000400 SW08=400 :-1,LOOP ON ERROR  
550 000100 SW06=100  
551 000040 SW05=40  
552 000020 SW04=20  
553 000010 SW03=10  
554 000004 SW02=4 :LOCK ON TEST SELECT  
555 000002 SW01=2 :RESTART PROGRAM AT SELECTED TEST  
556 000001 SW00=1 :RESELECT DQ11 DESIRED ACTIVE  
557 :NOTE: THIS MUST NOT EXCEED ORIGINAL COUNT
```



GENERAL DEFINATIONS AND EQUIVALENCIES

```
558
559
560      ;REGISTER DEFINITIONS
561
562      000000      R0=%0      ;GENERAL REGISTER
563      000001      R1=%1      ;GENERAL REGISTER
564      000002      R2=%2      ;GENERAL REGISTER
565      000003      R3=%3      ;GENERAL REGISTER
566      000004      R4=%4      ;GENERAL REGISTER
567      000005      R5=%5      ;GENERAL REGISTER
568      000006      SP=%6      ;PROCESSOR STACK POINTER
569      000007      PC=%7      ;PROGRAM COUNTER
570
571      ;LOCATION EQUIVALENCIES
572
573      177570      DSWR= 177570 ;HARDWARE SWITCH REGISTER LOC.
574      177570      DLIGHTS=177570 ;HARDWARE DISPLAY REGISTER LOC.
575      177776      PS=177776 ;PROCESSOR STATUS WORD
576      001200      STACK-1200 ;START OF PROCESSOR STACK
577
578      ;INSTRUCTION DEFINITIONS
579
580      005746      PUSH1SP=5746 ;DECREMENT PROCESSOR STACK 1 WORD
581      005726      POP1SP=5726 ;INCREMENT PROCESSOR STACK 1 WORD
582      010046      PUSHRO=10046 ;SAVE R0 ON STACK
583      012600      POPRO=12600 ;RESTORE R0 FROM STACK
584      024646      PUSH2SP=24646 ;DECREMENT STACK TWICE
585      022626      POP2SP=22626 ;INCREMENT STACK TWICE
586      .EQUIV EMT,HLT ;BASIC DEFINITION OF ERROR CALL
587
588
589      100000      BIT15=100000
590      040000      BIT14=40000
591      020000      BIT13=20000
592      010000      BIT12=10000
593      004000      BIT11=4000
594      002000      BIT10=2000
595      001000      BIT9=1000
596      000400      BIT8=400
597      000200      BIT7=200
598      000100      BIT6=100
599      000040      BIT5=40
600      000020      BIT4=20
601      000010      BIT3=10
602      000004      BIT2=4
603      000002      BIT1=2
604      000001      BIT0=1
605
606
607      ;D01: OPTIONAL DEFINITIONS
608
609      002000      ABBIT=2000
610      004000      ACTBIT=4000
611      010000      BABIT=10000
612      020000      BBBIT=20000
613      040000      JUMBIT=40000
```

GENERAL DEFINATIONS AND EQUIVALENCIES

614 001000 ODDBIT=1000  
615 100000 SYNBIT=100000

:DQ11 SECONDARY REGISTER DEFINATIONS

619			
620	000000	RXBA.P=0	:RECEIVER BUS ADDRESS PRIMARY.
621	000001	RXWC.P=1	:RECEIVER WORD COUNT PRIMARY.
622	000002	TXBA.P=2	:TRANSMITTER BUS ADDRESS PRIMARY.
623	000003	TXWC.P=3	:TRANSMITTER BUS ADDRESS PRIMARY.
624	000004	RXBA.S=4	:RECEIVER BUS ADDRESS SECONDARY.
625	000005	RXWC.S=5	:RECEIVER WORD COUNT SECONDARY.
626	000006	TXBA.S=6	:TRANSMITTER BUS ADDRESS SECONDARY.
627	000007	TXWC.S=7	:TRANSMITTER WORD COUNT SECONDARY.
628			
629	000010	CHARDT=10	:CHARACTER DETECT REGISTER.
630	000011	SYNC.=11	:SYNC REGISTER.
631	000012	MISC.=12	:MISCELLANEOUS REGISTER.
632	000013	TX.MUX=13	:TRANSMITTER MUX REGISTER.
633	000014	SEQ.-14	:SEQUENCE REGISTER.
634	000015	RX.BCC=15	:RECEIVER BCC REGISTER.
635	000016	TX.BCC=16	:TRANSMITTER BCC REGISTER.
636	000017	POLY.=17	:POLYNOMIAL REGISTER.
637			
638			

TRAPCATCHER FOR UNEXPECTED INTERUPTS

```
639 ;TRAPCATLAER FOR ILLEGAL INTERRUPTS
640 000000 . =0
641 ;STANDARD INTERRUPT VECTORS
642
643 000024 . =24
644 000024 014764 .PFAIL ;POWER FAIL HANDLER
645 000026 000340 340 ;SERVICE AT LEVEL 7
646 000030 014434 .HLT ;ERROR HANDLER
647 000032 000340 340 ;SERVICE AT LEVEL 7
648 000034 014402 .TRPSRV ;GENERAL HANDLER DISPATCH SERVICE
649 000036 000340 340 ;SERVICE AT LEVEL 7
650 000046 . -46
651 000046 013162 LOGICAL ;ACT HOOKS
652 000052 . -52
653 000052 000000 .WORD 0
654 ;THIS ROUTINE TRIES TO FORCE THE RECEIVER TO INTERUPT
655 ;TO ITS VECTOR WHERE IT WILL PICK UP THE STATUS LOCATION
656 ;FOR ITS NEW PC; AND PICK UP AN IOT INSTRUCTION FOR ITS
657 ;NEW PS. WHEN THE NEW PC IS FETCHED AN IOT INSTRUCTION IS
658 ;EXECUTED, TRAPPING TO LOCATION 20 WHERE A ROUTINE IS EXECUTED
659 ;TO TAKE THE PC FROM THE STACK AND US IT AS THE VECTOR ADDRESS
660 000056 . 56
661
662 000056 VECMAP:
663 000056 010120 000004 1$: MOV R1,(R0)+ ;START FILLING THE VECTOR AREA
664 000060 012721 000004 MOV #4,(R1)+ ;WITH .+2; IOT (4)
665 000064 022021 000004 CMP (R0)+,(R1)+ ;UPDATE THE POINTERS
666 000066 020127 001000 CMP R1,#1000 ;IS ALL FLOATING VECTOR AREA DONE
667 000072 101771 000004 BLOS 1$ ;BR IF NOT ALL DONE
668 000074 012737 000146 000020 MOV #4$,@#20 ;SET FOR IOT TRAP BY DQ11
669 000102 013737 001500 001244 MOV DQACTV,TEMP1 ;GET THE ACTIVE DQ11 S
670 000110 006037 001244 2$: ROR TEMP1 ;ARE YOU ACTIVE.. DQ11
671 000114 103023 000004 BCC 5$ ;IF CARRY CLEAR.. NO MORE DQ11S
672 000116 005037 177776 CLR PS ;CLEAR PS
673 000122 005722 000004 TST (R2)+ ;PUT POINTER TO STATUS TABLE
674 000124 012772 000340 177776 MOV #340,@-2(R2) ;TRY AND SET PRI/SEC DONE AND IE
675 000132 105200 000004 INCB R0 ;DELAY.....
676 000134 001376 000004 BNE -2 ;.....DELAY
677 000136 112712 000300 MOVB #300,(R2) ;NO INTERUPT ASSUME 300 FIX IN TEST C
678 000142 005722 000004 3$: TST (R2)+ ;UPDATE POINTERS
679 000144 000761 000004 BR 2$ ;GO DO IT AGAIN
680 000146 051612 000004 4$: BIS (SP),(R2) ;ENTERD BY IOT TRAP BY DQ11
681 000150 042712 000007 BIC #7,(R2) ;CLEAR UNWANTED BITS
682 000154 022626 000004 CMP (SP)+,(SP)+ ;POP IOT JUNK OFF STACK
683 000156 012716 000142 MOV #3$,(SP) ;SET RETURN PC ON STACK
684 000162 000002 000004 RTI ;GO HOME.
685 000164 000207 000004 5$: RTS PC ;ALL SIZING IS DONE
686
687 ;****SOFTWARE SWITCH REGISTER****
688 . 174
689 000174 000000 DISPREG: 0 ;SOFTWARE DISPLAY REGISTER
690 000176 000000 SWREG: 0 ;SOFTWARE SWITCH REGISTER
691
692 ;PROGRAM START
693
694 000200 . =20C
```

```

695 000200 000137 001512          JMP      .START          ;GO TO START OF PROGRAM
696
697          000220          .-220
698 000220 012702 001400      (SRMAP: MOV      #1400,R2          ;CLEAR ALL STATUS TABLE
699 000224 005022          CLR      (R2)+          ;DO CLEAR
700 000226 022702 001512      CMP      #1512,R2          ;ALL TABLE DONE
701 000232 001374          BNE     .-6              ;BR IF MORE TO GO
702 000234 005037 001504      CLR      DQNUM          ;SET NUMBER OF DQ11S TO 0
703 000240 012702 001400      MOV      #1400,R2          ;SET TABLE POINTER
704 000244 012701 160000      MOV      #160000,R1       ;GET FIRST FLOATING ADDRESS
705 000250 012737 000614 000004  1$:  MOV      #5$,2#4          ;SET FOR TIME OUT TRAP--NO DEVICE--
706 000256 112761 000012 000005  MOVB     #12,5(R1)       ;TRY AND SEL MISC REGISTER
707 000264 005061 000006          CLR      6(R1)          ;TRY AND CLEAR MISC REG
708 000270 012711 010000      MOV      #10000,(R1)      ;TRY AND SET RX ACTIVE
709 000274 022761 030000 000006  CMP      #30000,6(R1)    ;LOOK FOR SYNC 1 AND SYNC 2
710 000302 001071          BNE     2$              ;THIS IS NOT A DQ11 IF I BRANCH
711 000304 010122          MOV     R1,(R2)+        ;NOW THIS IS A DQ11 --STORE CSR
712 000306 052712 100000      BIS     #SYNBIT,(R2)     ;SET FOR TWO SYNC CHARS
713 000312 005011          CLR     (R1)           ;CLEAR DQ ACTIVE BIT
714 000314 112761 000010 000005  MOVB    #10,5(R1)       ;SEL CHAR DET REGISTER
715 000322 012761 177777 000006  MOV     #-1,6(R1)       ;WRITE INTO CHAR DET REG
716 000330 005761 000006          TST     6(R1)          ;WAS THE REGISTER WRITTEN?
717 000334 001402          BEQ     .+6            ;APPERENTLY NO BB OPTION.
718 000336 052712 020000      BIS     #BBBIT,(R2)     ;SET FOR BB OPTION
719 000342 112761 000017 000005  MOVB    #17,5(R1)       ;SEL POLYNO. REGISTER
720 000350 012761 177777 000006  MOV     #-1,6(R1)       ;WRITE POLYNO.REGISTER
721 000356 005761 000006          TST     6(R1)          ;WAS REG WRITTEN??
722 000362 001402          BEQ     .+6            ;BR IF NO AB OPTION
723 000364 052712 002000      BIS     #ABBIT,(R2)     ;SET FOR AB OPTION
724 000370 012761 001400 000002  MOV     #1400,2(R1)     ;TRY TO SET .DTR. .RS.
725 000376 032761 001400 000002  BIT     #1400,2(R1)     ;DID ANY OF THEM SET
726 000404 001402          BEQ     .+6            ;BR IF NO BA OPTION
727 000406 052712 010000      BIS     #BABIT,(R2)     ;SET FOR BA OPTION
728 000412 032761 030000 000002  BIT     #30000,2(R1)    ;DID .CS. .CO. SET
729 000420 001402          BEQ     .+6            ;BR IF NO JUMPER
730 000422 052712 040000      BIS     #JUMBIT,(R2)    ;SET FOR JUMPER
731 000426 052712 004000      BIS     #ACTBIT,(R2)    ;SET FOR ACTIVE ON FIRST NON-SYNC
732 000432 052712 001000      BIS     #ODDBIT,(R2)   ;SET FOR ODD VRC.....
733 000436 005722          TST     (R2)+          ;POP POINTER
734 000440 005011          CLR     (R1)           ;CLEAR RCSR
735 000442 005061 000002      CLR     2(R1)          ;CLEAR TCSR
736 000446 005061 000002      CLR     2(R1)          ;CLEAR AGAIN
737 000452 005061 000004      CLR     4(R1)          ;CLEAR ERROR REG
738 000456 005061 000006      CLR     6(R1)          ;CLEAR SEC REG
739 000462 005237 001504          INC     DQNUM          ;UPDATE NUMBER OF DQ11S
740 000466 062701 000010 2$:  ADD     #10,R1          ;UPDATE CSR POINTER BY 10 (8)
741 000472 022701 164000      CMP     #164000,R1      ;HAVE ALL FLOATING ADDRESSES BEEN CHECKED??
742 000476 001267          BNE     1$              ;BR IF NOT ALL DONE
743 000500 005037 001500      CLR     DQACTV         ;ZERO ACTIVE DQ11S
744 000504 005737 001504      TST     DQNUM          ;WERE ANY DQ11S FOUND
745 000510 001434          BEQ     4$              ;HEY BUDDY. NO DQ11S FOUND IN SYSTEM
746 000512 013701 001504      MOV     DQNUM,R1       ;SAVE NUMBER OF DQ11S
747 000516 010137 001276      MOV     R1,SAVNUM       ;SAVE NUMBER FOR ACT11
748 000522 000241 3$:  CLC          ;CLEAR CARRY
749 000524 006137 001500      ROL     DQACTV         ;      ACTIVE ADDRESS
750 000530 005237 001500      INC     DQACTV         ;SET BIT 0
    
```



```

751 000534 005301          DEC      R1          ;DEC NUMBER OF DQ11S
752 000536 001371          BNE      3$          ;BR IF MORE TO GO
753 000540 012737 000006 000004  MOV      #6,@#4      ;RESET TIME OUT VECTOR
754 000546 013737 001500 001502  MOV      DQACTV,SAVACT ;SAVE ACTIVE
755 000554 012737 000340 000022  MOV      #340,@#22   ;SET IOT TRAP PRIO: TO 7
756 000562 012702 001400          MOV      #1400,R2    ;SET TABLE POINTER
757 000566 012700 000300          MOV      #300,R0     ;SET VECTOR START
758 000572 012701 000302          MOV      #302,R1     ;SET VECTOR+2 START
759 000576 000137 000056          JMP      VECMAP      ;GO FIND THE VECTORS
760 000602 104402          4$:      TYPE          ;TYPE MESSAGE
761 000604 015325          MERR2          ;I DIDN'T FIND ANY DQ11S. DON'T USE AUTO SIZE.
762 000606 005000          CLR      R0          ;
763 000610 000000          HALT          ;
764 000612 000776          BR      -2          ;HOW CAN I TEST NO DQ11S
765 000614 012716 000466 5$:      MOV      #2$,(SP)   ;DON'T LET OPR HIT CONT. SW
766 000620 000002          RTI             ;ENTERED BY TIME OUT TRAP
767                                     ;GO HOME.
768
769                                     .=1000
770 001000 005377 055103 050504  MTITLE: .ASCIZ <377><12>/CZDQFE0/<377>/SEQ REG TSTS/<377>
771 001006 042506 177460 042523
772 001014 020121 042522 020107
773 001022 051524 051524 000377
774
775                                     .=1200
776                                     ;INDIRECT POINTERS
777
778 001200 177570          SWR:      177570      ;SWITCH REGISTER POINTER
779 001202 177570          LIGHTS:  177570     ;DISPLAY REGISTER POINTER
780 001204 177560          TKCSR:   177560     ;TELETYPE KEYBOARD CONTROL REGISTER
781 001206 177562          TKDBR:   177562     ;TELETYPE KEYBOARD DATA BUFFER
782 001210 177564          TPCSR:   177564     ;TELEPRINTER CONTROL REGISTER
783 001212 177566          TPDBR:   177566     ;TELEPRINTER DATA BUFFER
784
785                                     ;PROGRAM CONTRUL PARAMETERS
786
787 001214 000000          RETURN:  0          ;SCOPE ADDRESS FOR LOOP ON TEST
788 001216 000000          NEXT:   0          ;ADDRESS OF NEXT TEST TO BE EXECUTED
789 001220 000000          LOCK:   0          ;ADDRESS FOR LOCK ON CURRENT DATA
790 001222 000003          ICOUNT: 3          ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
791 001224 000000          LPCNT:  0          ;NUMBER OF ITERATIONS COMPLETED
792 001226 000000          TSTNO:  0          ;NUMBER OF TEST IN PROGRESS
793 001230 000000          PASCNT: 0          ;NUMBER OF PASSES COMPLETED
794 001232 000000          EPRCNT: 0          ;TOTAL NUMBER OF ERRORS
795 001234 000000          LSTERR: 0          ;PC OF LAST ERROR CALL
796
797                                     ;PROGRAM VARIABLES
798
799 001236 000000          CHAR1:  0
800 001240 000000          CHAR2:  0
801 001242 000000          CHAR3:  0
802 001244 000000          TEMP1:  0          ;TEMPORARY STORAGE
803 001246 000000          TEMP2:  0          ;TEMPORARY STORAGE
804 001250 000000          TEMP3:  0          ;TEMPORARY STORAGE
805 001252 000000          TEMP4:  0          ;TEMPORARY STORAGE
806 001254 000000          TEMP5:  C          ;TEMPORARY STORAGE

```

PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

807	001256	000000	SAVR0:	0	:R0 STORAGE
808	001260	000000	SAVR1:	0	:R1 STORAGE
809	001262	000000	SAVR2:	0	:R2 STORAGE
810	001264	000000	SAVR3:	0	:R3 STORAGE
811	001266	000000	SAVR4:	0	:R4 STORAGE
812	001270	000000	SAVR5:	0	:R5 STORAGE
813	001272	000000	SAVSP:	0	:STACK POINTER STORAGE
814	001274	000000	SAVPC:	0	:PROGRAM COUNTER STORAGE
815	001276	000000	SAVNUM:	0	
816	001300	000001	CREAM:	.BLKW 1	
817	001302	000000	RUNFLG:	0	
818	001304	000000	RUN:	0	
819	001306	000000	RUNCNT:	0	

PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

```
820
821                ;PROGRAM CONTROL FLAGS
822
823 001310          000          INIFLG: .BYTE 0          ;PROGRAM INITIALIZATION FLAG
824 001311          000          STFLG: .BYTE 0          ;TEST START FLAG
825 001312          000          ERRFLG: .BYTE 0         ;ERROR OCCURED FLAG
826 001313          000          LOKFLG: .BYTE 0         ;LOCK ON CURRENT TEST FLAG
827                000000      $Y=0
828
829                ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
830                ;POINTERS TO SUBROUTINES CAN BE FOUND
831                ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS
832
833                ;*****
834                ;*****
835 001314          104400      .TRPTAB:
836                SCOPE=TRAP+0          ;CALL TO SCOPE LOOP AND ITERATION HANDLER
837 001314          013236      .SCOPE
838                SCOPE1=TRAP+1         ;CALL TO LOOP ON CURRENT DATA HANDLER
839 001316          013350      .SCOPE1
840                TYPE-TRAP+2          ;CALL TO TELETYPE OUTPUT ROUTINE
841 001320          013370      .TYPE
842                INSTR=TRAP+3         ;CALL TO ASCII STRING INPUT ROUTINE
843 001322          013476      .INSTR
844                INSTER-TRAP+4        ;CALL TO INPUT ERROR HANDLER
845 001324          013614      .INSTER
846                PARAM=TRAP+5        ;CALL TO NUMERICAL DATA INPUT ROUTINE
847 001326          013646      .PARAM
848                SAV05=TRAP+6        ;CALL TO REGISTER SAVE ROUTINE
849 001330          014062      .SAV05
850                RES05=TRAP+7        ;CALL TO REGISTER RESTORE ROUTINE
851 001332          014122      .RES05
852                CONVRT=TRAP+10      ;CALL TO DATA OUTPUT ROUTINE
853 001334          014154      .CONVRT
854                CNVRT=TRAP+11       ;CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF.
855 001336          014160      .CNVRT
856                MSTCLR=TRAP+12      ;CALL TO ISSUE MASTER CLEAR
857 001340          010766      .MSTCLR
858                MEMCLR=TRAP+13     ;CALL TO CLEAR ALL SCRATCH PAD MEMORIES
859 001342          010652      .MEMCLR
860                CKSWR=TRAP+14      ;CALL TO ALLOW SWREG TO BE LOADED FROM TTY
861 001344          015062      .CKSWR
862                CNTLU=TRAP+15      ;CALL TO ALLOW LOADING OF SWREG FROM TTY
863 001346          015136      .CNTLU
864
865                ;*****
866                ;*****
867
868                ;DQ11 VECTOR AND REGISTER INDIRECT POINTERS
869
870 001350          000000      DQRVEC: 0          ;POINTER TO DQ11 RECEIVER INTERRUPT VECTOR
871 001352          000000      DQRLVL: 0         ;POINTER TO DQ11 RECEIVER INTERRUPT SERVICE PS
872 001354          000000      DQTRVEC: 0        ;POINTER TO DQ11 TRANSMITTER INTERRUPT VECTOR
873 001356          000000      DQTLVL: 0        ;POINTER TO DQ11 TRANSMITTER INTERRUPT SERVICE PS
874 001360          000000      DQRCSR: 0        ;POINTER TO DQ11 RECEIVER CONTROL REGISTER
875 001362          000000      DQRCSH: 0        ;POINTER TO HIGH BYTE OF DQ11 RECEIVER CONTROL REGISTER
```

PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

876 001364 000000 DQTCR: 0 ; POINTER TO DQ11 TRANSMITTER CONTROL REGISTER  
 877 001366 000000 DQERR: 0 ; POINTER TO DQ11 ERROR REGISTER  
 878 001370 000000 DQREG: 0 ; POINTER TO HIGH BYTE OF ERROR REGISTER  
 879 001372 000000 DQSEC: 0 ; POINTER TO DQ11 SECONDARY REGISTER  
 880 001374 000000 DQSECH: 0 ; POINTER TO HIGH BYTE OF DQ11 SECONDARY REGISTER

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;DQ11 STATUS TABLE AND ADDRESS ASSIGNMENTS

886 001400 001400 . =1400  
 887 001400 000001 DQCR00: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 00  
 888 001402 000001 DQST00: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 00  
 889 001404 000001 DQCR01: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 01  
 890 001406 000001 DQST01: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 01  
 891 001410 000001 DQCR02: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 02  
 892 001412 000001 DQST02: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 02  
 893 001414 000001 DQCR03: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 03  
 894 001416 000001 DQST03: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 03  
 895 001420 000001 DQCR04: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 04  
 896 001422 000001 DQST04: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 04  
 897 001424 000001 DQCR05: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 05  
 898 001426 000001 DQST05: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 05  
 899 001430 000001 DQCR06: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 06  
 900 001432 000001 DQST06: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 06  
 901 001434 000001 DQCR07: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 07  
 902 001436 000001 DQST07: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 07  
 903 001440 000001 DQCR10: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 10  
 904 001442 000001 DQST10: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 10  
 905 001444 000001 DQCR11: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 11  
 906 001446 000001 DQST11: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 11  
 907 001450 000001 DQCR12: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 12  
 908 001452 000001 DQST12: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 12  
 909 001454 000001 DQCR13: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 13  
 910 001456 000001 DQST13: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 13  
 911 001460 000001 DQCR14: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 14  
 912 001462 000001 DQST14: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 14  
 913 001464 000001 DQCR15: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 15  
 914 001466 000001 DQST15: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 15  
 915 001470 000001 DQCR16: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 16  
 916 001472 000001 DQST16: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 16  
 917 001474 000001 DQCR17: .BLKW 1 ; CONTROL STATUS REGISTER FOR DEVICE NO: 17  
 918 001476 000001 DQST17: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 17  
 919 001500 000001 DQACTV: .BLKW 1 ; HOLD ACTIVE BITS FOR TESTING  
 920 001502 000001 SAVACT: .BLKW 1 ; SAVE NUMBER OF ACTIVE DQ11S  
 921 001504 000001 DQNUM: .BLKW 1 ; OCTAL NUMBER OF TOTAL NUMBER OF DQ11S  
 922 001506 000001 DQCSR: .BLKW 1 ; CSR OF DQ11 UNDER TEST  
 923 001510 000001 DQSTAT: .BLKW 1 ; VECTOR AND CONFIGURATION STATUS OF DQ11 UNDER TEST.

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926  
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;PROGRAM INITIALIZATION  
 ;LOCK OUT INTERRUPTS  
 ;SET UP PROCESSOR STACK  
 ;SET UP POWER FAIL VECTOR  
 ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS  
 ;TYPE TITLE MESSAGE



PROGRAM INITIALIZATION AND START UP.

```
932 001512 012737 000340 177776 .START: MOV #340,PS ;LOCK OUT INTERRUPTS
933 001520 012706 001200 MOV #STACK,SP ;SET UP STACK
934 001524 012737 014764 000024 MOV #.PFAIL,@#24 ;SET UP POWER FAIL VECTOR
935 001532 013737 001504 001276 MOV DQNUM,SAVNUM
936 001540 105037 001311 CLR STFLG ;CLEAR START FLAG
937 001544 005037 001230 CLR PASCNT ;CLEAR PASS COUNT
938 001550 105037 001312 CLR ERRFLG ;CLEAR ERROR FLAG
939 001554 005037 001302 CLR RUNFLG
940 001560 012737 001400 001300 MOV #1400,CREAM
941 001566 005037 001232 CLR ERPCNT ;CLEAR ERROR COUNT
942 001572 005037 001234 CLR LSTERR ;CLEAR LAST ERROR POINTER
943 001576 012737 000001 001226 MOV #1,TSTNO ;SET UP FOR TEST 1
944 001604 012737 001512 001214 MOV #.START,RETURN ;SET UP FOR POWER FAIL BEFORE
945 ;TESTING STARTS
946 001612 012737 177570 001200 MOV #DSWR,SWR ;MOV HARDWARE SWR TO SWR
947 001620 012737 177570 001202 MOV #DLIGHTS,LIGHTS ;MOV DISPLAY LIGHTS TO LIGHTS
948 001626 013746 000006 MOV @#6,-(SP) ;SAVE VECTORS
949 001632 013746 000004 MOV @#4,-(SP)
950 001636 012737 001656 000004 MOV #64$,@#4 ;SET UP FOR TIMEOUT
951 001644 022777 177777 177326 CMP #-1,@SWR ;REFERENCE HARDWARE SWITCH REGISTER
952 001652 001402 BEQ 65$
953 001654 000407 BR 66$
954 001656 022626 64$: CMP (SP)+,(SP)+ ;ADJUST STACK
955 001660 012737 000176 001200 65$: MOV #SWREG,SWR ;POINT TO SOFTWARE SWITCH REG
956 001666 012737 000174 001202 MOV #DISPREG,LIGHTS ;POINT TO SOFT DISPLAY REG
957 001674 012637 000004 66$: MOV (SP)+,@#4 ;RESTORE VECTORS
958 001700 012637 000006 MOV (SP)+,@#6
959 001704 005737 000042 TST @#4 ;UNDER MONITOR
960 001710 001014 BNE 67$
961 ;:*****THE NEXT 4 LINES OF CODE MOVED TO SOLVE PR#2757 (JUNE 78)*****
962 001712 105737 001310 TSTB INIFLG ;HAS INITIALIZATION BEEN PERFORMED?
963 001716 001035 BNE 12$ ;IF YES, BR
964 001720 104402 001000 TYPE ,MTITLE ;TYPE TITLE MESSAGE
965 001724 105137 001310 COMB INIFLG ;IF NOT SET FLAG AND INIT
966 001730 022737 000176 001200 CMP #SWREG,SWR ;IS SWREG USED
967 001736 001001 BNE 67$
968 001740 104415 CNTLU
969 001742 105777 177232 67$: TSTB @SWR
970 001746 100402 BMI .+6
971 001750 004737 000220 JSR PC,CSRMAP
972 001754 104402 015612 TYPE ,XHEAD
973 001760 012737 001400 001244 MOV #1400,TEMP1
974 001766 017737 177252 001246 MOV @TEMP1,TEMP2
975 001774 001406 BEQ .+16
976 001776 104410 CONVRT
977 002000 015640 XSTATQ
978 002002 062737 000002 001244 ADD #2,TEMP1
979 002010 000766 BR .-22
980 002012 032777 000001 177160 12$: BIT #SW00,@SWR
981 002020 001424 BEQ 1$
982 002022 104402 TYPE
983 002024 015533 MNEW
984 002026 005000 CLR R0
985 002030 000000 HALT
986 002032 104414 CKSWR
987 002034 027737 177140 001502 CMP @SWR,SAVACT
```

PROGRAM INITIALIZATION AND START UP.

```
988 002042 101404 BLOS 11$
989 002044 104402 TYPE
990 002046 015374 MERR3
991 002050 000000 HALT
992 002052 000776 BR -2
993 002054 017737 177120 001500 11$: MOV @SWR,DQACTV
994 002062 013700 001500 MOV DQACTV,R0
995 002066 000000 HALT
996 002070 104414 CKSWR
997 002072 012700 000300 1$: MOV #300,R0
998 002076 012701 000302 MOV #302,R1
999 002102 010120 2$: MOV R1,(R0)+
1000 002104 005021 CLR (R1)+
1001 002106 022021 CMP (R0)+,(R1)+
1002 002110 022700 001000 CMP #1000,R0
1003 002114 001372 BNE 2$
1004
1005 ;TEST START AND RESTART
1006
1007 002116 012737 000340 177776 .BEGIN: MOV #340,PS ;LOCK OUT INTERRUPTS
1008 002124 012706 001200 MOV #STACK,SP ;SET UP STACK
1009 002130 005737 000042 TST @#42 ;IS PROGRAM UNDER MONITOR CONTROL
1010 002134 001040 BNE 3$
1011 002136 104414 CKSWR ;CHECK FOR <^G>
1012 002140 032777 000004 177032 BIT #BIT2,@SWR ;CHECK FOR LOCK ON TEST
1013 002146 001411 BEQ 1$
1014 002150 104402 015432 TYPE .MLOCK
1015 002154 012737 000240 013246 MOV #NOP,TTST
1016 002162 012737 000240 013250 MOV #NOP,TTST+2 ;SET UP TO LOCK
1017 002170 000406 BR 2$
1018 002172 013737 013344 013246 1$: MOV BRW,TTST
1019 002200 013737 013346 013250 MOV BRX,TTST+2 ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1020 002206 032777 000002 176764 2$: BIT #SW01,@SWR ;IF SW01=1, GET STARTING PC
1021 002214 001410 BEQ 3$
1022 002216 104403 INSTR
1023 002220 015420 MTSTPC
1024 002222 104405 PARAM
1025 002224 002254 TST1
1026 002226 010214 TLAST
1027 002230 001214 #RETURN
1028 002232 001 .BYTE 1
1029 002233 001 .BYTE 1
1030 002234 000403 BR 4$
1031 002236 012737 002254 001214 3$: MOV #TST1,RETURN ;START AT TEST 1
1032 002244 104402 015322 4$: TYPE ,MR ;TYPE R
1033 002250 000177 176740 JMP @RETURN ;START TESTING
1034
1035 ; TEST 1
1036 002254 012737 000001 001226 *****
1037 002262 012737 002644 001214 TST1: MOV #1,TSTNO
1038 002270 012737 002644 001216 MOV #TST2,RETURN
1039 002276 105737 001302 MOV #TST2,NEXT
1040 002302 001010 TSTB RUNFLG ;IS THIS MY FIRST TIME HERE?
1041 002304 012737 000001 001304 BNE 1$ ;BR IF FLAG IS SET
1042 002312 012737 000020 001306 MOV #BIT0,RUN ;SET RUN POINTER.
1043 002320 105137 001302 COMB RUNFLG ;SET FOR MAX OF 16 DQ11'S PER SYSTEM
;SET RUN FLAG
```

PROGRAM INITIALIZATION AND START UP.

```
1044 002324 033737 001304 001500 1$: BIT RUN,DQACTV ;FIND AN ACTIVE DQ11 TO TEST.
1045 002332 001032 BNE 3$ ;BR IF I FOUND ONE TO TEST.
1046 002334 005737 001500 TST DQACTV ;FIND OUT IF THERE ARE NO DQ11 ACTIVE.
1047 002340 001423 BEQ 2$ ;BR TO FATAL ERROR. WHY AM I HERE IF NO ACTIVE DQ11'S???
1048 002342 000257 CCC ;CLEAR ALL THE CONDITION CODES OF CPU
1049 002344 006137 001304 ROL RUN ;UPDATE RUN POINTER
1050 002350 062737 000004 001300 ADD #4,CREAM ;UPDATE ADDRESS POINTER.
1051 002356 005337 001306 DEC RUNCNT ;DEC NUMBER OF TIMES I LOOKED AT ACTIVE.
1052 002362 001360 BNE 1$ ;BR AND KEEP LOOKING.
1053 002364 012737 000020 001306 MOV #16,RUNCNT ;START RESTORING MY POINTERS.
1054 002372 012737 001400 001300 MOV #1400,CREAM ;RESTORE ADDRESS POINTER
1055 002400 012737 000001 001304 MOV #1,RUN ;RESTORE RUN POINTER.
1056 002406 000746 BR 1$ ;KEEP ON TESTING.
1057 002410 104402 2$: TYPE ;ALLERT OPERATOR OF FATAL ERROR
1058 002412 015325 MERR2 ;NO DQ11 ACTIVE. WHY AM I HERE???
1059 002414 000000 HALT ;YOU MUST RELOAD DQ11 DIAGNOSTIC!!
1060 002416 000776 BR -2 ;STICK HERE ON CONT.
1061 002420 000257 3$: CCC ;CLEAR CPU COND. CODES
1062 002422 006137 001304 ROL RUN ;UPDATE RUN. ACTIVE DQ11 FOUND.
1063 002426 017737 176646 001506 MOV @CREAM,DQCSR ;PLACE ADDRESS OF DQ11 AT DQCSR
1064 002434 062737 000002 001300 ADD #2,CREAM ;UPDATE ADDRESS POINTER
1065 002442 017737 176632 001510 MOV @CREAM,DQSTAT ;PLACE STATUS OF DQ11 AT DQSTAT
1066 002450 062737 000002 001300 ADD #2,CREAM ;UPDATE ADDRESS POINTER
1067 002456 013737 001506 001360 MOV DQCSR,DQRCR
1068 002464 013737 001510 001350 MOV DQSTAT,DQREVC
1069 002472 042737 177007 001350 BIC #177007,DQREVC
1070 002500 013737 001350 001352 MOV DQREVC,DQRLVL ;GENERATE ADDRESS OF RECEIVER INTERRUPT SERVICE PS
1071 002506 062737 000002 001352 ADD #2,DQRLVL
1072 002514 013737 001352 001354 MOV DQRLVL,DQTEVC ;GENERATE ADDRESS OF TRANSMITTER INTERRUPT VECTOR
1073 002522 062737 000002 001354 ADD #2,DQTEVC
1074 002530 013737 001354 001356 MOV DQTEVC,DQTLVL ;GENERATE ADDRESS OF TRANSMITTER INTERRUPT SERVICE PS
1075 002536 062737 000002 001356 ADD #2,DQTLVL
1076 002544 013737 001360 001362 MOV DQRCR,DQRCSH
1077 002552 005237 001362 INC DQRCSH ;GENERATE ADDRESS OF HIGH BYTE
1078 002556 013737 001360 001364 MOV DQRCSR,DQTCSR ;GENERATE ADDRESS OF TRANSMITTER CONTROL REGISTER
1079 002564 062737 000002 001364 ADD #2,DQTCSR
1080 002572 013737 001364 001366 MOV DQTCSR,DQERR ;GENERATE ADDRESS OF ERROR REGISTER
1081 002600 062737 000002 001366 ADD #2,DQERR
1082 002606 013737 001366 001370 MOV DQERR,DQREG ;GENERATE ADDRESS OF HIGH BYTE OF ERROR REGISTER
1083 002614 005237 001370 INC DQREG
1084 002620 013737 001370 001372 MOV DQREG,DQSEC ;GENERATE ADDRESS OF SECONDARY REGISTER
1085 002626 005237 001372 INC DQSEC
1086 002632 013737 001372 001374 MOV DQSEC,DQSECH ;GENERATE ADDRESS OF HIGH BYTE
1087 002640 005237 001374 INC DQSECH
1088
1089 ;THIS IS NOT A TEST...
1090 ; TEST 2
1091 ;*****
1092 002644 012737 000002 001226 TST2: MOV #2,TSTNO
1093 002652 012737 002662 001216 MOV #TST3,NEXT
1094 ;THE ORIGINAL TEST 2 IS
1095 ;NOW TEST 2 OF TAPE DZDQH
1096 002660 104400 SCOPE
1097
1098
1099
```

PROGRAM INITIALIZATION AND START UP.

```

1100                                     ;TEST TO SEE IF EVERY CHARACTER FROM
1101                                     ;0 TO 377 CAN BE DETECTED IN CHARACTER
1102                                     ;DETECT ADDRESS ZERO.
1103                                     ;NOTE: SW09=1 WILL FREEZE ON CURRENT DATA.
1104
1105                                     ; TEST 3
1106                                     ;*****
1107 002662 012737 000003 001226 TST3:  MOV #3,TSTNO
1108 002670 012737 003214 001216      MOV #TST4,NEXT
1109 002676 012737 002744 001220      MOV #1$,LOCK
1110 002704 032737 020000 001510      BIT #BBBIT,DQSTAT ;DOES THIS DQ11 HAVE THE 'BB' OPTION INSTALLED?
1111 002712 001005                                     ;BR IF YES
1112 002714 012737 013050 001214      MOV #.EOP,RETURN ;GOTO END PASS
1113 002722 000177 176266      JMP @RETURN
1114 002726 104413      13$: MEMCLR ;CLEAR ALL THE DQ11
1115 002730 105037 013047      6$: CLR DETCAR+1 ;CLEAR THE CHARACTER STORAGE AREA
1116 002734 005037 013044      CLR GDCHAR ;SET FOR ERROR PRINTOUT
1117 002740 005037 013042      CLR ADDR ;SAME.
1118 002744 012737 000010 013040      1$: MOV #8.,COUNT ;EIGHT BITS FOR EIGHT SHIFTS.
1119 002752 013702 013040      2$: MOV COUNT,R2 ;GET NUMBER OF SHIFTS PER CHAR.
1120 002756 105077 176400      CLR @DQRCSH ;GET CHAR ADDR. ZERO
1121 002762 105077 176402      CLR @DQREG ;GET RX BA PRI.
1122 002766 012777 012216 176376      MOV #RXBUFF,@DQSEC ;LOAD IT
1123 002774 105277 176370      INCB @DQREG ;GET RX WC PRI.
1124 003000 012777 000200 176364      MOV #200,@DQSEC ;LOAD IT
1125 003006 105077 176350      3$: CLR @DQRCSH ;SELECT CHARACTER DET REG 0
1126 003012 113737 013047 013044      MOVB DETCAR+1,GDCHAR ;
1127 003020 112777 000010 176342      MOVB #10,@DQREG ;SELECT THE CHARACTER DET REGISTER.
1128 003026 013777 013046 176336      MOV DETCAR,@DQSEC ;LOAD THE CHARACTER TO BE DETECTED
1129 003034 112777 000014 176326      MOVB #14,@DQREG ;SELECT THE SEQUENCE REGISTER
1130 003042 012777 120000 176322      MOV #BIT15+BIT13,@DQSEC ;SET SINGLE CHARACTER REC AND SET FLAG.
1131 003050 112777 000012 176312      MOVB #12,@DQREG ;COMM
1132 003056 012777 004012 176306      MOV #4012,@DQSEC ;SELECT EIGHT BITS TEST LOOP AND AUTO STEP
1133 003064 052777 010001 176266      BIS #BIT12+BIT0,@DQRCR ;SET RX ACTIVE AND RX GO
1134 003072 013737 013046 015714      MOV DETCAR,TEMP ;MOV CHARACTER TO WORKING AREA
1135 003100 105137 015715      COMB TEMP+1 ;COMPLIMENT DATA FOR USE ON THE BIT WINDOW
1136 003104 042777 000200 176260      4$: BIC #BIT7,@DQSEC ;IF PREVIOUSLY SET; CLEAR THE BIT WINDOW.
1137 003112 006037 015714      ROR TEMP ;SHIFT OUT THE BIT OF DATA.
1138 003116 013703 015714      MOV TEMP,R3 ;STORE CHAR
1139 003122 042703 177577      BIC #^C<BIT7>,R3 ;CLEAR ALL UNWANTED BITS
1140 003126 050377 176240      BIS R3,@DQSEC ;PLACE DATA ON THE BIT WINDOW
1141 003132 005277 176234      INC @DQSEC ;CLOCK UP
1142 003136 005377 176230      DEC @DQSEC ;CLOCK DOWN
1143 003142 005302      DEC R2 ;IS CHARACTER DONE YET
1144 003144 001357      BNE 4$ ;BR IF NOT DONE
1145 003146 005777 176206      TST @DQRCR ;WAS THE CHARACTER REALLY DETECTED?
1146 003152 100401      BMI +4 ;BR IF GOOD
1147 003154 104002      HLT 2 ;ERROR CHARACTER NOT DETECTED.
1148 003156 017737 176176 015714      MOV @DQRCR,TEMP ;GET THE RECEIVER CSR.
1149 003164 042737 170377 015714      BIC #^C<7400>,TEMP ;CLEAR ALL BUT THE CHARACTER DET. ADDR.
1150 003172 005737 015714      TST TEMP ;WAS THE CHAR DET. IN ADDR ZERO?
1151 003176 001401      BEQ +4 ;
1152 003200 104002      HLT 2 ;CHAR NOT DETECTED IN ADDR. ZERO..
1153                                     ;-----*LOCK*-----
1154 003202 104401      SCOPI ;IF SW09=1; THEN GOTO ADDRESS IN 'LOCK'.
1155                                     ;-----

```

PROGRAM INITIALIZATION AND START UP.

```

1156 003204 105237 013047      INCB  DETCAR+1      ;HAVE I HIT MY LIMIT YET?
1157 003210 001260              BNE   2$           ;NO RETURN WITH UPDATED CHAR.
1158 003212 104400              SCOPE              ;SCOPE TEST
1159
1160
1161
1162
1163
1164
1165
1166
1167
1168
1169
1170

```

```

: TEST THAT CHARACTERS FROM
: 400 TO 177400 CAN BE DETECTED.
: IN CHACTER DETECT ADDRESS ZERO.
: NOTE: SW09=1 WILL FREEZE ON CURRENT DATA.

```

: TEST 4

```

1171 003214 012737 000004 001226  TST4:  MOV    #4,TSTNO
1172 003222 012737 003514 001216      MOV    #TST5,NEXT
1173 003230 012737 003252 001220      MOV    #1$,LOCK
1174 003236 005037 013046              CLR    DETCAR      ;SET CHAR TO ZERO
1175 003242 005037 013044              CLR    GDCHAR      ;SET FOR ERROR
1176 003246 005037 013042              CLR    ADDR        ;SAME
1177 003252
1178 003252 012702 000020      1$:   MOV    #16.,R2      ;SET COUNT FOR 16 BIT CHARS
1179 003256 105077 176106      2$:   CLR    @DQREG     ;SEL THE RX BA PRI.
1180 003262 012777 012216 176102      3$:   MOV    #RXBUFF,@DQSEC ;LOAD IT
1181 003270 105277 176074              INCB  @DQREG       ;SEL THE RX WC PRI.
1182 003274 012777 000200 176070      MOV    #200,@DQSEC ;LOAD IT
1183 003302 105077 176054              CLR    @DQRCSH     ;GET CHAR ADD ZERO
1184 003306 112777 000010 176054      MOV    #10,@DQREG  ;GET CHAR ADDRESS
1185 003314 013777 013046 176050      MOV    DETCAR,@DQSEC ;LOAD THE CHARACTER TO BE DETCETED
1186 003322 112777 000014 176040      MOV    #14,@DQREG  ;GET THE SEQ REG.
1187 003330 012777 050000 176034      MOV    #BIT12+BIT14,@DQSEC ;LOAD DBL CHAR AND SET FLAG
1188 003336 112777 000012 176024      MOV    #12,@DQREG  ;SEL MISC REG.
1189 003344 012777 000012 176020      MOV    #BIT11+BIT3,@DQSEC ;SET TEST LOOP AND AUTO/STEP
1190 003352 052777 010001 176000      BIS    #BIT12+BIT0,@DQRCSR ;SET RX ACTIVE AND GO
1191 003360 013737 013046 015714      MOV    DETCAR,TEMP ;GET DATA CHAR.
1192 003366 013737 013046 013044      MOV    DETCAR,GDCHAR ;FOR ERROR
1193 003374 005137 015714              COM    TEMP        ;PREPARE FOR BIT WINDOW
1194 003400 042777 000200 175764  4$:   BIC    #BIT7,@DQSEC ;ZERO BIT WINDOW
1195 003406 000241              CLC                ;CLEAR CARRY
1196 003410 005037 001244              CLR    TEMP1
1197 003414 006037 015714              ROR    TEMP
1198 003420 106037 001244              RORB   TEMP1
1199 003424 053777 001244 175740      BIS    TEMP1,@DQSEC ;PLACE DATA ON BIT WINDOW
1200 003432 005277 175734              INC    @DQSEC      ;CLOCK THE
1201 003436 005377 175730              DEC    @DQSEC
1202 003442 005302              DEC    @DQSEC
1203 003444 001355              DEC    R2          ;IS ALL THE CHAR DONE?
1204 003446 005777 175706      BNE   4$          ;BR IF NO
1205 003452 100401              TST   @DQRCSR     ;DID THE FLAG SET?
1206 003454 104002              BMI   .+4         ;BR IF YES
1207 003456 017737 175676 015714      HLT   2           ;CHARACTER DET. FLAG NOT SET FOR DBL CHAR.
1208 003464 042737 170377 015714      MOV    @DQRCSR,TEMP ;GET THE RECEIVER CSR.
1209 003472 005737 015714      BJC   #^C<7400>,TEMP ;CLEAR ALL BUT THE CHARACTER DET. ADDR.
1210 003476 001401              TST   TEMP        ;WAS THE CHAR DET. IN ADDR ZERO?
1211 003500 104002              BEQ   '           ;
                          HLT   2           ;CHAR NOT DETECTED IN ADDR. ZERO..

```

PROGRAM INITIALIZATION AND START UP.

```
1212 ;----- *LOCK* -----  
1213 003502 104401 ; SCOPE ; IF SW09=1; THEN GOTO ADDRESS IN 'LOCK'.  
1214 ;-----  
1215 003504 105237 013047 INCB DETCAR+1 ; UPDATE THE DATA  
1216 003510 001260 BNE 1$ ; ALL DONE?  
1217 003512 104400 SCOPE ; SCOPE WHEN ALL DATA DONE.  
1218  
1219  
1220  
1221  
1222 ; TEST THAT A CHARACTER CAN  
1223 ; BE DETECTED IN ALL 16 CHARACTER  
1224 ; DETECT ADDRESSES  
1225 ;  
1226 ;  
1227 ; TEST THAT THE CHARACTER 255  
1228 ; CAN BE DETECTED IN CHARACTER  
1229 ; DETECT ADDRESS 00  
1230 ;  
1231 : TEST 5  
1232 ;*****  
1233 003514 012737 000005 001226 TST5: MOV #5,TSTNO  
1234 003522 012737 003544 001216 MOV #TST6,NEXT  
1235 003530 012737 000000 013042 MOV #00,ADDR ; LOAD THE ADDRESS  
1236 003536 004737 004314 JSR PC,CHK.ADD ; GO AND LOAD THE CHARACTER.  
1237 003542 104400 SCOPE ; SCOPE THIS TEST  
1238  
1239 ;  
1240 ; TEST THAT THE CHARACTER 255  
1241 ; CAN BE DETECTED IN CHARACTER  
1242 ; DETECT ADDRESS 01  
1243 ;  
1244 : TEST 6  
1245 ;*****  
1246 003544 012737 000006 001226 TST6: MOV #6,TSTNO  
1247 003552 012737 003574 001216 MOV #TST7,NEXT  
1248 003560 012737 000001 013042 MOV #01,ADDR ; LOAD THE ADDRESS  
1249 003566 004737 004314 JSR PC,CHK.ADD ; GO AND LOAD THE CHARACTER.  
1250 003572 104400 SCOPE ; SCOPE THIS TEST  
1251  
1252 ;  
1253 ; TEST THAT THE CHARACTER 255  
1254 ; CAN BE DETECTED IN CHARACTER  
1255 ; DETECT ADDRESS 02  
1256 ;  
1257 : TEST 7  
1258 ;*****  
1259 003574 012737 000007 001226 TST7: MOV #7,TSTNO  
1260 003602 012737 003624 001216 MOV #TST10,NEXT  
1261 003610 012737 000002 013042 MOV #02,ADDR ; LOAD THE ADDRESS  
1262 003616 004737 004314 JSR PC,CHK.ADD ; GO AND LOAD THE CHARACTER.  
1263 003622 104400 SCOPE ; SCOPE THIS TEST  
1264  
1265 ;  
1266 ; TEST THAT THE CHARACTER 255  
1267 ; CAN BE DETECTED IN CHARACTER
```



```
1268 ;DETECT ADDRESS 03
1269 ;
1270 : TEST 10
1271 :*****
1272 003624 012737 000010 001226 TST10: MOV #10,TSTNO
1273 003632 012737 003654 001216 MOV #TST11,NEXT
1274 003640 012737 000003 013042 MOV #03,ADDR ;LOAD THE ADDRESS
1275 003646 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1276 003652 104400 SCOPE ;SCOPE THIS TEST
1277 ;
1278 ;
1279 ;TEST THAT THE CHARACTER 255
1280 ;CAN BE DETECTED IN CHARACTER
1281 ;DETECT ADDRESS 04
1282 ;
1283 : TEST 11
1284 :*****
1285 003654 012737 000011 001226 TST11: MOV #11,TSTNO
1286 003662 012737 003704 001216 MOV #TST12,NEXT
1287 003670 012737 000004 013042 MOV #04,ADDR ;LOAD THE ADDRESS
1288 003676 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1289 003702 104400 SCOPE ;SCOPE THIS TEST
1290 ;
1291 ;
1292 ;TEST THAT THE CHARACTER 255
1293 ;CAN BE DETECTED IN CHARACTER
1294 ;DETECT ADDRESS 05
1295 ;
1296 : TEST 12
1297 :*****
1298 003704 012737 000012 001226 TST12: MOV #12,TSTNO
1299 003712 012737 003734 001216 MOV #TST13,NEXT
1300 003720 012737 000005 013042 MOV #05,ADDR ;LOAD THE ADDRESS
1301 003726 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1302 003732 104400 SCOPE ;SCOPE THIS TEST
1303 ;
1304 ;
1305 ;TEST THAT THE CHARACTER 255
1306 ;CAN BE DETECTED IN CHARACTER
1307 ;DETECT ADDRESS 06
1308 ;
1309 : TEST 13
1310 :*****
1311 003734 012737 000013 001226 TST13: MOV #13,TSTNO
1312 003742 012737 003764 001216 MOV #TST14,NEXT
1313 003750 012737 000006 013042 MOV #06,ADDR ;LOAD THE ADDRESS
1314 003756 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1315 003762 104400 SCOPE ;SCOPE THIS TEST
1316 ;
1317 ;
1318 ;TEST THAT THE CHARACTER 255
1319 ;CAN BE DETECTED IN CHARACTER
1320 ;DETECT ADDRESS 07
1321 ;
1322 : TEST 14
1323 :*****
```

PROGRAM INITIALIZATION AND START UP.

```

1324 003764 012737 000014 001226 TST14: MOV #14,TSTNO
1325 003772 012737 004014 001216 MOV #TST15,NEXT
1326 004000 012737 000007 013042 MOV #07,ADDR ;LOAD THE ADDRESS
1327 004006 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1328 004012 104400 SCOPE ;SCOPE THIS TEST

```

```

1329
1330
1331 ;
1332 ;TEST THAT THE CHARACTER 255
1333 ;CAN BE DETECTED IN CHARACTER
1334 ;DETECT ADDRESS 10

```

```

: TEST 15
:*****

```

```

1337 004014 012737 000015 001226 TST15: MOV #15,TSTNO
1338 004022 012737 004044 001216 MOV #TST16,NEXT
1339 004030 012737 000010 013042 MOV #10,ADDR ;LOAD THE ADDRESS
1340 004036 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1341 004042 104400 SCOPE ;SCOPE THIS TEST

```

```

1342
1343 ;
1344 ;TEST THAT THE CHARACTER 255
1345 ;CAN BE DETECTED IN CHARACTER
1346 ;DETECT ADDRESS 11

```

```

: TEST 16
:*****

```

```

1350 004044 012737 000016 001226 TST16: MOV #16,TSTNO
1351 004052 012737 004074 001216 MOV #TST17,NEXT
1352 004060 012737 000011 013042 MOV #11,ADDR ;LOAD THE ADDRESS
1353 004066 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1354 004072 104400 SCOPE ;SCOPE THIS TEST

```

```

1355
1356 ;
1357 ;TEST THAT THE CHARACTER 255
1358 ;CAN BE DETECTED IN CHARACTER
1359 ;DETECT ADDRESS 12

```

```

: TEST 17
:*****

```

```

1363 004074 012737 000017 001226 TST17: MOV #17,TSTNO
1364 004102 012737 004124 001216 MOV #TST20,NEXT
1365 004110 012737 000012 013042 MOV #12,ADDR ;LOAD THE ADDRESS
1366 004116 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.
1367 004122 104400 SCOPE ;SCOPE THIS TEST

```

```

1368
1369 ;
1370 ;TEST THAT THE CHARACTER 255
1371 ;CAN BE DETECTED IN CHARACTER
1372 ;DETECT ADDRESS 13

```

```

: TEST 20
:*****

```

```

1376 004124 012737 000020 001226 TST20: MOV #20,TSTNO
1377 004132 012737 004154 001216 MOV #TST21,NEXT
1378 004140 012737 000013 013042 MOV #13,ADDR ;LOAD THE ADDRESS
1379 004146 004737 004314 JSR PC,CHK.ADD ;GO AND LOAD THE CHARACTER.

```

```

1380 004152 104400          SCOPE          ;SCOPE THIS TEST
1381
1382
1383          ;
1384          ;TEST THAT THE CHARACTER 255
1385          ;CAN BE DETECTED IN CHARACTER
1386          ;DETECT ADDRESS 14
1387
1388          ; TEST 21
1389          ;.....
1389 004154 012737 000021 001226  ST21: MOV    #21,ISTNO
1390 004162 012737 004204 001216  MOV    #TST22,NEXT
1391 004170 012737 000014 013042  MOV    #14,ADDR          ;LOAD THE ADDRESS
1392 004176 004737 004314          JSR    PC,CHK.ADD        ;GO AND LOAD THE CHARACTER.
1393 004202 104400          SCOPE          ;SCOPE THIS TEST
1394
1395          ;
1396          ;TEST THAT THE CHARACTER 255
1397          ;CAN BE DETECTED IN CHARACTER
1398          ;DETECT ADDRESS 15
1399
1400          ; TEST 22
1401          ;.....
1402 004204 012737 000022 001226  ST22: MOV    #22,TSTNC
1403 004212 012737 004234 001216  MOV    #TST23,NEXT
1404 004220 012737 000015 013042  MOV    #15,ADDR          ;LOAD THE ADDRESS
1405 004226 004737 004314          JSR    PC,CHK.ADD        ;GO AND LOAD THE CHARACTER.
1406 004232 104400          SCOPE          ;SCOPE THIS TEST
1407
1408          ;
1409          ;TEST THAT THE CHARACTER 255
1410          ;CAN BE DETECTED IN CHARACTER
1411          ;DETECT ADDRESS 16
1412
1413          ; TEST 23
1414          ;.....
1415 004234 012737 000023 001226  ST23: MOV    #23,TSTNO
1416 004242 012737 004264 001216  MOV    #TST24,NEXT
1417 004250 012737 000016 013042  MOV    #16,ADDR          ;LOAD THE ADDRESS
1418 004256 004737 004314          JSR    PC,CHK.ADD        ;GO AND LOAD THE CHARACTER.
1419 004262 104400          SCOPE          ;SCOPE THIS TEST
1420
1421          ;
1422          ;TEST THAT THE CHARACTER
1423          ;CAN BE DETECTED IN CHARACTER
1424          ;DETECT ADDRESS 17
1425
1426          ; TEST 24
1427          ;.....
1428 004264 012737 000024 001226  ST24: MOV    #24,TSTN
1429 004272 012737 004562 001216  MOV    #TST25,NEXT
1430 004300 012737 000017 013042  MOV    #17,ADDR          ;LOAD THE ADDRESS
1431 004306 004737 004314          JSR    PC,CHK.ADD        ;GO AND LOAD THE CHARACTER.
1432 004312 104400          SCOPE          ;SCOPE THIS TEST
1433
1434          ;
1435 004314 104417          ;CLEAN ALL THE DOTTI REGISTERS.

```

PROGRAM INITIALIZATION AND START UP.

```

1436 004316 113777 013042 175036      MOVB  ADDP,@DQRCSH      ;LOAD THE CHAR DET ADDRESS TO BE USED.
1437 004324 005037 013046              CLR  DETCAR            ;CLEAR WORKING LOC.
1438 004330 112737 000255 013047      MOVB  #255,DETCAR+1    ;LOAD THE CHARACTER TO BE DETECTED IN WORKING AREA.
1439 004336 012737 000255 013044      MOV   #255,GDCHAR     ;LOAD FOR ERROR PRINTOUT
1440 004344 013702 013040              1$:  MOV   COUNT,R2      ;EIGHT SHIFTS FOR EIGHT BITS (NO VRC)
1441 004350 105077 175014              2$:  CLRB  @DQREG         ;SEL THE RX BA PRI.
1442 004354 012777 012216 175010      MOV   #RXBUFF,@DQSEC  ;LOAD IT
1443 004362 105277 175002              INCB  @DQREG         ;SEL THE RX WC PRI.
1444 004366 012777 177777 174776      MOV   #-1,@DQSEC     ;SET FOR ONE CHAR.
1445 004374 112777 000010 174766      MOVB  #10,@DQSEC     ;SELECT THE CHARACTER DET REGISTER.
1446 004402 013777 013046 174762      MOV   DETCAR,@DQSEC  ;SET THE CHARACTER TO BE DETECTED INTO DQ11 CHAR DET REG
1447 004410 112777 000014 174752      MOVB  #14,@DQREG     ;SELECT THE SEQUENCE REGISTER.
1448 004416 012777 120000 174746      MOV   #BIT15+BIT13,@DQSEC ;SET SINGLE CHAR DET AND SINGLE CHAR DET FLAG SE
1449 004424 112777 000012 174736      MOVB  #12,@DQREG     ;SELECT THE MISC REGISTER.
1450 004432 012777 004012 174732      MOV   #4012,@DQSEC   ;SET EIGHT BITS TEST LOOP AND AUTO STEP
1451 004440 052777 010001 174712      BIS   #BIT12+BIT0,@DQRCR ;SET RX ACTIVE AND RX GO.
1452 004446 013737 013046 015714      MOV   DETCAR,TEMP    ;MOVE THE CHAR TO BE DET TO WORKING AREA
1453 004454 105137 015715              COMB  TEMP+1         ;COMPLEMENT CHAR FOR USE ON BIT WINDOW.
1454 004460 042777 000200 174704      3$:  BIC   #BIT7,@DQSEC  ;IF BIT WINDOW SET ON LAST PASS CLEAR IT.
1455 004466 006037 015714              ROR   TEMP          ;SHIFT OUT BIT OF DATA.
1456 004472 013703 015714              MOV   TEMP,R3       ;SAVE IT
1457 004476 042703 177577              BIC   #^C<BIT7>,R3  ;CLEAR ALL UNWANTED BITS
1458 004502 050377 174664              BIS   R3,@DQSEC     ;PLACE DATA ON BIT WINDOW.
1459 004506 005277 174660              INC   @DQSEC        ;CLOCK UP
1460 004512 005377 174654              DEC   @DQSEC        ;CLOCK DOWN
1461 004516 005302              DEC   R2            ;IS CHARACTER DONE YET?
1462 004520 001357              BNE   3$           ;BR IF NOT DONE
1463 004522 005777 174632              TST   @DQRCR       ;WAS CHAR REALLY DETECTED?
1464 004526 100401              BMI   .+4          ;BR IF GOOD
1465 004530 104002              HLT   2            ;CHARACTER DETECT FAILED.
1466 004532 017737 174622 015714      MOV   @DQRCR,TEMP   ;GET THE RECEIVER CSR.
1467 004540 042737 170377 015714      BIC   #^C<7400>,TEMP ;CLEAR ALL BUT CHARACTER DET. ADDR.
1468 004546 123737 013042 015715      CMFB  ADDR,TEMP+1   ;WAS THE CHARACTER REALLY DETECTED
1469                                ;IN ADDRESS $A ??
1470                                BEQ   .+4
1471                                HLT   2            ;WRONG ADDRESS.
1472                                RTS   PC
1473                                ;
1474                                ;TEST OF RECEIVER AND TRANSMITTER 'SET 'T''
1475                                ;TEST OF BIT ONE OF SEQUENCE REGISTER.
1476                                ;THIS TEST WILL 'SET T' AND THEN WILL
1477                                ;SEND A CHAR WHICH WILL 'SET DONE CLEAR GO'; IF
1478                                ;REALLY IN TRANSPARENT MODE THE CHAR WILL NOT BE DETECTED
1479                                ;AND THE WORD COUNTS WILL GOTO ZERO.
1480                                ;
1481                                ; TEST 25
1482                                ;*****
1483 004562 012737 000025 001226      TST25: MOV   #25,TSTNO
1484 004570 012737 004722 001216      MOV   #TST26,NEXT
1485
1486 004576 004737 011024              2$:  JSR   PC,SET.UP    ;SET UP ALL NECESSARY FOR TEST.
1487 004602 012777 040002 174562      MOV   #BIT14+BIT1,@DQSEC ;SET DBL. CHAR AND SET T
1488
1489 004610 105377 174546              DECB  @DQRCSH       ;SELECT ADD 16 (8)
1490 004614 112777 000010 174546      MOVB  #'0,@DQREG    ;SELECT CHAR DET. ADDRESS
1491 004622 012777 164400 174542      MOV   #351*400,@DQSEC ;LOAD THE CHARACTER. SET DONE CLEAR GO.

```

PROGRAM INITIALIZATION AND START UP.

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1492 004630 112777 000014 174532      MOVB  #14,@DQREG      :SELECT THE SEQ REGISTER.
1493 004636 012777 100200 174526      MOV   #BIT15+BIT7,@DQSEC
1494                                     :SET FUNCTION. CLEAR GO SET DONE.
1495 004644 012700 012014      MOV   #TXBUFF,R0     :PREPARE TX BUFFER
1496 004650 012720      MOV   (PC)+,(R0)+    :LOAD THE BUFFER WITH DATA
1497 004652      000      350      .BYTE 000,350       :DATA
1498 004654 012720      MOV   (PC)+,(R0)+    :LOAD THE BUFFER WITH DATA
1499 004656      351      200      .BYTE 351,200       :DATA
1500 004660 004737 011620      JSR   PC,ENABLE      :SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
1501 004664 112777 000001 174476      MOVB  #1,@DQREG      :GET THE RX WC PRI.
1502 004672 005777 174474      TST   @DQSEC         :RX WC PRI. SHOULD =0
1503 004676 001401      BEQ   .+4            :BR IF RX WC PRI 0
1504 004700 104003      HLT   3              :RX PRI WC NOT =0
1505 004702 112777 000003 174460      MOVB  #3,@DQREG      :GET TX WC PRI.
1506 004710 005777 174456      TST   @DQSEC         :TX WC PRI SHOULD 0
1507 004714 001401      BEQ   .+4            :BR IF TX WC =0
1508 004716 104003      HLT   3              :TX WC PRI NOT -0
1509 004720 104400      SCOPE
1510
1511
1512
1513                                     :
1514                                     :TEST OF RECEIVER "CLEAR 'T' "
1515                                     :TEST OF BIT TWO OF SEQUENCE REGISTER.
1516                                     :THIS TEST WILL ENTER BOTH THE RECEIVER AND
1517                                     :TRANSMITTER INTO TRANSPARENCY; THEN A CHARACTER
1518                                     :WHICH SAYS "CLEAR RX 'T' WILL BE SENT FOLLOWED
1519                                     :BY A CHARACTER WHICH SAYS "SET RX CHAR FLAG".
1520                                     :THE TEST THEN CHECKS THAT THE CHARACTER FLAG IS SET
1521                                     :WHICH MEANS THAT CHARACTER WAS DETECTED.
1522                                     :
1523                                     :
1524                                     : TEST 26
1525                                     :*****
1524 004722 012737 000026 001226      TST26: MOV   #26,TSTNO
1525 004730 012737 005072 001216      MOV   #TST27,NEXT
1526 004736 004737 011024      JSR   PC,SET_UP      :SET UP ALL NECESSARY FOR TEST.
1527 004742 012777 040002 174422      MOV   #BIT14+BIT1,@DQSEC
1528                                     :SET FUNCTION: DBL CHAR AND SET T
1529 004750 105377 174406      DECB  @DQRCSH        :SELECT CHAR ADDRESS 16 (8)
1530 004754 112777 000010 174406      MOVB  #10,@DQREG     :SELECT CHAR DET ADDRESS.
1531 004762 012777 165000 174402      MOV   #352*400,@DQSEC :LOAD CHARACTER
1532 004770 112777 000014 174372      MOVB  #14,@DQREG     :SELECT THE SEQ REGISTER.
1533 004776 012777 040004 174366      MOV   #BIT14+BIT2,@DQSEC
1534                                     :SET FOR DBL CHAR AND CLEAR T
1535 005004 105377 174352      DECB  @DQRCSH        :GET NEXT ADDR
1536                                     :GET NEXT ADDRESS
1537 005010 112777 000010 174352      MOVB  #10,@DQREG     :SELECT CHAR DET ADDRESS
1538 005016 012777 166400 174346      MOV   #355*400,@DQSEC :LOAD CHARACTER.
1539 005024 112777 000014 174336      MOVB  #14,@DQREG     :SELECT THE SEQ REGISTER.
1540 005032 012777 120000 174332      MOV   #BIT15+BIT13,@DQSEC
1541                                     :SET FOR SINGLE CHAR AND SET FLAG.
1542 005040 012700 012014      MOV   #TXBUFF,R0     :GET POINTER
1543 005044 012720      MOV   (PC)+,(R0)+    :LOAD THE BUFFER WITH DATA
1544 005046      350      351      .RYTE 350,351       :DATA
1545 005050 012720      MOV   (PC)+,(R0)+    :LOAD THE BUFFER WITH DATA
1546 005052      352      355      .BYTE 352,355       :DATA
1547 005054 004737 011620      JSR   PC,ENABLE      :SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.

```

PROGRAM INITIALIZATION AND START UP.

```

1548 005060 005777 174274 TST @DQPCSR ;CHECK CHAR DET FLAG
1549 005064 100401 BMI .+4 ;BR IS SET
1550 005066 04004 HLT 4 ;CHARACTER DET FLAG NOT SET
1551 005070 104400 SCOPE ;SCOPE THIS TEST
1552
1553
1554
1555
1556 ;TEST OF RECEIVER AND TRANSMITTER 'BCC/CLEAR START'
1557 ;TEST OF BIT THREE OF SEQUENCE REGISTER.
1558 ;THE TEST STARTS UP THE TRANSMITTER AND RECEIVER BCC
1559 ;AND DEPOSITS ONE CHARACTER INTO IT. THE RECEIVER
1560 ;DONE FLAG COMES UP AND THE DQ11 CLOCK IS STOPPED.
1561 ;THE BCC'S OF BOTH THE TX AND RX ARE THEN 'GRABBED'
1562 ;AND SHIFTED LOOKING FOR THAT ONE CHARACTER TO BE PRESENT
1563 ;IN THE BCC OF EACH RX AND TX BCC REGISTER.
1564
1565

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TEST 27

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1566 005072 012737 000027 001226 *****
1567 005100 012737 005350 001216 tst27: MOV #27,TSTNO
1568 005106 004737 011024 JSR PC,SET.UP ;SET UP ALL NECESSARY FOR TEST.
1569 005112 012777 100010 174252 MOV #BIT15+BIT3,@DQSEC
1570 ;SET SNGL CHAR AND BCC/START CLEAR
1571 005120 112777 000017 174242 MOVB #17,@DQREG ;SEL THE POLY REG.
1572 005126 012777 000200 174236 MOV #200,@DQSEC ;SET FOR LRC 8
1573 005134 112777 000003 174226 MOVB #3,@DQREG ;SEL THE TX WC PRI.
1574 005142 012777 177576 174222 MOV #-202,@DQSEC ;SET FOR 202 (8)
1575 005150 012700 012014 MOV #TXBUFF,R0 ;GET TX BUFFER
1576 005154 105020 1$: CLRB (R0)+ ;CLEAR ALL THE TX BUFFER
1577 005156 022700 012215 CMP #TXBUFF+201,R0 ;ALL CLEAR?
1578 005162 001374 BNE 1$ ;BR IF NO
1579 005164 012700 012014 MOV #TXBUFF,R0 ;GET TX BUFFER
1580 005170 012720 MOV (PC)+,(R0)+ ;LOAD THE BUFFER WITH DATA
1581 005172 350 225 .BYTE 350,225 ;DATA
1582 005174 012737 000225 013036 MOV #225,CHAR ;SET EXPECTED BCC CHAR.
1583 005202 012737 000010 013040 MOV #8,COUNT ;SET FOR 8 BITS
1584 005210 105077 174154 CLRB @DQREG ;SEL REC PRIMARY
1585 005214 012777 012216 174150 MOV #RXBUFF,@DQSEC ;SET WITH START ADRS
1586 005222 112777 000001 174140 MOVB #1,@DQREG ;SEL REC CHAR COUNT
1587 005230 012777 177775 174134 MOV #-3,@DQSEC ;SET CHAR COUNT
1588 005236 112777 000004 174124 MOVB #4,@DQREG ;SEL REC SECONDARY
1589 005244 012777 012236 174120 MOV #RXBUFF+20,@DQSEC ;SET WITH SEC ADRS
1590 005252 112777 000005 174110 MOVB #5,@DQREG ;SEL REC CHAR COUNT
1591 005260 012777 177577 174104 MOV #-201,@DQSEC ;SET CHAR COUNT
1592 005266 004737 011674 JSR PC,NEWENA ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
1593 005272 013703 013040 MOV COUNT,R3 ;GET CHAR SIZE
1594 005276 000241 6$: CLC ;
1595 005300 106100 ROLB R0 ;SHIFT RX BCC IMAGE
1596 005302 005500 7$: ADI R0 ;PICK UP CARRY
1597 005304 023700 013036 CMP CHAR,R0 ;CHECK BCC
1598 005310 001403 BEQ 3$ ;BCC OK
1599 005312 005303 DEC R3 ;ALL SHIFTS DONE?
1600 005314 001370 BNE 6$ ;BR IF NO.
1601 005316 104005 HLT 5 ;RX BCC HAS WRONG DATA.
1602 005320 013703 013040 3$: MOV COUNT,R3 ;SAVE COUNTER
1603 005324 000241 8$: ;

```



PROGRAM INITIALIZATION AND START UP.

1604	005326	106101		ROLB	R1	:SHIFT TX BCC IMAGE
1605	005330	005501		ADC	R1	:PICK UP CARRY
1606	005332	023701	013036	CMP	CHAR,R1	:IS BCC OK?
1607	005336	001403		BEQ	5\$	:BR IF OK
1608	005340	005303		DEC	R3	:ALL SHIFTS DONE?
1609	005342	001370		BNE	8\$	:BR IF NO
1610	005344	104005		HLT	5	:TX BCC HAS WRONG DATA.
1611	005346	104400		~\$: SCOPE		:SCOPE THE TEST

PROGRAM INITIALIZATION AND START UP.

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:
: TEST OF RECEIVER "CLEAR ACTIVE"
: TEST OF BIT SIX OF SEQUENCE REGISTER.
: THIS TEST WILL SEND A CHARACTER WHICH SAYS "CLEAR RX ACTIVE"
: THE PROGRAM WAITS FOR TX DONE THEN LOOKS AT RX ACTIVE
: WHICH SHOULD BE EQUAL TO ZERO; THEN THE PROGRAM LOOKS
: FOR RX GO TO BE SET AND RX PRI DONE TO BE CLEAR.
: ALSO THE RX WC PRI SHOULD BE NOT EQUAL TO ZERO.
:
: TEST 30
:*****
TST30: MOV #30,TSTNO
MOV #TST31,NEXT
JSR PC,SET.UP ;SET UP ALL NECESSARY FOR TEST.
MOV #BIT15+BIT6,@DQSEC ;SET SNGL CHAR AND CLEAR ACTV
MOV #350,TXBUF+2 ;SET DATA IN TX BUFFER
JSR PC,X.ABG ;GO AND WORK THE DQ11
MOV #1$,LOCK ;SET FOR RETURN IF SW09 1
1$: JSR PC,EXT.UP ;SET THING UP FOR DOUBLE CHAR.(16 BITS)
MOV #BIT14+BIT6,@DQSEC ;SET DBL CHAR AND CLEAR ACTV
MOV #3721,XTXBUF+2 ;LOAD THE DATA
JSR PC,X.ABG ;WORK DQ11
:-----*LOCK*-----
SCOPI ;IF SW09=1; THEN GOTO ADDRESS IN 'LOCK'.
:-----
SCOPE ;SCOPE THIS TEST
X.ABG: INC @DQRCSP ;SET RX GO.
INC @DQTCSP ;SET TX GO
TSTB @DQTCSP ;HANG HERE FOR TX PRI DONE!!
BPL -4 ;BR IF NOT DONE.
CMP (SP),(SP) ;WAST TIME.
BIT #BIT12,@DQRCSP ;IS RX ACTIVE CLEARED?
BEQ +4 ;BR IF YES
HLT 6 ;RX ACTIVE NOT CLEARED
MOVB #1,@DQREG ;GET THE RX WC PRI.
TST @DQSEC ;IT SHOULD BE NON-ZERO..
BNE +4 ;BR IF OK
HLT 6 ;RX PRI WC =0
CMPB #001,@DQRCSP ;GO SHOULD BE SET AND DONE NPT SET.
BEQ +4 ;BR IF OK!
HLT 6 ;LOW BYTE RXCSR NOT =001
RTS PC
:
: TEST OF RFCEIVER AND TRANSMITTER "CLEAR GO/SET DONE"
: TEST OF BIT SEVEN OF SEQUENCE REGISTER.
: CHARACTER "SET DONE/CLEAR GO" IS SENT AND IS DETCETED
: BY BOTH THE TX AND RX. WHEN RX DONE SETS; THE PROGRAM
: VERIFIES THAT BOTH THE TX AND RX WC (PRI) ARE NOT
: EQUAL TO ZERO AND THAT PRI DONE SET,GO IS CLEARED,
: AND PRI/SEC BIT IS CLEARED.
:
: TEST 31
:*****

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PROGRAM INITIALIZATION AND START UP.

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1668 005532 012737 000031 001226 TST31: MOV #31,TSTNO
1669 005540 012737 005726 001216 MOV #TST32,NEXT
1670 005546 004737 011024 JSR PC,SET.UP ;SET UP ALL NECESSARY FOR TEST.
1671 005552 012777 100200 173612 MOV #BIT15+BIT7,@DQSEC
1672 ;SET SNGL CHAR AND SET DONE CLEAR GO
1673 005560 012700 012016 MOV #TXBUFF+2,R0 ;SET TX BUFFER
1674 005564 012710 MOV (PC)+,(R0) ;LOAD WITH DATA
1675 005566 350 352 .BYTE 350,352 ;DATA
1676 005570 004737 005640 JSR PC,X.ABF ;WORK DQ11
1677 005574 012737 005602 001220 MOV #1$,LOCK ;SET FOR RETURN IF SW09=1
1678 005602 004737 011236 1$: JSR PC,EXT.UP ;SET THING UP FOR DOUBLE CHAR.(16 BITS)
1679 005606 012777 040200 173556 MOV #BIT14+BIT7,@DQSEC
1680 ;SET DBL CHAR AND SET DONE CLEAR GO
1681 005614 012737 003721 012426 MOV #3721,XTXBUF+2 ;LOAD DATA
1682 005622 012737 012525 012430 MOV #12525,XTXBUF+4 ;SAME
1683 005630 004737 005640 JSR PC,X.ABF ;TURN ON DQ11
1684 ;-----*LOCK*-----
1685 005634 104401 SCOPE1 ;IF SW09=1; THEN GOTO ADDRESS IN 'LOCK'.
1686 ;-----
1687 005636 104400 SCOPE ;SCOPE THIS TEST.
1688
1689 005640 004737 011620 X.ABF: JSR PC,ENABLE ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
1690 005644 112777 000001 173516 MOVB #1,@DQREG ;SEL RX WC PRI
1691 005652 005777 173514 TST @DQSEC ;IT SB NON-ZERO.
1692 005656 001001 BNE +4 ;BR IF OK
1693 005660 104007 HLT 7 ;RX PRI WC =0
1694 005662 112777 000003 173500 MOVB #3,@DQREG ;SEL THE TX WC PRI
1695 005670 005777 173476 TST @DQSEC ;IT SB NON-ZERO
1696 005674 001001 BNE +4 ;BR IF OK.
1697 005676 104007 HLT 7 ;TX WC PRI IS =0
1698 005700 122777 000200 173452 CMPB #200,@DQRCR ;DONE=1; P/S=0; GO=0?
1699 005706 001401 BEQ +4 ;BR IF OK.
1700 005710 104007 HLT 7 ;RX CSR NOT =200 (PRI DONE)
1701 005712 122777 000200 173444 CMPB #200,@DQTCR ;DONE=1; P/S=0; GO=0
1702 005720 001401 BEQ +4 ;BR IF OK.
1703 005722 104007 HLT 7 ;TX PRI DONE SET? (TX CSR=200)
1704 005724 000207 RTS PC
1705
1706 ;
1707 ;TEST OF RECEIVER 'CHARACTER STRIP'
1708 ;TEST OF BIT EIGHT OF SEQUENCE REGISTER.
1709 ;THE CHARACTER THAT IS SENT AS 'CHARACTER STRIP' IS
1710 ;LOOKED FOR IN THE RX BUFFER; IF IT IS NOT FOUND IT
1711 ;IS ASSUMED THAT THE CHARACTER WAS INDEED 'STRIPPED'.
1712 ;
1713 ; TEST 32
1714 ;*****
1715 005726 012737 000032 001226 TST32: MOV #32,TSTNO
1716 005734 012737 006104 001216 MOV #TST33,NEXT
1717 005742 004737 011024 JSR PC,SET.UP ;SET UP ALL NECESSARY FOR TEST.
1718 005746 012777 100400 173416 MOV #BIT15+BIT8,@DQSEC
1719 ;SET SNGL CHAR AND CHAR STRIP.
1720 005754 012700 012016 MOV #TXBUFF+2,R0 ;SET POINTER
1721 005760 012710 MOV (PC)+,(R0) ;LOAD THE
1722 005762 350 321 .BYTE 350,321 ; DATA
1723 005764 004737 011620 JSR PC,ENABLE ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.

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PROGRAM INITIALIZATION AND START UP.

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1780 006212 012737 003721 012426      MOV      #3721,XTXBUF+2  ;LOAD DATA
1781 006220 012737 054321 012430      MOV      #54321,XTXBUF+4 ;SAME
1782 006226 004737 011620                JSR      PC,ENABLE      ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
1783 006232 012700 012216                MOV      #RXBUFF,RO    ;GET POINTER
1784 006236 012701 000010                MOV      #10,R1        ;GET CHAR COUNTER
1785 006242 022720 177777      3$:    CMP      #177777,(RO)+ ;TX PAD IN BUFFER?
1786 006246 001001                BNE      .+4           ;BR IF NO
1787 006250 104011                HLT      11            ;PAD CHARACTER IS IN BUFFER.
1788 006252 005301                DEC      R1            ;ALL CHARS DONE?
1789 006254 001372                BNE      3$           ;BR IF NO.
1790 006256 104400      4$:    SCOPE

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: TEST OF 'BCC EXCLUDE'
: TEST OF BIT 11 OF SEQUENCE REGISTER
: 'BCC EXCLUDE' IS EXERCIZED ON BOTH THE RX AND TX TOGETHER
: THE BCC IS TURNED ON AND THEN A CHARACTER IS EXCLUDED
: FROM THE BCC; WHEN DONE COMES UP THE BCC'S OF BOTH
: THE RX AND TX ARE SHIFTED AROUND TO SEE IF THE
: CHARACTER WAS REALLY EXCLUDED.

```

: TEST 34

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1805 006260 012737 000034 001226      TST34: MOV      #34,TSTNO
1806 006266 012737 006600 001216      MOV      #TST35,NEXT
1807 006274 004737 011024                JSR      PC,SET.UP     ;SET UP ALL NECESSARY FOR TEST.
1808 006300 012777 100010 173064      MOV      #BIT15+BIT3,@DQSEC
1809
1810 006306 105377 173050                DECB    @DQRC5H       ;SET SNGL CHAR AND BCC START CLEAR
1811 006312 112777 000010 173050      MOVVB   #10,@DQREG    ;SEL CHAR ADD 16(8)
1812 006320 012777 170400 173044      MOV      #361*400,@DQSEC ;GET CHAR DET ADDRESS
1813 006326 112777 000014 173034      MOVVB   #14,@DQREG    ;LOAD CHAR.
1814 006334 012777 104000 173030      MOV      #BIT15+BIT11,@DQSEC ;SEL SEQ REG
1815
1816 006342 112777 000017 173020      MOVVB   #17,@DQREG    ;SET SNGL CHAR AND BCC EXCLUDE
1817 006350 012777 000200 173014      MOV      #200,@DQSEC  ;SEL POLY REG.
1818 006356 112777 000003 173004      MOVVB   #3,@DQREG     ;SET LRC 8
1819 006364 012777 177576 173000      MOV      #-202,@DQSEC ;SEL TX WC PRI.
1820 006372 012700 012014                MOV      #TXBUFF,RO  ;SET BIG NUMBER
1821 006376 105020                CLRB    (RO)+        ;SET POINTER
1822 006400 022700 012215                CMP      #TXBUFF+201,RO ;LOAD DATA 000
1823 006404 001374                BNE     1$           ;CLEAR BUFFER!!
1824 006406 012700 012014                MOV      #TXBUFF,RO  ;BR IF NOT ALL CLEAR.
1825 006412 012710                MOV      (PC)+,(RO)  ;SET POINTER
1826 006414 350 107                .BYTE   350,107     ;LOAD THE
1827 006416 112737 000361 012016      MOVVB   #361,TXBUFF+2 ;DATA
1828 006424 012737 000010 013040      MOV      #8,COUNT    ;INTO
1829 006432 012737 000107 013036      MOV      #107,CHAR   ;THE TX BUFFER.
1830 006440 105077 172724                CLRB    @DQREG       ;SET FOR 8 BITS AND 107 AS THE CHAR IN BCC.
1831 006444 012777 012216 172720      MOV      #RXBUFF,@DQSEC ;SEL REC PRIMARY
1832 006452 112777 000001 172710      MOVVB   #1,@DQREG    ;SET WITH START ADRS
1833 006460 012777 177775 172704      MOV      #-3,@DQSEC  ;SEL REC CHAR COUNT
1834 006466 112777 000004 172674      MOVVB   #4,@DQREG    ;SET CHAR COUNT
1835 006474 012777 012236 172670      MOV      #RXBUFF+20,@DQSEC ;SET REC SECONDARY
;SET WITH SEC ADRS

```

PROGRAM INITIALIZATION AND START UP.

```

1836 006502 112777 000005 172660      MOVB   #5,@DQREG      ;SEL CHAR COUNT
1837 006510 012777 177577 172654      MOV    #-201,@DQSEC   ;SET CHAR COUNT
1838 006516 004737 011674          JSR    PC,NEWENA      ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
1839 006522 013703 013040          MOV    COUNT,R3      ;SAVE COUNTER
1840 006526 000241          4$:   CLC              ;
1841 006530 106100          ROLB   R0             ;SHIFT RX BCC IMAGE
1842 006532 005500          5$:   ADC    R0        ;SAVE CARRY
1843 006534 023700 013036          CMP    CHAR,R0        ;BCC OK?
1844 006540 001403          BEQ   3$              ;BR IF OK
1845 006542 005303          DEC   R3              ;ALL SHIFTS DONE?
1846 006544 001370          BNE   4$              ;BR IF NO
1847 006546 104012          HLT   12              ;RX BCC HAS WRONG DATA.
1848 006550 013703 013040          3$:   MOV    COUNT,R3
1849 006554 000241          6$:   CLC              ;CLEAR CARRY
1850 006556 106101          ROLB   R1             ;SHIFT TX BCC IMAGE
1851 006560 005501          ADC   R1              ;PICK UP CARRY
1852 006562 023701 013036          CMP    CHAR,R1        ;BCC OK?
1853 006566 001403          BEQ   7$              ;BR IF OK
1854 006570 005303          DEC   R3              ;ALL SHIFTS DONE?
1855 006572 001370          BNE   6$              ;BR IF NO
1856 006574 104012          HLT   12              ;TX BCC HAS WRONG DATA.
1857 006576 104400          7$:   SCOPE           ;SCOPE THIS TEST
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```

: TEST OF SET TRANSPARENCY FOR TRANSMITTER.  
: TEST THAT THE SEQ FUNCTIONS ARE ALLOWED IF  
: THEY ARE PRECEDED BY \*DLE\*.  
: THIS TEST THAT WHEN THE TRANSMITTER FLIPS FROM PRI TO SEC  
: AND 'EXIT T' IS ASSERTED THAT THE TX SENDS A 'DLE'  
: CHARACTER.  
: TEST 35  
\*\*\*\*\*  
TST35: MOV #35,TSTNC  
MOV #TST36,NEXT  
JSR PC,SET.UP ;SET UP ALL NECESSARY FOR TEST.  
MOV #BIT14+BIT1,@DQSEC  
;SET DBL CHAR AND SET T  
DECB @DQRCSH ;SEL CHAR ADD 16  
MOVB #10,@DQREG ;GET CHAR DET REG  
MOV DQSEC,R0  
MOV (PC)+,(R0) ;LOAD THE REGISTER  
.BYTE 352,352 ;WITH THIS DATA  
MOVB #14,@DQREG ;SEL THE SEQ REG.  
MOV #BIT15+BIT9,@DQSEC  
;SET SNGL CHAR AND DLE  
DECB @DQRCSH ;SEL CHAR ADD 15(8)  
MOVB #10,@DQREG ;GET CHAR ADDRESS  
MOV #354\*400,@DQSEC ;LOAD WITH DATA  
MOVB #14,@DQREG ;SEL THE SEQ REGISTER  
MOV #BIT15+BIT7,@DQSEC  
;SET SNGL CHAR AND SET DONE CLEAR GO  
MOVB #3,@DQREG ;SEL THE TX WC PRI.  
MOV #-6,@DQSEC ;SET FOR 6 CHARS  
MOVB #350,TXBUF+1 ;LOAD  
MOVB #357,TXBUF+4 ; DATA





PROGRAM INITIALIZATION AND START UP.

```
1948 007254 104003          HLT      3          ;TX SEC WC S/B NON-ZERO.
1949 007256 104400          SCOPE                                ;SCOPE THIS TEST.
1950
1951
1952
1953          ;
1954          ;TEST THAT THE RECEIVER STRIP SYNC IS
1955          ;INHIBITED WHEN IN TRANSPARENT MODE.
1956          ;
1957          ; TEST 37
1958          ;*****
1958 007260 012737 000037 001226 TST37: MOV      #37,TSTNO
1959 007266 012737 007470 001216      MOV      #TST40,NEXT
1960 007274 004737 011024          JSR      PC,SET.UP      ;SET UP ALL NECESSARY FOR TEST.
1961 007300 012777 040002 172064      MOV      #BIT14+BIT1,@DQSEC
1962          ;
1963 007306 105377 172050          DECB    @DQRCSH        ;SET DBL CHAR AND SET T
1964 007312 112777 000010 172050      MOV     #10,@DQREG    ;SEL CHAR ADD 16(8)
1965 007320 013700 001372          MOV     DQSEC,R0      ;SEL CHAR REG
1966 007324 012710          MOV     (PC)+(R0)     ;
1967 007326          101          101      .BYTE    101,101     ;LOAD THE CHAR
1968 007330 112777 000014 172032      MOV     #14,@DQREG    ;DATA
1969 007336 012777 101000 172026      MOV     #BIT15+BIT9,@DQSEC ;SEL THE SEQ REG
1970          ;
1971 007344 112737 000350 012015      MOV     #350,TXBUFF+1 ;SET SNGL CHAR AND DLE
1972 007352 012700 012016          MOV     #TXBUFF+2,R0 ;LOAD BUFFER
1973 007356 112720 000101          MOV     #101,(R0)+    ;
1974 007362 112720 000026          MOV     #26,(R0)+     ;DLE
1975 007366 022700 012026          CMP     #TXBUFF+12,R0 ;SYNC
1976 007372 001371          BNE     1$            ;KEEP STUFFING
1977 007374 012777 000003 171756      MOV     #3,@DQRCR     ;
1978 007402 005277 171756          INC     @DQTCR        ;SET STRIP SYNC AND GO(RX)
1979 007406 105777 171746          TSTB   @DQRCR        ;SET TX GO
1980 007412 100375          BPL     -4            ;HANG HERE FOR RX DONE (P)
1981 007414 012700 012216          MOV     #RXBUFF,R0   ;
1982 007420 122720 000000          CMPB   #0,(R0)+      ;GET RX POINTER
1983 007424 001401          BEQ     +4            ;FIRST CHAR S/B=0
1984 007426 104003          HLT     3             ;
1985 007430 122720 000350          CMPB   #350,(R0)+    ;FIRST DATA CHAR WRONG
1986 007434 001401          BEQ     +4            ;NEXT CHAR S/B=350
1987 007436 104003          HLT     3             ;
1988 007440 122720 000101          CMPB   #101,(R0)+    ;RX BUFFER WRONG
1989 007444 001401          BEQ     +4            ;DLE PRESENT?
1990 007446 104003          HLT     3             ;
1991 007450 122720 000026          CMPB   #26,(R0)+     ;DLE NOT THERE
1992 007454 001401          BEQ     +4            ;SYNC PRESENT?
1993 007456 104003          HLT     3             ;
1994 007460 022700 012226          CMP     #RXBUFF+10,R0 ;LOOKS LIKE SYNC STRIPPED?
1995 007464 001365          BNE     2$            ;BUFFER DONE?
1996 007466 104400          SCOPE    2$          ;BR IF NO
1997          ;SCOPE THIS TEST
1998
1999
2000          ;
2001          ;VERIFY THAT BIT 8 OF THE SEQUENCE
2002          ;REGISTER STRIPS CHARS FROM CORE BUT NOT
2003          ;FROM THE BCC.
          ;
```

PROGRAM INITIALIZATION AND START UP.

```

2004      : TEST 40
2005      :*****
2006 007470 012737 000040 001226 TST40: MOV #40,TSTNO
2007 007476 012737 010002 001216      MOV #TST41,NEXT
2008 007504 004737 011024      JSR PC,SET.UP      ;SET UP ALL NECESSARY FOR TEST.
2009 007510 012777 100010 171654      MOV #BIT15+BIT3,@DQSEC
2010      :SET BCC START CLEAR AND SNGL CHAR
2011 007516 105377 171640      DECB @DQRCSH      ;SEL CHAR ADD 16(8)
2012 007522 112777 000010 171640      MOV #10,@DQREG    ;SEL CHAR REG
2013 007530 012777 112400 171634      MOV #225*400,@DQSEC ;LOAD CHAR
2014 007536 112777 000014 171624      MOV #14,@DQREG    ;SEL THE SEQ REG
2015 007544 012777 100400 171620      MOV #BIT15+BIT8,@DQSEC
2016      :SET SNGL CHAR AND CHAR STRIP.
2017 007552 012700 012014      MOV #TXBUFF,R0    ;GET TX POINTER
2018 007556 105020      CLR (R0)+         ;CLEAR IT OUT
2019 007560 022700 012215 5$: CMP #TXBUFF+201,R0 ;ALL DONE?
2020 007564 001374      BNE 1$           ;BR IF NO
2021 007566 112737 000350 012015      MOV #350,TXBUFF+1 ;LOAD CHAR
2022 007574 112737 000225 012017      MOV #225,TXBUFF+3 ;SAME
2023 007602 112777 000017 171560      MOV #17,@DQREG    ;SEL POLY REG
2024 007610 012777 000200 171554      MOV #200,@DQSEC   ;SET FOR LRC 8
2025 007616 012737 000010 013040      MOV #8,COUNT      ;SET FOR 8 BIT CHAR
2026 007624 012737 000225 013036      MOV #225,CHAR     ;SET EXPECTED BCC CHAR
2027 007632 112777 000003 171530      MOV #3,@DQREG     ;SEL THE TX WC PRI.
2028 007640 012777 177576 171524      MOV #-202,@DQSEC  ;SET BIG
2029 007646 105077 171516      CLR @DQREG        ;SEL REC PRIMARY
2030 007652 012777 012216 171512      MOV #RXBUFF,@DQSEC ;SET WITH START ADRS
2031 007660 112777 000001 171502      MOV #1,@DQREG     ;SEL REC CHAR CNT
2032 007666 012777 177775 171476      MOV #-3,@DQSEC   ;SET CHAR COUNT
2033 007674 112777 000004 171466      MOV #4,@DQREG     ;SEL REC SECONDARY
2034 007702 012777 012236 171462      MOV #RXBUFF+20,@DQSEC ;SET WITH SEC ADRS
2035 007710 112777 000005 171452      MOV #5,@DQREG     ;SEL CHAR COUNT
2036 007716 012777 177577 171446      MOV #-201,@DQSEC ;SET CHAR COUNT
2037 007724 004737 011674      JSR PC,NEWENA     ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
2038 007730 013703 013040      MOV COUNT,R3      ;SAVE COUNT
2039 007734 000241      CLC              ;
2040 007736 106100      ROLB R0          ;SHIFT RX BCC IMAGE
2041 007740 005500      ADC R0          ;SAVE CARRY
2042 007742 023700 013036 6$: CMP CHAR,R0      ;GOOD BCC?
2043 007746 001403      BEQ 4$          ;BR IF YES
2044 007750 005303      DEC R3          ;ALL SHIFTS DONE?
2045 007752 001370      BNE 5$          ;BR IF NO
2046 007754 104013      HLT 13          ;RX BCC WRONG..
2047 007756 012701 012216 4$: MOV #RXBUFF,R1   ;GET RX BUFFER
2048 007762 123721 013036 7$: CMPB CHAR,(R1)+ ;CHAR STRIPPED
2049 007766 001001      BNE .+4         ;
2050 007770 104013      HLT 13          ;8 BIT CHAR NOT STRIPPED.
2051 007772 022701 012226 8$: CMP #RXBUFF+10,R1 ;ALL DONE?
2052 007776 001371      BNE 7$          ;NOT YET
2053 010000 104400      SCOPE
2054
2055
2056
2057      ;TEST OF BCC TEST/ APPEND
2058      ;TEST OF BCC'S TESTED/APPENDED
2059

```

PROGRAM INITIALIZATION AND START UP.

```
2060 ; TEST 41
2061 :*****
2062 010002 012737 000041 001226 TST41: MOV #41,TSTNO
2063 010010 012737 010060 001216 MOV #TST42,NEXT
2064 010016 012737 100060 011022 MOV #BIT15+BIT5+BIT4,FUNCT.
2065 010024 012737 000000 013034 MOV #000,XPOLY ;SET EXTENDED POLY.
2066 010032 012737 000255 013032 MOV #255,POLY ;SET 00-15 POLY
2067 010040 004737 011454 JSR PC,BCC.TA ;GOTO SUBROUTINE
2068 010044 017737 171316 013030 MOV @DQERR,ERR ;IS THE AN ERROR CONDITION?
2069 010052 100001 BPL .+4 ;BR IF NO ERRORS
2070 010054 104015 HLT 15 ;THE DQ11 ERROR FLAG IS SET!!
2071 010056 104400 SCOPE ;SCOPE THIS TEST
2072
2073 ;TEST OF BCC TEST/ APPEND
2074 ;TEST OF 2 BCC'S TESTED/APPENDED
2075
2076 ; TEST 42
2077 :*****
2078 010060 012737 000042 001226 TST42: MOV #42,TSTNO
2079 010066 012737 010136 001216 MOV #TST43,NEXT
2080 010074 012737 100020 011022 MOV #BIT15+BIT4,FUNCT.
2081 010102 012737 000000 013034 MOV #000,XPOLY ;SET EXTENDED POLY.
2082 010110 012737 112001 013032 MOV #112001,POLY ;SET 00-15 POLY
2083 010116 004737 011454 JSR PC,BCC.TA ;GOTO SUBROUTINE
2084 010122 017737 171240 013030 MOV @DQERR,ERR ;IS THE AN ERROR CONDITION?
2085 010130 100001 BPL .+4 ;BR IF NO ERRORS
2086 010132 104015 HLT 15 ;THE DQ11 ERROR FLAG IS SET..
2087 010134 104400 SCOPE ;SCOPE THIS TEST
2088
2089 ;TEST OF BCC TEST/ APPEND
2090 ;TEST OF 3 BCC'S TESTED/APPENDED
2091
2092 ; TEST 43
2093 :*****
2094 010136 012737 000043 001226 TST43: MOV #43,TSTNO
2095 010144 012737 010214 001216 MOV #TST44,NEXT
2096 010152 012737 100040 011022 MOV #BIT15+BIT5,FUNCT.
2097 010160 012737 000225 013034 MOV #225,XPOLY ;SET EXTENDED POLY.
2098 010166 012737 112001 013032 MOV #112001,POLY ;SET 00-15 POLY
2099 010174 004737 011454 JSR PC,BCC.TA ;GOTO SUBROUTINE
2100 010200 017737 171162 013030 MOV @DQERR,ERR ;IS THE AN ERROR CONDITION?
2101 010206 100001 BPL .+4 ;BR IF NO ERRORS
2102 010210 104015 HLT 15 ;THE DQ11 ERROR FLAG IS SET..
2103 010212 104400 SCOPE ;SCOPE THIS TEST
```

```

2104
2105
2106      :MULTIPLE FUNCTION....
2107      :-----
2108      :FUNCTIONS EXERCISED
2109      :START CHAR (350)
2110      :15  SNGL CHAR MATCH
2111      :14  DBL CHAR MATCH
2112      :13  SNGL CHAR FLAG
2113      :12  DBL CHAR FLG
2114      :08  RX STRIP
2115      :03  BCC START CLEAR
2116      :01  RX/TX TRANS
2117
2118      :END CHAR (225)
2119      :15  SNGL CHAR MATCH
2120      :13  SNGL CHAR FLAG
2121      :08  RX STRIP
2122      :07  CLEAR GO/SET DONE
2123      :05  BCC TEST /APPEND (3 BCC'S)
2124      :02  CLR RX TRANS
2125
2126      :DLE STRIP/ADD (20)
2127      :15  SNGL CHAR MATCH
2128      :09  DLE STRIP/ADD
2129
2130
2131
2132
2133
2134

```

```

2135 010214 012737 000044 001226
2136 010222 012737 013050 001216
2137 010230 004737 011024
2138 010234 012777 170412 171130
2139 010242 105377 171114
2140 010246 112777 000010 171114
2141 010254 012777 112400 171110
2142 010262 112777 000014 171100
2143 010270 012777 120677 171074
2144 010276 105377 171060
2145 010302 112777 000010 171060
2146 010310 012777 010020 171054
2147 010316 112777 000014 171044
2148 010324 012777 101000 171040
2149 010332 112777 000006 171030
2150 010340 012777 012064 171024
2151 010346 112777 000001 171014
2152 010354 012777 177600 171010
2153 010362 112777 000067 171000
2154 010370 012777 177776 170774
2155 010376 112777 000017 170764
2156 010404 012777 172516 170760
2157 010412 112777 000012 170750
2158 010420 052777 000100 170744
2159 010426 112777 000017 170734

```

```

: TEST 44
:*****
TST44: MOV #44,TSTNO
MOV #.EOP,NEXT
JSR PC,SET.UP ;SET UP ALL NECESSARY FOR TEST.
MOV #170412,@DQSEC ;LOAD THE SEQ FUNCTIONS
DECB @DQRCSH ;GET CHAR ADD 16(8)
MOVB #10,@DQREG ;GET CHAR REG.
MOV #225*400,@DQSEC ;LOAD CHAR.
MOVB #14,@DQREG ;SEL SEQ REG
MOV #120644,@DQSEC ;LOAD SEQ FUNCTIONS
DECB @DQRCSH
MOVB #10,@DQREG ;SEL CHAR DET
MOV #10020,@DQSEC ;LOAD FUNCTIONS
MOVB #14,@DQREG ;SEL SEQ REG
MOV #101000,@DQSEC ;LOAD DLE (20)
MOVB #6,@DQREG ;SEL TX SEC ADRS
MOV #TXBUFF+50,@DQSEC ;SET SEC ADRS
MOVB #1,@DQREG ;SEL REC PRI SHAR CNT
MOV #-200,@DQSEC ;SET CHAR CNT
MOVB #67,@DQREG ;SEL TXSEC CHAR CNT
MOV #-2,@DQSEC ;SET CHAR CNT
MOVB #17,@DQREG ;SEL POLY REG
MOV #172516,@DQSEC ;SET *WILD* POLYNOMIAL
MOVB #12,@DQREG ;SEL THE MISC REG
BIS #216,@DQSEC ;SET THE 'EXT POLY' BIT
MOVB #17,@DQREG ;WRITE POLY 16-23

```

## PROGRAM INITIALIZATION AND START UP.

2160	010434	012777	000275	170730	MOV	#275,@DQSEC	:
2161	010442	012700	012014		MOV	#TXBUFF,R0	:GET POINTER
2162	010446	012720			MOV	(PC)+,(R0)+	:LOAD THE BUFFER WITH DATA
2163	010450	000	350		.BYTE	000,350	:DATA
2164	010452	012720			MOV	(PC)+,(R0)+	:LOAD THE BUFFER WITH DATA
2165	010454	311	224		.BYTE	311,224	:DATA
2166	010456	012720			MOV	(PC)+,(R0)+	:LOAD THE BUFFER WITH DATA
2167	010460	107	201		.BYTE	107,201	:DATA
2168	010462	012720			MOV	(PC)+,(R0)+	:LOAD THE BUFFER WITH DATA
2169	010464	371	251		.BYTE	371,251	:DATA
2170	010466	012700	012064		MOV	#TXBUFF+50,R0	:LOAD R0
2171	010472	012720			MOV	(PC)+,(R0)+	:LOAD BUFFER WITH DATA
2172	010474	225	377		.BYTE	225,377	:DATA
2173	010476	004737	011620		JSR	PC,ENABLE	:SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
2174	010502	005777	170652		TST	@DQRCR	:DID RX CHAR FLAG SET?
2175	010506	100401			BMI	+.4	:BR IF YES
2176	010510	104014			HLT	14	:CHAR DET FLAG NOT SET.
2177	010512	017737	170650	013030	MOV	@DQERR,ERR	:ANY ERRORS?
2178	010520	100001			BPL	+.4	:BR IF NO ERRORS
2179	010522	104017			HLT	17	:DQ11 ERROR FLAG SET!
2180	010524	122777	000200	170626	CMPB	#200,@DQRCR	:DONE(P)=1; P/S=0; GO-0?
2181	010532	001401			BEQ	+.4	:YES
2182	010534	104014			HLT	14	:RX CSR WRONG DATA
2183	010536	122777	000300	170620	CMPB	#300,@DQTCR	:DONE(P)=1; P/S 0; GO=0?
2184	010544	001401			BEQ	+.4	:YES
2185	010546	104014			HLT	14	:TX CSR WRONG DATA
2186	010550	112777	000001	170612	MOVB	#1,@DQREG	:GET RX WC PRI.
2187	010556	005777	170610		TST	@DQSEC	:S/B NOT=0
2188	010562	001001			BNE	+.4	:BR IF OK
2189	010564	104014			HLT	14	:RX WC PRI S/B NON-ZERO!
2190	010566	112777	000003	170574	MOVB	#3,@DQREG	:SEL THE TX WC PRI.
2191	010574	005777	170572		TST	@DQSEC	:S/B =0
2192	010600	001401			BEQ	+.4	:
2193	010602	104014			HLT	14	:TX WC PRI S/B NON-ZERO
2194	010604	012700	012216		MOV	#RXBUFF,R0	:GET RX BUFFER POINTER
2195	010610	012702	000010		MOV	#10,R2	:SET CHAR COUNT
2196	010614	122710	000350		CMPB	#350,(R0)	:ARE THE TWO CHARS STRIPPED?
2197	010620	001001			BNE	+.4	:
2198	010622	104014			HLT	14	:CHAR '350' NOT STRIPPED FROM CORE
2199	010624	122720	000225		CMPB	#225,(R0)+	:
2200	010630	001001			BNE	+.4	:
2201	010632	104014			HLT	14	:CHAR '225' NOT STRIPPED
2202	010634	122720	000020		CMPB	#20,(R0)+	:IS DLE STRIPPED?
2203	010640	001001			BNE	+.4	:
2204	010642	104021			HLT	21	:DLE STUCK -- REFER TO M7817 ECO
2205							:CHECK E84 ONE-SHOT
2206	010644	005302			DEC	R2	:ALL DONE?
2207	010646	001362			BNE	1\$	:NO
2208	010650	104400			SCOPE		:SCOPE THE TEST



PROGRAM INITIALIZATION AND START UP.

```

2209
2210
2211 010652          .MEMCLR:
2212 010652 105077 170512          CLRB @DQREG
2213 010656 012705 000020          MOV #16.,R5
2214 010662 152777 000020 170500 1$: BISB #BIT4,@DQREG
2215 010670 142777 000140 170472 BICB #140,@DQREG
2216 010676 005077 170470          CLR @DQSEC
2217 010702 105277 170462          INCB @DQREG
2218 010706 005305          DEC R5
2219 010710 001364          BNE 1$
2220 010712 105077 170452          CLRB @DQREG
2221 010716 105077 170440          CLRB @DQRC5H
2222 010722 012705 000020          MOV #16.,R5
2223 010726 112777 000010 170434 2$: MOVB #10,@DQREG
2224 010734 005077 170432          CLR @DQSEC
2225 010740 112777 000014 170422 MOVB #14,@DQREG
2226 010746 005077 170420          CLR @DQSEC
2227 010752 105277 170404          INCB @DQRC5H
2228 010756 005305          DEC R5
2229 010760 001362          BNE 2$
2230 010762 105077 170374          CLRB @DQRC5H
2231 010766          .MSTCLR:
2232 010766 112777 000012 170374 MOVB #MISC.,@DQREG
2233 010774 012777 000040 170370 MOV #BIT5,@DQSEC
2234 011002 000240          NOP
2235 011004 112777 000012 170356 MOVB #MISC.,@DQREG
2236 011012 012777 000040 170352 MOV #BIT5,@DQSEC
2237 011020 000002          RTI
2238
2239 011022 000000          FUNCT.: 0
2240 011024          SET.UP:
2241 011024 104413          MEMCLR
2242 011026 012702 000010          MOV #10,R2
2243 011032 012700 012014          MOV #TXBUFF,RO
2244 011036 105020          CLRB (RO)+
2245 011040 005302          DEC R2
2246 011042 001375          BNE -.4
2247 011044 105077 170320          CLRB @DQREG
2248 011050 012777 012216 170314 MOV #RXBUFF,@DQSEC
2249 011056 105277 170306          INCB @DQREG
2250 011062 012777 177770 170302 MOV #-10,@DQSEC
2251 011070 105277 170274          INCB @DQREG
2252 011074 005737 001510          TST DQSTAT
2253 011100 100404          BMI 10$
2254 011102 112737 000377 012012 MOVB #377,SYNC
2255 011110 000403          BR 20$
2256 011112 112737 000026 012012 10$: MOVB #26,SYNC
2257 011120 012777 012012 170244 20$: MOV #SINC,@DQSEC
2258 011126 105277 170236          INCB @DQREG
2259 011132 012777 177766 170232 MOV #-12,@DQSEC
2260 011140 112777 000011 170222 MOVB #11,@DQREG
2261 011146 013777 012010 170216 MOV .SYNC,@DQSEC
2262 011154 105277 170210          INCB @DQREG
2263 011160 012777 004000 170204 MOV #-000,@DQSEC
2264 011166 032737 040000 001510 BIT #JUMBIT,DQSTAT

```

;CLEAR ALL THE DQ11 REGISTERS  
 ;PREPARE TO CLEAR THE TX BUFFER  
 ;GET THE BUFFERS ADDRESS  
 ;START CLEARING  
 ;ALL CLEAR?  
 ;BR IF NOT DONE.  
 ;SELECT THE RX BA PRI.  
 ;LOAD RX BA PRI.  
 ;GET RX WC PRI.  
 ;SET FOR 8. CHARS.  
 ;GET THE TX BA PRI.  
 ;ONE SYNC CHARACTER?  
 ;IF NO, BR.                    :++E  
 ;SET MARK.                    :++E  
 ;CONTINUE.                    :++E  
 ;RESTORE SYNC CHARACTER.       :++E  
 ;SET ADDRESS                   :++E  
 ;SEL THE TX WC PRI.            :++E  
 ;SET FOR 8. CHARS AND 2 SYNC'S  
 ;SEL THE SYNC REGISTER  
 ;LOAD WITH SYNC  
 ;SELECT THE MISC REGISTER  
 ;SET FOR EIGHT BITS.  
 ;IF TEST JUMPER AT END OF CABLE;

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```

2265 011174 001003          BNE      .+10          ;RUN DATA THROUGH IT.
2266 011176 052777 000010 170166  BIS      #BIT3,@DQSEC  ;NO TEST JUMPER; SET TEST LOOP
2267 011204 112777 000017 170150  MOVVB   #17,@DQRC5H   ;GET LAST CHAR DET ADDRESS.
2268 011212 112777 000010 170150  MOVVB   #10,@DQREG    ;SEL CHAR DET REGISTER
2269 011220 012777 164000 170144  MOV     #350*400,@DQSEC ;LOAD THE CHARACTER
2270 011226 112777 000014 170134  MOVVB   #14,@DQREG    ;GET THE SEQ REGISTER
2271 011234 000207          RTS      PC           ;LEAVE ROUTINE POINTING TO SEQ REGISTER.
2272 011236          EXT.UP:
2273 011236 104413          MEMCLR          ;CLEAR ALL THE DQ11
2274 011240 012702 000020          MOV     #20,R2       ;PREPARE TO CLEAR THE TX BUFFER
2275 011244 012700 012424          MOV     #XTXBUF,RO   ;GET THE TX BUFFER ADDRESS.
2276 011250 005020          CLR     (R0)+        ;START CLEARING
2277 011252 005302          DEC     R2           ;DONE?
2278 011254 001375          BNE     .-4          ;BR IF NO
2279 011256 005737 001510          TS*    DQSTAT       ;ONE SYNC CHARACTER?
2280 011262 100404          BMI    10$         ;IF NO, BR.
2281 011264 012737 177777 012420  MOV     #-1,XSUNC    ;SET MARK.
2282 011272 000403          BR     20$         ;CONTINUE.
2283 011274 012737 013026 012420 10$: MOV     #13026,XSUNC ;LOAD SYNC
2284 011302 012737 013026 012422 20$: MOV     #13026,XSUNC2 ;DITTO
2285 011310 105077 170054          CLR    @DQREG       ;SEL THE RX BA PRI.
2286 011314 012777 012216 170050  MOV     #RXBUFF,@DQSEC ;LOAD THE ADDRESS
2287 011322 105277 170042          INCB   @DQREG       ;SEL THE RX WC PRI.
2288 011326 012777 177770 170036  MOV     #-10,@DQSEC  ;SET FOR TEN CHARS
2289 011334 105277 170030          INCB   @DQREG       ;SEL THE TX BA PRI.
2290 011340 012777 012420 170024  MOV     #XSUNC,@DQSEC ;LOAD THE ADDRESS.
2291 011346 105277 170016          INCB   @DQREG       ;SEL THE TX WC PRI.
2292 011352 012777 177766 170012  MOV     #-12,@DQSEC  ;SET FOR TWO SYNC AND 8. CHARS
2293 011360 112777 000011 170002  MOVVB   #11,@DQREG   ;SEL THE SYNC REGISTER
2294 011366 013777 012010 167776  MOV     .SYNC,@DQSEC ;LOAD SYNC
2295 011374 105277 167770          INCB   @DQREG       ;SEL THE MISC REGISTER.
2296 011400 005077 167766          CLR    @DQSEC       ;SEL 16 BITS PER CHAR.
2297 011404 032737 040000 001510  BIT     #JUMBIT,DQSTAT ;IF TEST JUMPER INSTALLED;
2298 011412 001003          BNE     .+10        ;RUN DATA THROUGH CABLE.
2299 011414 052777 000010 167750  BIS     #BIT3,@DQSEC  ;NO JUMPER; SET TEST LOOP!
2300 011422 112777 000017 167732  MOVVB   #17,@DQRC5H   ;GET LAST CHAR DET ADDRESS
2301 011430 112777 000010 167732  MOVVB   #10,@DQREG    ;GET CHAR DET REGISTER
2302 011436 012777 003721 167726  MOV     #3721,@DQSEC  ;LOAD CHARACTER
2303 011444 112777 000014 167716  MOVVB   #14,@DQREG    ;SEL THE SEQ REGISTER
2304 011452 000207          RTS      PC           ;LEAVE THE ROUTINE.
2305
2306 011454          BCC.TA:
2307 011454 004737 011024          JSR    PC,SET.UP    ;SET UP ALL NECESSARY FOR TEST.
2308 011460 012777 100010 167704  MOV     #BIT15+BIT3,@DQSEC ;
2309
2310 011466 105377 167670          DECB   @DQRC5H      ;SET SNGL CHAR AND BCC START CLEAR
2311 011472 112777 000010 167670  MOVVB   #10,@DQREG   ;GET NEXT ADDR
2312 011500 012777 176400 167664  MOV     #375*400,@DQSEC ;SEL CHAR DET ADDR
2313 011506 112777 000014 167654  MOVVB   #14,@DQREG   ;LOAD CHAR
2314 011514 013777 011022 167650  MOV     FUNCT.,@DQSEC ;SEL THE SEQ REG.
2315 011522 112777 000017 167640  MOV     #17,@DQREG   ;SET THE TEST APPEND FUNCTIONS
2316 011530 013777 013032 167634  MOV     POLY,@DQSEC  ;SEL THE POLY REG.
2317 011536 112777 000012 167624  MOV     POLY,@DQSEC  ;LOAD THE POLYNOMIAL.
2318 011544 052777 000100 167620  MOVVB   #12,@DQREG   ;SEL THE MISC REG
2319 011552 112777 000017 167610  BIS     #BIT6,@DQSEC  ;SEL EXT POLY REG
2320 011560 013777 013034 167604  MOV     #7,@DQREG    ;RESEL. THE POLY REG
                MOV     XPOLY,@DQSEC ;SET 16-23 POLY

```

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PROGRAM INITIALIZATION AND START UP.

```

2321 011566 012700 012014      MOV    #TXBUFF,RO      ;SET TX POINTER
2322 011572 012720              MOV    (PC)+,(RO)+    ;LOAD THE BUFFER WITH DATA
2323 011574          350      355      .BYTE 350,355        ;DATA
2324 011576 012720              MOV    (PC)+,(RO)+    ;LOAD THE BUFFER WITH DATA
2325 011600          360      365      .BYTE 360,365        ;DATA
2326 011602 012720              MOV    (PC)+,(RO)+    ;LOAD THE BUFFER WITH DATA
2327 011604          370      375      .BYTE 370,375        ;DATA
2328 011606 012720              MOV    (PC)+,(RO)+    ;LOAD THE BUFFER WITH DATA
2329 011610          377      377      .BYTE 377,377        ;DATA
2330 011612 004737 011620      JSR    PC,ENABLE      ;SET GO BITS FOR RX AND TX; WAIT FOR RX DONE.
2331 011616 000207              RTS    PC              ;LEAVE
2332
2333 011620 005037 011670      ENABLE: CLR    3$      ;
2334 011624 012737 000005 011672 MOV    #5,4$          ;SET DELAY
2335 011632 005277 167522      INC    @DQRCR        ;SET RX GO.
2336 011636 005277 167522      INC    @DQTCR        ;SET TX GO.
2337 011642 105777 167512      $:    TSTB @DQRCR    ;RX PRI. DONE?
2338 011646 100407              BMI    2$            ;BR IF YES
2339 011650 005237 011670      INC    3$            ;DELAY.....
2340 011654 001372              BNE    1$            ;
2341 011656 005337 011672      DEC    4$            ;
2342 011662 001367              BNE    1$            ;
2343 011664 104001              HLT    1              ;RX PRI DONE NOT SET.
2344 011666 000207      2$:    RTS    PC      ;LEAVE
2345 011670 000000      3$:    000
2346 011672 000000      4$:    000
2347
2348 011674 005037 012004      NEWENA: CLR    3$      ;
2349 011700 012737 000005 012006 MOV    #5,4$          ;SET DELAY
2350 011706 005277 167446      INC    @DQRCR        ;SET RX GO
2351 011712 005277 167446      INC    @DQTCR        ;SET TX GO
2352 011716 105777 167436      $:    TSTB @DQRCR    ;RX PRIMARY DONE?
2353 011722 100410              BMI    2$            ;BR IF YES
2354 011724 005237 012004      INC    3$            ;DELAY
2355 011730 001372              BNE    1$            ;
2356 011732 005337 012006      DEC    4$            ;
2357 011736 001367              BNE    1$            ;
2358 011740 104001              HLT    1              ;RX PRI DONE FAILED TO SET
2359 011742 000417              BR     5$            ;LEAVE
2360 011744 112777 000012 167416 2$:    MOVB  #12,@DQREG    ;SEL THE MISC REG
2361 011752 042777 000010 167412      BIC    #BIT3,@DQSEC  ;STOP DATA
2362 011760 112777 000015 167402      MOVB  #15,@DQREG    ;SEL RX BCC
2363 011766 017700 167400      MOV    @DQSEC,RO     ;READ INTO RO
2364 011772 105277 167372      INCB  @DQREG ;SEL TX BCC
2365 011776 017701 167370      MOV    @DQSEC,R1     ;READ INTO R1
2366 012002 000207      5$:    RTS    PC      ;RETURN
2367 012004 000000      3$:    .WORD 0
2368 012006 000000      4$:    .WORD 0
2369
2370
2371 012010          026      026      .SYNCL: .BYTE 26,26
2372 012012          026      026      SYNCL:  .BYTE 26,26
2373 012014 000000      TXBUFF: 0
2374          012216          .-.+200
2375 012216 000000      RXBUFF: 0
2376          012420          .-.+200

```

PROGRAM INITIALIZATION AND START UP.

2377	012420	026	026
2378	012422	026	026
2379	012424	000000	
2380		012626	
2381	012626	000000	
2382		013030	
2383	013030	000000	
2384	013032	000000	
2385	013034	000000	
2386	013036	000000	
2387	013040	000000	
2388	013042	000000	
2389	013044	000000	
2390	013046	000000	

```

XSYNC: .BYTE 26,26
XSYNC2: .BYTE 26,26
XTXBUF: 000000
        =.+200
XRXBUF: 000000
        =.+200
ERR:    0
POLY:   0
XPOLY:  0
CHAR:   0
COUNT: 0
ADDR:   0
GDCHAR: 0
DETCAR: 0

```

```

2391
2392
2393
2394
2395
2396
2397
        :END OF PASS
        :TYPE NAME OF TEST
        :UPDATE PASS COUNT
        :CHECK FOR EXIT TO ACT-11
        :RESTART TEST

```

2398	013050	005037	001234
2399	013054	005037	001312
2400	013060	005237	001237
2401	013064	104402	
2402	013066	015300	
2403	013070	104402	
2404	013072	015461	
2405	013074	104411	
2406	013076	013206	
2407	013100	104402	
2408	013102	015467	
2409	013104	104411	
2410	013106	013214	
2411	013110	104402	
2412	013112	015475	
2413	013114	104411	
2414	013116	013222	
2415	013120	104402	
2416	013122	015506	
2417	013124	104411	
2418	013126	013230	
2419	013130	013777	001230 166044
2420	013136	005337	001276
2421	013142	001013	
2422	013144	013737	001504 001276
2423	013152	013701	000042
2424	013156	001405	
2425	013160	000005	
2426	013162		
2427	013162	004711	
2428	013164	000240	
2429	013166	000240	
2430	013170	000240	
2431	013172	104414	
2432	013174	012737	002254 001274

```

.EOP:   CLR      LSTERR      :CLEAR LAST ERROR PC
        CLR      ERRFLG     :CLEAR ERROR FLAG
        INC      PASCNT     :UPDATE PASS COUNT
        TYPE
        MEPASS
        TYPE
        MCSRX
        CNVRT
        XCSR
        TYPE
        MVECX
        CNVRT
        XVEC
        TYPE
        MPASSX
        CNVRT
        XPASS
        TYPE
        MERRX
        CNVRT
        XERR
        MOV      PASCNT,ALIGHTS :DISPLAY PASS COUNT
        DEC      SAVNUM
        BNE      RESTR
        MOV      DQNUM,SAVNUM
        MOV      @#42,R1
        BEQ      RESTR
        RESET
        LOGICAL: JSR      PC,(R1)
        NOP
        NOP
        NOP
        RESTR:  CKSWR
        MOV      #TST1,RETURN

```

```

:CHECK FOR ACT-11 OR UDP
:IF NOT, CONTINUE TESTING

```

```

2433 013202 000137 002254          JMP      TST1
2434 013206 000001          XCSR:   1
2435 013210      006      002          .BYTE  6.2
2436 013212 001360          DQRCSR
2437 013214 000001          XVEC:   1
2438 013216      003      002          .BYTE  3.2
2439 013220 001350          DQRVEC
2440 013222 000001          XPASS:  1
2441 013224      006      002          .BYTE  6.2
2442 013226 001230          PASCNT
2443 013230 000001          XERR:   1
2444 013232      006      002          .BYTE  6.2
2445 013234 001232          ERRCNT
2446
2447          ;SCOPE LOOP AND INTFRATION HANDLER
2448
2449 013236 104414          .SCOPE: CKSWR
2450 013240 032777 040000 165732          BIT      #BIT14,@SWR
2451 013246 001407          TTST:  BEQ      1$
2452 013250 000432          BR      3$
2453 013252 105777 165726          TSTB    @TKCSR
2454 013256 100027          BPL     3$
2455 013260 017700 165722          MOV     @TKDBR,R0
2456 013264 000412          BR      2$
2457 013266 032777 004000 165704 1$:  BIT      #SW11,@SWR
2458 013274 001006          BNE     2$
2459 013276 005237 001224          INC     LPCNT
2460 013302 023737 001224 001222          CMP     LPCNT,I'COUNT
2461 013310 001012          BNE     3$
2462 013312 105037 001312          2$:  CLRB    ERRFLG
2463 013316 005037 001224          CLR     LPCNT
2464 013322 012737 000113 001222          MOV     #75.,I'COUNT
2465 013330 013737 001216 001214          MOV     NEXT,RETURN
2466 013336 013716 001214          3$:  MOV     RETURN,(SP)
2467 013342 000002          RTI
2468 013344 001407          BRW:   1407
2469 013346 000432          BRX:   432
2470
2471          ;CHECK FOR FREEZE ON CURRENT DATA
2472
2473 013350 104414          .SCOPE: CKSWR
2474 013352 032777 001000 165620          BIT      #SW09,@SWR
2475 013360 001402          BEQ     1$
2476 013362 013716 001220          MOV     LOCK,(SP)
2477 013366 000002          1$:  RTI
2478
2479          ;TELETYPE OUTPUT ROUTINE
2480
2481 013370 010546          .TYPE:  MOV     R5,-(SP)
2482 013372 017605 000002          MOV     @2(SP),R5
2483 013376 062766 000002 000002          ADD     #2,2(SP)
2484 013404 005737 015060          1$:  TST     @WRDSW
2485 013410 001004          BNE     300$
2486 013412 032777 010000 165560          BIT     #SW12,@SWR
2487 013420 001024          BNE     3$
2488 013422 105715          300$: TSTB   (R5)
  
```

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

2489	013424	100014			BPL	2\$
2490	013426	105777	165556		TSTB	@TPCSR
2491	013432	100375			BPL	.-4
2492	013434	012777	000015	165550	MOV	#15,@TPDDBR
2493	013442	105777	165542		TSTB	@TPCSR
2494	013446	100375			BPL	.-4
2495	013450	012777	000012	165534	MOV	#12,@TPDDBR
2496	013456	105777	165526		TSTB	@TPCSR
2497	013462	100375			BPL	2\$
2498	013464	112577	165522		MOVB	(R5)+,@TPDDBR
2499	013470	001345			BNE	1\$
2500	013472	012605			MOV	(SP)+,R5
2501	013474	000002			RTI	

2\$:

3\$:

:ASCII STRING INPUT ROUTINE

2505	013476	010346			.INSTR:	MOV	R3,-(SP)
2506	013500	010446				MOV	R4,-(SP)
2507	013502	017637	000004	013520		MOV	@4(SP),.MSG
2508	013510	062766	000002	000004		ADD	#2,4(SP)
2509	013516	104402			.INST1:	TYPE	
2510	013520	000000			.MSG:		0
2511	013522	012704	015652			MOV	#INBUF,R4
2512	013526	012703	000007			MOV	#7,R3
2513	013532	105777	165446		1\$:	TSTB	@TKCSR
2514	013536	100375				BPL	1\$
2515	013540	117714	165442			MOVB	@TKDDBR,(R4)
2516	013544	142714	000200			BICB	#200,(R4)
2517	013550	121427	000025			CMPB	(R4),#25
2518	013554	001003				BNE	200\$
2519	013556	104402	015240			TYPE	,MCRLF
2520	013562	000755				BR	.INST1
2521	013564	122427	000015		200\$:	CMPB	(R4)+,#15
2522	013570	001423				SEQ	INSTR2
2523	013572	117777	165410	165412		MOVB	@TKDDBR,@TPDDBR
2524	013600	105777	165404		2\$:	TSTB	@TPCSR
2525	013604	100375				BPL	2\$
2526	013606	005303				DEC	R3
2527	013610	001350				BNE	1\$
2528	013612	000402				BR	.INSTG
2529	013614	010346			.INSTE:	MOV	R3,-(SP)
2530	013616	010446				MOV	R4,-(SP)
2531	013620	104402			.INSTG:	TYPE	
2532	013622	015234				MOB	
2533	013624	005737	015060			TST	@#RDSW
2534	013630	001402				BEQ	400\$
2535	013632	104402	015240			TYPE	,MCRLF
2536	013636	000727			400\$:	BR	.INST1
2537	013640	012604			INSTR2:	MOV	(SP)+,R4
2538	013642	012603				MOV	(SP)+,R3
2539	013644	000002				RTI	

: IS IT <^G>

:CONVERT ASCII STRING TO OCTAL

2543	013646	010546			.PARAM:	MOV	R5,-(SP)
2544	013650	010446				MOV	R4,-(SP)

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

```

2545 013652 016605 000074      MOV      4(SP),R5
2546 013656 012537 014052      MOV      (R5)+,LOLIM
2547 013662 012537 014054      MOV      (R5)+,HILIM
2548 013666 012537 014056      MOV      (R5)+,DEVADR
2549 013672 112537 014060      MOV      (R5)+,LOBITS
2550 013676 112537 014061      MOV      (R5)+,ADRCNT
2551 013702 010566 000004      MOV      R5,4(SP)
2552 013706 005005      PARAM1: CLR      R5
2553 013710 012704 015652      MOV      #INBUF,R4
2554 013714 122714 000015      CMPB     #15,(R4)
2555 013720 001420      BEQ      PARERR
2556 013722 121427 000060      1$:      CMPB     (R4),#60
2557 013726 002415      BLT      PARERR
2558 013730 121427 000067      CMPB     (R4),#67
2559 013734 003012      BGT      PARERR
2560 013736 142714 000060      BICB     #60,(R4)
2561 013742 152405      BISB     (R4)+,R5
2562 013744 122714 000015      CMPB     #15,(R4)
2563 013750 001414      BEQ      LIMITS
2564 013752 006305      ASL      R5
2565 013754 006305      ASL      R5
2566 013756 006305      ASL      R5
2567 013760 000760      BR       1$
2568 013762 122714 000015      PARERR: CMPB     #15,(R4)      ;IS FIRST CHARACTER A <CR>
2569 013766 001003      BNE     120$
2570 013770 005737 015060      TST     @#RDSW      ;IS CKSWR ROUTINE BEING USED
2571 013774 001023      BNE     PARTI
2572 013776 104404      120$:   INSTER
2573 014000 000742      BR       PARAM1
2574
2575      ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
2576
2577 014002 020537 014054      LIMITS: CMP      R5,HILIM
2578 014006 101365      BHI     PARERR
2579 014010 020537 014052      CMP      R5,LOLIM
2580 014014 103762      BLO     PARERR
2581 014016 133705 014060      BITB     LOBITS,R5
2582 014022 001357      BNE     PARERR
2583
2584      ;STORE NUMBER AT SPECIFIED ADDRESS
2585
2586 014024 013704 014056      1$:      MOV      DEVADR,R4
2587 014030 010524      MOV      R5,(R4)+
2588 014032 062705 000002      ADD      #2,R5
2589 014036 105337 014061      DECB     ADRCNT
2590 014042 001372      BNE     1$
2591 014044 012604      PARTI:  MOV      (SP)+,R4
2592 014046 012605      MOV      (SP)+,R5
2593 014050 000002      RTI
2594 014052 000000      LOLIM:  0
2595 014054 000000      HILIM:  0
2596 014056 000000      DEVADR: 0
2597 014060 000000      LOBITS: 0
2598      ADRCNT=LOBITS+1
2599
2600      ;SAVE PC OF TEST THAT FAILED AND R0-R5

```



```

2601
2602 014062 016637 000004 001274 .SAV05: MOV 4(SP),SAVPC
2603
2604 ;SAVE R0-R5
2605
2606 014070 010537 001270 SV05: MOV R5,SAVR5
2607 014074 010437 001266 MOV R4,SAVR4
2608 014100 010337 001264 MOV R3,SAVR3
2609 014104 010237 001262 MOV R2,SAVR2
2610 014110 010137 001260 MOV R1,SAVR1
2611 014114 010037 001256 MOV R0,SAVR0
2612 014120 000002 RTI
2613
2614 ;RESTORE R0-R5
2615
2616 014122 013700 001256 .RES05: MOV SAVR0,R0
2617 014126 013701 001260 MOV SAVR1,R1
2618 014132 013702 001262 MOV SAVR2,R2
2619 014136 013703 001264 MOV SAVR3,R3
2620 014142 013704 001266 MOV SAVR4,R4
2621 014146 013705 001270 MOV SAVR5,R5
2622 014152 000002 RTI
2623
2624 ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
2625
2626 014154 104402 .CONVR: TYPE
2627 014156 015240 MCRLF
2628 014160 010046 .CNVRT: MOV R0,-(SP)
2629 014162 010146 MOV R1,-(SP)
2630 014164 010346 MOV R3,-(SP)
2631 014166 010446 MOV R4,-(SP)
2632 014170 010546 MOV R5,-(SP)
2633 014172 017601 000012 MOV @12(SP),R1
2634 014176 013737 015714 00125C MOV TEMP,TEMP3
2635 014204 062766 000002 000012 ADD #2,12(SP)
2636 014212 012137 014374 MOV (R1)+,WRDCNT
2637 014216 112137 014376 1$: MOV (R1)+,CHRCNT
2638 014222 112137 014377 MOV (R1)+,SPACNT
2639 014226 013137 014400 MOV @ (R1)+,BINWRD
2640 014232 013704 014400 2$: MOV BINWRD,R4
2641 014236 113705 014376 MOV (R1)+,CHRCNT,R5
2642 014242 012700 015714 MOV #TEMP,R0
2643 014246 010403 3$: MOV R4,R3
2644 014250 042703 177770 BIC #177770,R3
2645 014254 062703 000060 ADD #060,R3
2646 014260 110320 MOV R3,(R0)+
2647 014262 000241 CLC
2648 014264 006004 ROR R4
2649 014266 000241 CLC
2650 014270 006004 ROR R4
2651 014272 000241 CLC
2652 014274 006004 ROR R4
2653 014276 005305 DEC R5
2654 014300 001362 BNE 3$
2655 014302 012703 015756 MOV #DATA,R3
2656 014306 114023 4$: MCVB -(R0),(R3)+

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

2657	014310	105337	014376		DECB	CHRCNT	
2658	014314	001374			BNE	4\$	
2659	014316	105737	014377		TSTB	SPACNT	
2660	014322	001405			BEQ	6\$	
2661	014324	112723	000040	5\$:	MOVB	#040,(R3)+	
2662	014330	105337	014377		DECB	SPACNT	
2663	014334	001373			BNE	5\$	
2664	014336	105013		6\$:	CLRB	(R3)	
2665	014340	104402			TYPE		
2666	014342	015756			MDATA		
2667	014344	005337	014374		DEC	WRDCNT	
2668	014350	001322			BNE	1\$	
2669	014352	013737	001250 015714		MOV	TEMP3,TEMP	
2670	014360	012605			MOV	(SP)+,R5	
2671	014362	012604			MOV	(SP)+,R4	
2672	014364	012603			MOV	(SP)+,R3	
2673	014366	012601			MOV	(SP)+,R1	
2674	014370	012600			MOV	(SP)+,R0	
2675	014372	000002			RTI		
2676	014374	000000			WRDCNT:	0	
2677	014376	000000			CHRCNT:	0	
2678		014377			SPACNT=	CHRCNT+1	
2679	014400	000000			BINWRD:	0	
2680						:TRAP DISPATCH SERVICE	
2681						:ARGUMENT OF TRAP IS EXTRACTED	
2682						:AND USED AS OFFSET TO OBTAIN POINTER	
2683						:TO SELECTED SUBROUTINE	
2684							
2685	014402	011646		.TRPSR:	MOV	(SP),-(SP)	:GET PC OF RETURN
2686	014404	162716	000002		SUB	#2,(SP)	:-PC OF TRAP
2687	014410	017616	000000		MOV	@(SP),(SP)	:GET TRP
2688	014414	006316		TRPOK:	ASL	(SP)	:MULTIPLY TRAP ARG BY 2
2689	014416	042716	177001		BIC	#177001,(SP)	:CLEAR UNWANTED BITS
2690	014422	062716	001314		ADD	#.TRPTAB,(SP)	:POINTER TO SUBROUTINE ADDRESS
2691	014426	017616	000000		MOV	@(SP),(SP)	:SUBROUTINE ADDRESS
2692	014432	000136			JMP	@(SP)+	:GO TO SUBROUTINE
2693							
2694						:ERROR HANDLER	
2695							
2696	014434	104414		.HLT:	CKSWR		
2697	014436	032777	010000 164534		BIT	#SW12,@SWR	
2698	014444	001406			BEQ	XBX	
2699	014446	105777	164536		TSTB	@TPCSR	
2700	014452	100003			BPL	XBX	
2701	014454	112777	000207 164530		MOVB	#207,@TPDBR	
2702	014462	032777	020000 164510	XBX:	BIT	#SW13,@SWR	
2703	014470	001074			BNE	HALTS	
2704	014472	021637	001234		CMP	(SP),LSTERR	
2705	014476	001404			BEQ	1\$	
2706	014500	011637	001234		MOV	(SP),LSTERR	
2707	014504	105037	001312		CLRB	ERRFLG	
2708	014510	104406		1\$:	SAV05		
2709	014512	011605			MOV	(SP),R5	
2710	014514	162705	000002		SUB	#2,R5	
2711	014520	011504			MOV	(R5),R4	
2712	014522	006304			ASI	R4	

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

2713	014524	061504			ADD	(R5),R4
2714	014526	006304			ASL	R4
2715	014530	042704	177001		BIC	#177001,R4
2716	014534	062704	016020		ADD	#.ERRTAB,R4
2717	014540	012437	014632		MOV	(R4)+,ERRMSG
2718	014544	012437	014644		MOV	(R4)+,DATAHD
2719	014550	011437	014656		MOV	(R4),DATABP
2720	014554	105737	001312		TSTB	ERRFLG
2721	014560	001403			BEQ	TYPMSG
2722	014562	005737	014656		TST	DATABP
2723	014566	001027			BNE	TYPDAT
2724	014570	104402			TYPMSG:	TYPE
2725	014572	015517				MTSTN
2726	014574	104411				CNVRT
2727	014576	014756				XTSTN
2728	014600	104402				TYPE
2729	014602	015605				MERRPC
2730	014604	104411				CNVRT
2731	014606	014750				ERTAB0
2732	014610	104402				TYPE
2733	014612	015240				MCRLF
2734	014614	112737	177777	001312	MOVB	#-1,ERRFLG
2735	014622	005737	014632		TST	ERRMSG
2736	014626	001407			BEQ	WRKO.FM
2737	014630	104402			TYPE	
2738	014632	000000			ERRMSG:	0
2739	014634				WRKO.FM:	
2740	014634	005737	014644		TST	DATAHD
2741	014640	001402			BEQ	TYPDAT
2742	014642	104402			TYPE	
2743	014644	000000			DATAHD:	0
2744	014646	005737	014656		TYPDAT:	TST
2745	014652	001402				DATABP
2746	014654	104410			BEQ	RESREG
2747	014656	000000			CONVRT	
2748	014660	104407			DATABP:	0
2749	014662	005777	164312		RESREG:	RES05
2750	014666	100005			HALTS:	TST
2751	014670	010046				@SWR
2752	014672	016600	000002			EXITER
2753	014676	000000			BPL	
2754	014700	012600			PUSHRO	
2755	014702	104414			MOV	2(SP),R0
2756	014704	005237	001232		HALT	
2757	014710	032777	000400	164262	POPPO	
2758	014716	001007			EXITER:	CKSWR
2759	014720	032777	002000	164252	INC	ERRCNT
2760	014726	001407			BIT	#SW08,@SWR
2761	014730	013737	001216	001214	BNE	1\$
2762	014736	012706	001200		BIT	#SW10,@SWR
2763	014742	000177	164246		BEQ	2\$
2764	014746	000002			MOV	NEXT,RETURN
2765	014750	000001			MOV	#STACK,SP
2766	014752	006	002		JMP	@RETURN
2767	014754	001274			RTI	
2768	014756	000001			ERTAB0:	1
					.BYTE	6,2
					SAVPC	
					XTSTN:	1

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

```

2769 014760 003 002 .BYTE 3,2
2770 014762 001226 TSTNO
2771 ;ENTER HERE ON POWER FAILURE
2772
2773
2774 014764 .PFAIL:
2775 014764 012737 014776 000024 MOV #RESTART,24 ;SET UP FOR POWER UP TRAP
2776 014772 000000 HALT ;HALT ON POWER DOWN NORMAL
2777 014774 000777 BR .
2778
2779 ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
2780
2781 014776 RESTAR:
2782 014776 012737 014764 000024 MOV #.PFAIL,24 ;SET UP FOR POWER FAILURE
2783 015004 012706 001200 MOV #STACK,SP
2784 015010 005037 015714 CLR TEMP
2785 015014 005237 015714 INC TEMP
2786 015020 001375 BNE .-4
2787 015022 104402 TYPE
2788 015024 015242 MPFAIL
2789 015026 104411 CNVRT
2790 015030 015052 PFTAB
2791 015032 005037 001312 CLR ERRFLG
2792 015036 005037 001234 CLR LSTERR
2793 015042 104412 MSTCLR
2794 015044 104413 MEMCLR
2795 015046 000177 164142 JMP @RETURN
2796 015052 000001 PFTAB:
2797 015054 003 002 .BYTE 3,2
2798 015056 001226 TSTNO
2799
2800
2801 ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ^G TO ALLOW CHANGING
2802 ;OF LOC.176.
2803 ;LOCATIONS USED:
2804 015060 000000 RDSW: .WORD 0
2805
2806
2807 015062 005737 000042 .CKSWR: TST @#42
2808 015066 001042 BNE OUT
2809 015070 022737 000176 001200 CMP #SWREG,SWR ;SOFTWARE SWITCH REGISTER PRESENT
2810 015076 001036 BNE OUT ;NO, GET OUT
2811 015100 105777 164100 TSTB @TKCSR ;YES, WAIT FOR
2812 015104 100033 BPL OUT ;READY, GET CHARACTER
2813 015106 017737 164074 013520 MOV @TKDBR,.MSG ;AND STRIP OFF
2814 015114 042737 177600 013520 BIC #177600,.MSG ;THE GARBAGE
2815 015122 122737 000007 013520 CMPB #7,.MSG ;IS IT A <^G>
2816 015130 001021 BNE OUT
2817 015132 104402 015210 TYPE,$CNTG
2818 015136 005137 015060 .CNTLJ: COM @RDSW
2819 015142 104402 015214 TYPE,$MSWR
2820 015146 104411 015202 CNVRT,SWREGC
2821 015152 104403 015223 INSTR,$MNEW
2822 015156 104405 PARAM
2823 015160 000000 C
2824 015162 177777 177777

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

2881	015554	020117	050504	030461
2882	015562	051447	042040	051505
2883	015570	051111	042105	040440
2884	015576	052103	053111	027105
2885	015604	000		
2886	015605	120	035103	000040
2887	015612	046777	050101	047440
2888	015620	020106	050504	030461
2889	015626	051440	040524	052524
2890	015634	177523	000	
2891		015640		
2892	015640	000002		
2893	015642	006	003	
2894	015644	001244		
2895	015646	006	002	
2896	015650	001246		
2897				
2898				
2899				
2900				
2901	015652	000000		
2902		015714		
2903	015714	000000		
2904		015756		
2905	015756	000000		
2906		016020		
2907	016020	000000		
2908	016022	000000		
2909	016024	000000		
2910	016026	016174		
2911	016030	000000		
2912	016032	000000		
2913	016034	016314		
2914	016036	016563		
2915	016040	017230		
2916	016042	016361		
2917	016044	016624		
2918	016046	000000		
2919	016050	016361		
2920	016052	016643		
2921	016054	000000		
2922	016056	016361		
2923	016060	016664		
2924	016062	000000		
2925	016064	016361		
2926	016066	016715		
2927	016070	000000		
2928	016072	016361		
2929	016074	016743		
2930	016076	000000		
2931	016100	016361		
2932	016102	016777		
2933	016104	000000		
2934	016106	016361		
2935	016110	017030		
2936	016112	000000		

MERRPC: .ASCIZ /PC: /  
XHEAD: .ASCIZ <377>/MAP OF DQ11 STATUS/<377>

.EVEN  
XSTATQ: 2  
.BYTE 6,3  
TEMP1  
.BYTE 6,2  
TEMP2

.EVEN  
:BUFFERS FOR INPUT-OUTPUT

INBUF: 0  
 .+.40  
 TEMP: 0  
 .+.40  
 MDATA: 0  
 .+.40  
 .ERRTA: 0  
 0 ;HALT 0  
 0  
 EMC  
 0 ;HALT 1  
 0  
 EM1  
 DH0 ;HALT 2  
 DT1  
 EM2  
 DH1 ;HALT 3  
 0  
 EM2  
 DH2 ;HALT 4  
 0  
 EM2  
 DH3 ;HALT 5  
 0  
 EM2  
 DH4 ;HALT 6  
 0  
 EM2  
 DH5 ;HALT 7  
 0  
 EM2  
 DH6 ;HALT 10  
 0  
 EM2  
 DH7 ;HALT 11  
 0

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

2937	016114	016361			EM2	
2938	016116	017050			DH10	;HALT 12
2939	016120	000000			0	
2940	016122	016361			EM2	
2941	016124	017075			DH11	;HALT 13
2942	016126	000000			0	
2943	016130	017124			DH12	
2944	016132	000000			0	;HALT 14
2945	016134	000000			0	
2946	016136	016403			EM3	
2947	016140	017203			DH14	;HALT 15
2948	016142	017254			DT3	
2949	016144	016462			EM4	
2950	016146	017160			DH13	;HALT 16
2951	016150	017242			DT2	
2952	016152	016506			EM5	
2953	016154	017203			DH14	;HALT 17
2954	016156	017254			DT3	
2955	016160	016533			EM6	
2956	016162	000000			0	;HALT 20
2957	016164	000000			0	
2958	016166	017124			DH12	
2959	016170	017214			DH15	;HALT 21
2960	016172	000000			0	
2961	016174	051377	041505	044505	EM0:	.ASCIZ <377>/RECEIVER DONE NOT SET./
	016224	052377	042510	041440	MSG13:	.ASCIZ <377>/THE CHARACTER DETECT OPTION <BB> IS NOT INSTALLED!!!/
	016314	041777	040510	040522	EM1:	.ASCIZ <377>/CHARACTER DETECTION TEST <SET FLAG>/
	016361	377	042524	052123	EM2:	.ASCIZ <377>/TEST OF SEQ REG /
	016403	377	041502	020103	EM3:	.ASCIZ <377>/BCC TEST-APPEND FAILURE. DQ11 ERROR FLAG SET./
	016462	042377	052101	020101	EM4:	.ASCIZ <377>/DATA COMPARE ERROR/
	016506	042377	030521	020061	EM5:	.ASCIZ <377>/DQ11 ERROR FLAG SET/
	016533	377	047516	051040	EM6:	.ASCIZ <377>/NO RECIEVER INTERUPTS./
	016563	377	044103	051101	DH0:	.ASCIZ <377>/CHAR RECEIVED EXPECTED ADDRESS/
	016624	041377	052111	030460	DH1:	.ASCIZ <377>/BIT01 -SET T-/
	016643	377	044502	030124	DH2:	.ASCIZ <377>/BIT02 -CLEAR T-/
	016664	041377	052111	031460	DH3:	.ASCIZ <377>/BIT03 -BCC START CLEAR-/
	016715	377	044502	030124	DH4:	.ASCIZ <377>/BIT06 -CLEAR ACTIVE-/
	016743	377	044502	030124	DH5:	.ASCIZ <377>/BIT07 -SET DONE; CLEAR GO-/
	016777	377	044502	030124	DH6:	.ASCIZ <377>/BIT08 -CHARACTER STRIP-/
	017030	041377	052111	030061	DH7:	.ASCIZ <377>/BIT10 -TX PAD-/
	017050	041377	052111	030461	DH10:	.ASCIZ <377>/BIT11 -BCC EXCLUDE-/
	017075	377	044502	030124	DH11:	.ASCIZ <377>/BIT08 -RX CHAR STRIP-/
	017124	046777	046125	044524	DH12:	.ASCIZ <377>/MULTIPLE FUNCTIONS FAILURE/
	017160	042777	050130	041505	DH13:	.ASCIZ <377>/EXPECTED RECEIVED/
	017203	377	050504	051105	DH14:	.ASCIZ <377>/DQERR /
	017214	042377	042514	051440	DH15:	.ASCIZ <377>/DLE STUCK /
					.EVEN	
	017230	000002			DT1:	2
2962	017232	006	011		.BYTE	6,9.
2963	017234	013044			GDCHAR	
2964	017236	002	002		.BYTE	2,2
2965	017240	013042			ADDR	
2966	017242	000002			DT2:	2
2967	017244	003	006		.BYTE	3,6
2968	017246	013044			GDCHAR	
2969	017250	003	002		.BYTE	3,2



2970	017252	013036	
2971	017254	000001	
2972	017256	006	002
2973	017260	013030	
2974		000001	

DT3: CHAR  
 1  
 .BYTE 6.2  
 ERR  
 .END

















.CNVRT	014160	855	2628#			
.CONVR	014154	853	2626#			
.EOP	013050	1112	2136	2398#		
.ERRTA	016020	2716	2907#			
.HLT	014434	646	2696#			
.INSTE	013614	845	2529#			
.INSTG	013620	2528	2531#			
.INSTR	013476	843	2505#			
.INST1	013516	2509#	2520	2536		
.MEMCL	010652	859	2211#			
.MSG	013520	2507*	2510#	2813*	2814*	2815
.MSTCL	010766	857	2231#			
.PARAM	013646	847	2543#			
.PFAIL	014764	644	934	2774#	2782	
.RES05	014122	851	2616#			
.SAV05	014062	849	2602#			
.SCOPE	013236	837	2449#			
.SCOPI	013350	839	2473#			
.START	001512	695	932#	944		
.SYNC	012010	2261	2294	2371#		
.TRPSR	014402	648	2685#			
.TRPTA	001314	835#	2690			
.TYPE	013370	841	2481#			

. ABS. 017262 000

ERRORS DETECTED: 0

DSKZ:CZDQFE,DSKZ:CZDQFE,SEQ-DSKZ:CZDQXX.MAC,DSKZ:CZDQFE.P11  
RUN-TIME: 7 10 1 SECONDS  
RUN-TIME RATIO: 38/19 2.0  
CORE USED: 19K (37 PAGES)

DOCUMENT PAGES: 66