

DQ11

CHAR L & INTR
CZDQHEO

AH-8637E-MC
FICHE 1 OF 1

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IDENTIFICATION

PRODUCT CODE: AC-8635E-MC
PRODUCT NAME: CZDQHEO CHAR L & INTR
DATE: NOV 1980
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] BASIC 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

2.1 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)

2.2 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.

3. LOADING PROCEEDURE

3.1 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

4.1 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 ACTIVE.

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 THE 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 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-8635E-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.

DQCROO-DQCR17
DQSTOO-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 OCCURS 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 DQSTXX: 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 DQSTXX: AFTER AUTO 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


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522
523      :CZDQHE0/<377>/CHAR L & INTR
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 'CZDQHE0/<377>/CHAR L & INTR "'
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
555      000002      SW01=2
556      000001      SW00=1
557
                    :LOCK ON TEST SELECT
                    :RESTART PROGRAM AT SELECTED TEST
                    :RESELECT DQ11 DESIRED ACTIVE
                    :NOTE: THIS MUST NOT EXCEED ORIGINAL COUNT

```


558

559

560

561

562 000000

563 000001

564 000002

565 000003

566 000004

567 000005

568 000006

569 000007

570

571

572

573 177570

574 177570

575 177776

576 001200

577

578

579

580 005746

581 005726

582 010046

583 012600

584 024646

585 022626

586

587

588

589 100000

590 040000

591 020000

592 010000

593 004000

594 002000

595 001000

596 000400

597 000200

598 000100

599 000040

600 000020

601 000010

602 000004

603 000002

604 000001

605

606

607

608

609 002000

610 004000

611 010000

612 020000

613 040000

;REGISTER DEFINITIONS

R0=%0 ;GENERAL REGISTER
 R1=%1 ;GENERAL REGISTER
 R2=%2 ;GENERAL REGISTER
 R3=%3 ;GENERAL REGISTER
 R4=%4 ;GENERAL REGISTER
 R5=%5 ;GENERAL REGISTER
 SP=%6 ;PROCESSOR STACK POINTER
 PC=%7 ;PROGRAM COUNTER

;LOCATION EQUIVALENCIES

DSWR= 177570 ;HARDWARE SWITCH REGISTER LOC.
 DLIGHTS=177570 ;HARDWARE DISPLAY REGISTER LOC.
 PS=177776 ;PROCESSOR STATUS WORD
 STACK=1200 ;START OF PROCESSOR STACK

;INSTRUCTION DEFINITIONS

PUSH1SP=5746 ;DECREMENT PROCESSOR STACK 1 WORD
 POP1SP=5726 ;INCREMENT PROCESSOR STACK 1 WORD
 PUSHRO=10046 ;SAVE R0 ON STACK
 POPRO=12600 ;RESTORE R0 FROM STACK
 PUSH2SP=24646 ;DECREMENT STACK TWICE
 POP2SP=22626 ;INCREMENT STACK TWICE
 .EQUIV EMT,HLT ;BASIC DEFINITION OF ERROR CALL

BIT15=100000
 BIT14=40000
 BIT13=20000
 BIT12=10000
 BIT11=4000
 BIT10=2000
 BIT9=1000
 BIT8=400
 BIT7=200
 BIT6=100
 BIT5=40
 BIT4=20
 BIT3=10
 BIT2=4
 BIT1=2
 BIT0=1

;DQ11 OPTIONAL DEFINITIONS

ABBIT=2000
 ACTBIT=4000
 BABIT=10000
 BBBIT=20000
 JUMBIT=40000

614 001000
615 100000

ODDBIT=1000
SYNBIT=100000

;DQ11 SECONDARY REGISTER DEFINATIONS

620 000000
621 000001
622 000002
623 000003
624 000004
625 000005
626 000006
627 000007
628
629 000010
630 000011
631 000012
632 000013
633 000014
634 000015
635 000016
636 000017
637
638

RXBA.P=0 ;RECEIVER BUS ADDRESS PRIMARY.
RXWC.P=1 ;RECEIVER WORD COUNT PRIMARY.
TXBA.P=2 ;TRANSMITTER BUS ADDRESS PRIMARY.
TXWC.P=3 ;TRANSMITTER BUS ADDRESS PRIMARY.
RXBA.S=4 ;RECEIVER BUS ADDRESS SECONDARY.
RXWC.S=5 ;RECEIVER WORD COUNT SECONDARY.
TXBA.S=6 ;TRANSMITTER BUS ADDRESS SECONDARY.
TXWC.S=7 ;TRANSMITTER WORD COUNT SECONDARY.

CHARDT=10 ;CHARACTER DETECT REGISTER.
SYNC.=11 ;SYNC REGISTER.
MISC.=12 ;MISCELLANEOUS REGISTER.
TX.MUX=13 ;TRANSMITTER MUX REGISTER.
SEQ.=14 ;SEQUENCE REGISTER.
RX.BCC=15 ;RECEIVER BCC REGISTER.
TX.BCC=16 ;TRANSMITTER BCC REGISTER.
POLY.=17 ;POLYNOMIAL REGISTER.

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TRAPCATCHER FOR UNEXPECTED INTERRUPTS

SEQ 0014

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639      ;TRAPCATCAER FOR ILLEGAL INTERRUPTS
640      . = 0
641      ;STANDARD INTERRUPT VECTORS
642
643      . = 24
644      000024 016222      .PFAIL      ;POWER FAIL HANDLER
645      000026 000340      340          ;SERVICE AT LEVEL 7
646      000030 015672      .HLT        ;ERROR HANDLER
647      000032 000340      340          ;SERVICE AT LEVEL 7
648      000034 015640      .TRPSRV     ;GENERAL HANDLER DISPATCH SERVICE
649      000036 000340      340          ;SERVICE AT LEVEL 7
650      000046 000046      . = 46
651      000046 014420      LOGICAL      ;ACT HOOKS
652      000052 000052      . = 52
653      000052 000000      .WORD 0
654      ;THIS ROUTINE TRIES TO FORCE THE RECEIVER TO INTERRUPT
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      . = 56
661      000056
662      000056
663      000056 010120      VECMAP:
664      000060 012721 000004 1$:      MOV      R1,(R0)+      ;START FILLING THE VECTOR AREA
665      000064 022021      MOV      #4,(R1)+      ;WITH .+2; IOT (4)
666      000066 020127 001000      CMP      (R0)+,(R1)+      ;UPDATE THE POINTERS
667      000072 101771      CMP      R1,#1000      ;IS ALL FLOATING VECTOR AREA DONE
668      000074 012737 000146 000020      BLOS     1$      ;BR IF NOT ALL DONE
669      000102 013737 001500 001244      MOV      #4$,@#20      ;SET FOR IOT TRAP BY DQ11
670      000110 006037 001244      MOV      DQACTV,TEMP1      ;GET THE ACTIVE DQ11 S
671      000114 103023      2$:      ROR      TEMP1      ;ARE YOU ACTIVE.. DQ11
672      000116 005037 177776      BCC      5$      ;IF CARRY CLEAR.. NO MORE DQ11S
673      000122 005722      CLR      PS      ;CLEAR PS
674      000124 012772 000340 177776      TST      (R2)+      ;PUT POINTER TO STATUS TABLE
675      000132 105200      MOV      #340,@-2(R2)      ;TRY AND SET PRI/SEC DONE AND IE
676      000134 001376      INCB      R0      ;DELAY.....
677      000136 112712 000300      BNE      -2      ;.....DELAY
678      000142 005722      MOVB      #300,(R2)      ;NO INTERRUPT ASSUME 300 FIX IN TEST C
679      000144 000761      3$:      TST      (R2)+      ;UPDATE POINTERS
680      000146 051612      BR      2$      ;GO DO IT AGAIN
681      000150 042712 000007      4$:      BIS      (SP),(R2)      ;ENTERD BY IOT TRAP BY DQ11
682      000154 022626      BIC      #7,(R2)      ;CLEAR UNWANTED BITS
683      000156 012716 000142      CMP      (SP)+,(SP)+      ;POP IOT JUNK OFF STACK
684      000162 000002      MOV      #3$,(SP)      ;SET RETURN PC ON STACK
685      000164 000207      RTI      PC      ;GO HOME.
686      ;*****SOFTWARE SWITCH REGISTER*****
687      . = 174
688      000174 000000      DISPREG:      0      ;SOFTWARE DISPLAY REGISTER
689      000176 000000      SWREG:      0      ;SOFTWARE SWITCH REGISTER
690
691      ;PROGRAM START
692
693      . = 200
694      000200

```


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SEQ 0015

695	000200	000137	001512		JMP	.START	:GO TO START OF PROGRAM
696							
697		000220					
698	000220	012702	001400		CSRMAP: 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	MOV	#5\$,2#4	:SET FOR TIME OUT TRAP--NO DEVICE--
706	000256	112761	000012	000005	1\$: MOV	#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 (HARS
713	000312	005011			CLR	(R1)	:CLEAR DQ ACTIVE BIT
714	000314	112761	000010	000005	MOV	#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	.(	:APPERENTLY NO BB OPTION.
718	000336	052712	020000		BIS	#BBBIT,(R2)	:SET FOR BB OPTION
719	000342	112761	000017	000005	MOV	#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

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SEQ 0016

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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$:  TYPE      :TYPE MESSAGE
761 000604 016563          MERR2      :I DIDN'T FIND ANY DQ11S. DON'T USE AUTO SIZE.
762 000606 005000          CLR      R0              :
763 000610 000000          HALT              :HOW CAN I TEST NO DQ11S
764 000612 000776          BR      -2         :DON'T LET OPR HIT CONT. SW
765 000614 012716 000466 5$:  MOV     #-2,(SP) :ENTERED BY TIME OUT TRAP
766 000620 000002          RTI              :GO HOME.
767
768
769          001000          .=1000
770 001000 005377 055103 050504 MTITLE: .ASCIIZ <377><12>/CZDQHE0/<377>/CHAR L & INTR /<377>
771 001006 042510 177460 044103
772 001014 051101 046040 023040
773 001022 044440 052116 020122
774 001030 000377
775
776          001200          .=1200
777          :INDIRECT POINTERS
778
779 001200 177570          SWR: 177570          :SWITCH REGISTER POINTER
780 001202 177570          LIGHTS: 177570        :DISPLAY REGISTER POINTER
781 001204 177560          TKCSR: 177560         :TELETYPE KEYBOARD CONTROL REGISTER
782 001206 177562          TKDBR: 177562         :TELETYPE KEYBOARD DATA BUFFER
783 001210 177564          TPCSR: 177564         :TELEPRINTER CONTROL REGISTER
784 001212 177566          TPDBR: 177566         :TELEPRINTER DATA BUFFER
785
786          :PROGRAM CONTROL PARAMETERS
787
788 001214 000000          RETURN: 0              :SCOPE ADDRESS FOR LOOP ON TEST
789 001216 000000          NEXT: 0              :ADDRESS OF NEXT TEST TO BE EXECUTED
790 001220 000000          LOCK: 0              :ADDRESS FOR LOCK ON CURRENT DATA
791 001222 000003          ICOUNT: 3            :NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
792 001224 000000          LPCNT: 0            :NUMBER OF ITERATIONS COMPLETED
793 001226 000000          TSTNO: 0            :NUMBER OF TEST IN PROGRESS
794 001230 000000          PASCNT: 0           :NUMBER OF PASSES COMPLETED
795 001232 000000          ERRCNT: 0           :TOTAL NUMBER OF ERRORS
796 001234 000000          LSTERR: 0           :PC OF LAST ERROR CALL
797
798          :PROGRAM VARIABLES
799
800 001236 000000          CHAR1: 0
801 001240 000000          CHAR2: 0
802 001242 000000          CHAR3: 0
803 001244 000000          TEMP1: 0            :TEMPORARY STORAGE
804 001246 000000          TEMP2: 0            :TEMPORARY STORAGE
805 001250 000000          TEMP3: 0            :TEMPORARY STORAGE
806 001252 000000          TEMP4: 0            :TEMPORARY STORAGE

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SEQ 0017

807	001254	000000	TEMP5:	0	:TEMPORARY STORAGE
808	001256	000000	SAVR0:	0	:R0 STORAGE
809	001260	000000	SAVR1:	0	:R1 STORAGE
810	001262	000000	SAVR2:	0	:R2 STORAGE
811	001264	000000	SAVR3:	0	:R3 STORAGE
812	001266	000000	SAVR4:	0	:R4 STORAGE
813	001270	000000	SAVR5:	0	:R5 STORAGE
814	001272	000000	SAVSP:	0	:STACK POINTER STORAGE
815	001274	000000	SAVPC:	0	:PROGRAM COUNTER STORAGE
816	001276	000000	SAVNUM:	0	
817	001300	000001	CREAM:	.BLKW 1	
818	001302	000000	RUNFLG:	0	
819	001304	000000	RUN:	0	
820	001306	000000	RUNCNT:	0	

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 CZDQHE.P11 03-DEC-80 08:27 PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0018

```

821
822                                     :PROGRAM CONTROL FLAGS
823
824 001310      000      INIFLG: .BYTE 0      :PROGRAM INITIALIZATION FLAG
825 001311      000      STFLG: .BYTE 0      :TEST START FLAG
826 001312      000      ERRFLG: .BYTE 0     :ERROR OCCURED FLAG
827 001313      000      LOKFLG: .BYTE 0     :LOCK ON CURRENT TEST FLAG
828      000000      $Y=0
829
830                                     :DEFINITIONS FOR TRAP SUBROUTINE CALLS
831                                     :POINTERS TO SUBROUTINES CAN BE FOUND
832                                     :IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS
833
834 :*****
835 :*****
836 001314      104400      .TRPTAB:
837      014474      SCOPE=TRAP+0      :CALL TO SCOPE LOOP AND ITERATION HANDLER
838      104401      .SCOPE
839      014606      SCOP1=TRAP+1      :CALL TO LOOP ON CURRENT DATA HANDLER
840      104402      .SCOP1
841      014626      TYPE=TRAP+2      :CALL TO TELETYPE OUTPUT ROUTINE
842      104403      .TYPE
843      014734      INSTR=TRAP+3      :CALL TO ASCII STRING INPUT ROUTINE
844      104404      .INSTR
845      015052      INSTER=TRAP+4      :CALL TO INPUT ERROR HANDLER
846      104405      .INSTER
847      015104      PARAM=TRAP+5      :CALL TO NUMERICAL DATA INPUT ROUTINE
848      104406      .PARAM
849      015320      SAV05=TRAP+6      :CALL TO REGISTER SAVE ROUTINE
850      104407      .SAV05
851      015360      RES05=TRAP+7      :CALL TO REGISTER RESTORE ROUTINE
852      104410      .RES05
853      015412      CONVRT=TRAP+10     :CALL TO DATA OUTPUT ROUTINE
854      104411      .CONVRT
855      015416      CNVRT=TRAP+11     :CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF.
856      104412      .CNVRT
857      013032      MSTCLR=TRAP+12     :CALL TO ISSUE MASTER CLEAR
858      104413      .MSTCLR
859      012706      MEMCLR=TRAP+13     :CALL TO CLEAR ALL SCRATCH PAD MEMORIES
860      104414      .MEMCLR
861      016320      CKSWR=TRAP+14      :CALL TO ALLOW SWREG TO BE LOADED FROM TTY
862      104415      .CKSWR
863      016374      CNTLU=TRAP+15      :CALL TO ALLOW LOADING OF SWREG FROM TTY
864      .CNTLU
865
866 :*****
867 :*****
868
869                                     :DQ11 VECTOR AND REGISTER INDIRECT POINTERS
870
871 001350      000000      DQRVEC: 0      :POINTER TO DQ11 RECEIVER INTERRUPT VECTOR
872 001352      000000      DQRLVL: 0      :POINTER TO DQ11 RECEIVER INTERRUPT SERVICE PS
873 001354      000000      DQTVEC: 0      :POINTER TO DQ11 TRANSMITTER INTERRUPT VECTOR
874 001356      000000      DQTLVL: 0      :POINTER TO DQ11 TRANSMITTER INTERRUPT SERVICE PS
875 001360      000000      DQRCSR: 0      :POINTER TO DQ11 RECEIVER CONTROL REGISTER
876 001362      000000      DQRCSH: 0      :POINTER TO HIGH BYTE OF DQ11 RECEIVER CONTROL REGISTER

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PROGRAM PARAMETERS, VARIABLES, AND TRAP CALLS.

SEQ 0019

877	001364	000000	DQTCR: 0	: POINTER TO DQ11 TRANSMITTER CONTROL REGISTER
878	001366	000000	DQERR: 0	: POINTER TO DQ11 ERROR REGISTER
879	001370	000000	DQREG: 0	: POINTER TO HIGH BYTE OF ERROR REGISTER
880	001372	000000	DQSEC: 0	: POINTER TO DQ11 SECONDARY REGISTER
881	001374	000000	DQSECH: 0	: POINTER TO HIGH BYTE OF DQ11 SECONDARY REGISTER

:DQ11 STATUS TABLE AND ADDRESS ASSIGNMENTS

882				
883				
884				
885				
886				
887		001400	.=1400	
888	001400	000001	DQCR00: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 00
889	001402	000001	DQST00: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 00
890	001404	000001	DQCR01: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 01
891	001406	000001	DQST01: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 01
892	001410	000001	DQCR02: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 02
893	001412	000001	DQST02: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 02
894	001414	000001	DQCR03: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 03
895	001416	000001	DQST03: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 03
896	001420	000001	DQCR04: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 04
897	001422	000001	DQST04: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 04
898	001424	000001	DQCR05: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 05
899	001426	000001	DQST05: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 05
900	001430	000001	DQCR06: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 06
901	001432	000001	DQST06: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 06
902	001434	000001	DQCR07: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 07
903	001436	000001	DQST07: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 07
904	001440	000001	DQCR10: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 10
905	001442	000001	DQST10: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 10
906	001444	000001	DQCR11: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 11
907	001446	000001	DQST11: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 11
908	001450	000001	DQCR12: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 12
909	001452	000001	DQST12: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 12
910	001454	000001	DQCR13: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 13
911	001456	000001	DQST13: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 13
912	001460	000001	DQCR14: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 14
913	001462	000001	DQST14: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 14
914	001464	000001	DQCR15: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 15
915	001466	000001	DQST15: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 15
916	001470	000001	DQCR16: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 16
917	001472	000001	DQST16: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 16
918	001474	000001	DQCR17: .BLKW 1	: CONTROL STATUS REGISTER FOR DEVICE NO: 17
919	001476	000001	DQST17: .BLKW 1	: VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 17
920	001500	000001	DQACTV: .BLKW 1	: HOLD ACTIVE BITS FOR TESTING
921	001502	000001	SAVACT: .BLKW 1	: SAVE NUMBER OF ACTIVE DQ11S
922	001504	000001	DQNUM: .BLKW 1	: OCTAL NUMBER OF TOTAL NUMBER OF DQ11S
923	001506	000001	DQCSR: .BLKW 1	: CSR OF DQ11 UNDER TEST
924	001510	000001	DQSTAT: .BLKW 1	: VECTOR AND CONFIGURATION STATUS OF DQ11 UNDER TEST

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

932

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 CZDQHE.P11 03-DEC-80 08:27 PROGRAM INITIALIZATION AND START UP.

SEQ 0020

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933 001512 012737 000340 177776 .START: MOV #340,PS ;LOCK OUT INTERRUPTS
934 001520 012706 001200 MOV #STACK,SP ;SET UP STACK
935 001524 012737 016222 000024 MOV #.PFAIL,@#24 ;SET UP POWER FAIL VECTOR
936 001532 013737 001504 001276 MOV DQNUM,SAVNUM
937 001540 105037 001311 CLRB STFLG ;CLEAR START FLAG
938 001544 005037 001230 CLR PASCNT ;CLEAR PASS COUNT
939 001550 105037 001312 CLRB ERRFLG ;CLEAR ERROR FLAG
940 001554 005037 001302 CLR RUNFLG
941 001560 012737 001400 001300 MOV #1400,CREAM
942 001566 005037 001232 CLR ERRCNT ;CLEAR ERROR COUNT
943 001572 005037 001234 CLR LSTERR ;CLEAR LAST ERROR POINTER
944 001576 012737 000001 001226 MOV #1,TSTNO ;SET UP FOR TEST 1
945 001604 012737 001512 001214 MOV #.START,RETURN ;SET UP FOR POWER FAIL BEFORE
946 ;TESTING STARTS
947 001612 012737 177570 001200 MOV #DSWR,SWR ;MOV HARDWARE SWR TO SWR
948 001620 012737 177570 001202 MOV #DLIGHTS,LIGHTS ;MOV DISPLAY LIGHTS TO LIGHTS
949 001626 013746 000006 MOV @#6,-(SP) ;SAVE VECTORS
950 001632 013746 000004 MOV @#4,-(SP)
951 001636 012737 001656 000004 MOV #64$,@#4 ;SET UP FOR TIMEOUT
952 001644 022777 177777 177326 CMP #-1,@SWR ;REFERENCE HARDWARE SWITCH REGISTER
953 001652 001402 BEQ 65$
954 001654 000407 BR 66$
955 001656 022626 64$: CMP (SP)+,(SP)+ ;ADJUST STACK
956 001660 012737 000176 001200 65$: MOV #SWREG,SWR ;POINT TO SOFTWARE SWITCH REG
957 001666 012737 000174 001202 MOV #DISPREG,LIGHTS ;POINT TO SOFT DISPLAY REG
958 001674 012637 000004 66$: MOV (SP)+,@#4 ;RESTORE VECTORS
959 001700 012637 000006 MOV (SP)+,@#6
960 001704 005737 000042 TST @#42 ;UNDER MONITOR
961 001710 001014 BNE 67$
962 ;:*****THE NEXT 4 LINES OF CODE MOVED TO SOLVE PR#2757 (JUNE 78)*****
963 001712 105737 001310 TSTB INIFLG ;HAS INITIALIZATION BEEN PERFORMED?
964 001716 001035 BNE 12$ ;IF YES, BR
965 001720 104402 001000 TYPE ,MTITLE ;TYPE TITLE MESSAGE
966 001724 105137 001310 COMB INIFLG ;IF NOT SET FLAG AND INIT
967 001730 022737 000176 001200 CMP #SWREG,SWR ;IS SWREG USED
968 001736 001001 BNE 67$
969 001740 104415 CNTLU
970 001742 105777 177232 67$: TSTB @SWR
971 001746 100402 BMI .+6
972 001750 004737 000220 JSR PC,CSRMAP
973 001754 104402 017050 TYPE ,XHEAD
974 001760 012737 001400 001244 MOV #1400,TEMP1
975 001766 017737 177252 001246 MOV @TEMP1,TEMP2
976 001774 001406 BEQ .+16
977 001776 104410 CONVRT
978 002000 017076 XSTATQ
979 002002 062737 000002 001244 ADD #2,TEMP1
980 002010 000766 BR .-22
981 002012 032777 000001 177160 12$: BIT #SW00,@SWR
982 002020 001424 BEQ 1$
983 002022 104402 TYPE
984 002024 016771 MNEW
985 002026 005000 CLR R0
986 002030 000000 HALT
987 002032 104414 CKSWR
988 002034 027737 177140 001502 CMP @SWR,SAVACT

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989 002042 101404 BLOS 11$
990 002044 104402 TYPE
991 002046 016632 MERR3
992 002050 000000 HALT
993 002052 000776 BR -2
994 002054 017737 177120 001500 11$: MOV @SWR,DQACTV
995 002062 013700 001500 MOV DQACTV,R0
996 002066 000000 HALT
997 002070 104414 CKSWR
998 002072 012700 000300 1$: MOV #300,R0
999 002076 012701 000302 MOV #302,R1
1000 002102 010120 2$: MOV R1,(R0)+
1001 002104 005021 CLR (R1)+
1002 002106 022021 CMP (R0)+,(R1)+
1003 002110 022700 001000 CMP #1000,R0
1004 002114 001372 BNE 2$
1005
1006 ;TEST START AND RESTART
1007
1008 002116 012737 000340 177776 .BEGIN: MOV #340,PS ;LOCK OUT INTERRUPTS
1009 002124 012706 001200 MOV #STACK,SP ;SET UP STACK
1010 002130 005737 000042 TST @#42 ;IS PROGRAM UNDER MONITOR CONTROL
1011 002134 001040 BNE 3$
1012 002136 104414 CKSWR ;CHECK FOR <^G>
1013 002140 032777 000004 177032 BIT #BIT2,@SWR ;CHECK FOR LOCK ON TEST
1014 002146 001411 BEQ 1$
1015 002150 104402 016670 TYPE ,MLOCK
1016 002154 012737 000240 014504 MOV #NOP,TTST
1017 002162 012737 000240 014506 MOV #NOP,TTST+2 ;SET UP TO LOCK
1018 002170 000406 BR 2$
1019 002172 013737 014602 014504 1$: MOV BRW,TTST
1020 002200 013737 014604 014506 MOV BRX,TTST+2 ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1021 002206 032777 000002 176764 2$: BIT #SW01,@SWR ;IF SW01=1, GET STARTING PC
1022 002214 001410 BEQ 3$
1023 002216 104403 INSTR
1024 002220 016656 MTSTPC
1025 002222 104405 PARAM
1026 002224 002254 TST1
1027 002226 012040 TLAST
1028 002230 001214 #RETURN
1029 002232 001 .BYTE 1
1030 002233 001 .BYTE 1
1031 002234 000403 BR 4$
1032 002236 012737 002254 001214 3$: MOV #TST1,RETURN ;START AT TEST 1
1033 002244 104402 016560 4$: TYPE ,MR ;TYPE R
1034 002250 000177 176740 JMP @RETURN ;START TESTING
1035
1036 ; TEST 1
1037 002254 012737 000001 001226 TST1: MOV #1,TSTNO
1038 002262 012737 002644 001214 MOV #TST2,RETURN
1039 002270 012737 002644 001216 MOV #TST2,NEXT
1040 002276 105737 001302 TSTB RUNFLG ;IS THIS MY FIRST TIME HERE?
1041 002302 001010 BNE 1$ ;BR IF FLAG IS SET
1042 002304 012737 000001 001304 MOV #BIT0,RUN ;SET RUN POINTER.
1043 002312 012737 000020 001306 MOV #16.,RUNCNT ;SET FOR MAX OF 16 DQ11'S PER SYSTEM
1044 002320 105137 001302 COMB RUNFLG ;SET RUN FLAG

```


[illegible]


```

1101      : TEST 2
1102      :*****
1103 002644 012737 000002 001226 TST2: MOV #2,TSTNO.
1104 002652 012737 002734 001214 MOV #2$,RETURN
1105 002660 012737 000036 001222 MOV #30,ICOUNT
1106 002666 012737 003756 001216 MOV #TST3,NEXT
1107      :ADJUST SYNC CHARACTERS.
1108
1109 002674 032737 100000 001510 BIT #SYNBIT,DQSTAT ;ONE SYNC CHAR OR TWO?
1110 002702 001006 BNE 1$ ;BR IF TWO
1111 002704 112737 000377 013052 MOV#B #377,SYNC ;SET ONE SYNC. ;:++D
1112 002712 005037 013656 CLR XSYNC ;DBL SYNC SET TO ONE.
1113 002716 000406 BR 2$ ;CONT.
1114 002720 112737 000026 013052 1$: MOV#B #26,SYNC ;LOAD FOR TWO SYNC
1115 002726 012737 013026 013656 MOV #13026,XSYNC ;SAME FOR DBL SYNC
1116 002734 104413 2$: MEMCLR ;CLEAR ALL REGISTERS GIVE MSTCLR
1117 002736 005037 014302 CLR GDCHAR ;ZERO POINTER
1118 002742 005037 014274 CLR CHAR ;
1119 002746 005037 177776 CLR PS ;ZERO PROC. PRIO.
1120 002752 105077 176412 SETON: CLRB @DQREG ;SEL THE RX BA PRI.
1121 002756 012777 013256 176406 MOV #RXBUFF,@DQSEC ;LOAD RX BA PRI.
1122 002764 105277 176400 INCB @DQREG ;SEL RX WC PRI.
1123 002770 012777 177600 176374 MOV #-200,@DQSEC ;SET FOR 200 (8) CHARS
1124 002776 105277 176366 INCB @DQREG ;SEL THE TX BA PRI.
1125 003002 012777 013052 176362 MOV #SYNC,@DQSEC ;LOAD WITH SYNC POINTER
1126 003010 105277 176354 INCB @DQREG ;SEL THE TX WC PRI.
1127 003014 012777 177576 176350 MOV #-202,@DQSEC ;SET FOR 2 SYNC AND 200 (8) CHARS.
1128 003022 105277 176342 INCB @DQREG ;SEL THE RX BA SEC
1129 003026 012777 014064 176336 MOV #XRXBUF,@DQSEC ;LOAD RX BA SEC
1130 003034 105277 176330 INCB @DQREG ;SEL RX WC SEC
1131 003040 012777 177600 176324 MOV #-200,@DQSEC ;SET FOR 200(8) CHARS
1132 003046 105277 176316 INCB @DQREG ;SEL THE TX BA SEC
1133 003052 012777 013662 176312 MOV #XTXBUF,@DQSEC ;LOAD IT
1134 003060 105277 176304 INCB @DQREG ;SEL THE TX WC SEC
1135 003064 012777 177600 176300 MOV #-200,@DQSEC ;SET FOR 200 CHARS
1136 003072 112777 000011 176270 MOV#B #11,@DQREG ;SEL THE SYNC REGISTER
1137 003100 013777 013050 176264 MOV .SYNC,@DQSEC ;LOAD SYNC
1138 003106 105277 176256 INCB @DQREG ;SEL THE MISC REGISTER
1139 003112 012777 104000 176252 MOV #104000,@DQSEC ;SET 8 BITS PER CHAR AND VRC ENABLE.
1140 003120 032737 040000 001510 BIT #JUMBIT,DQSTAT ;IS JUMPER AT END OF CABLE?
1141 003126 001003 BNE .+10 ;BR IF YES
1142 003130 052777 000010 176234 BIS #BIT3,@DQSEC ;NO CABLE SET TEST LOOP FOR DATA TURN AROUND
1143 003136 112777 000017 176224 MOV#B #17,@DQREG ;SEL THE POLY REGISTER
1144 003144 012777 123456 176220 MOV #123456,@DQSEC ;SET PLOYNOMIAL.
1145
1146 003152 012700 013054 MOV #TXBFA,R0 ;START TO FILL TX BUFFERS
1147 003156 012703 000177 MOV #177,R3 ;COUNTER
1148 003162 110320 1$: MOV#B R3,(R0)+ ;PRIMARY IS BINARY COUNT BACKWARDS.
1149 003164 105303 DECB R3 ;DONE?
1150 003166 001375 BNE 1$ ;NO
1151 003170 012700 013662 MOV #XTXBUF,R0 ;SET SEC BUFFER
1152 003174 005003 CLR R3 ;
1153 003176 110320 2$: MOV#B R3,(R0)+ ;SECONDARY IS BINARY COUNT
1154 003200 105203 INCB R3 ;DONE?
1155 003202 100375 BPL 2$ ;NO
1156 003204 012777 003502 176136 MOV #RXISR,@DQREVC ;SET RECEIVER INTERRUPT POINTER

```



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1157 003212 012777 000240 176132      MOV      #240,ADQRLVL      ;SET PRIO: TO 5
1158 003220 012777 003334 176126      MOV      #TXISR,ADQTVEC    ;SET TX VECTOR
1159 003226 012777 000240 176122      MOV      #240,ADQTLVL      ;SET PRIO TO 5
1160 003234 012777 000041 176116      MOV      #BIT5+BIT0,ADQRCR ;SET RX GO AND IE
1161 003242 012777 000051 176114      MOV      #BIT5+BIT3+BIT0,ADQTCR ;SET TX GO AND IE AND ERROR IE
1162 003250 005037 001246              CLR      TEMP2           ;SET TIMER
1163 003254 012737 000113 001250      MOV      #75.,TEMP3      ;SET NUMBER OF INTERUPTS WANTED
1164 003262 012737 000020 001252 4$:   MOV      #16.,TEMP4      ;SET FOR 16 REGISTERS
1165 003270 142777 000017 176072      BICB     #17,ADQREG       ;SEL RX BA PRI.
1166 003276 105777 176066              TSTB     ADQREG          ;SIT HERE AND MAKE WAVES
1167 003302 005777 176064              TST      ADQSEC         ;WHILE INTERUPTS OCCUR
1168 003306 105277 176056              INCB     ADQREG         ;*****
1169 003312 005337 001252              DEC      TEMP4         ;*****
1170 003316 001367              BNE      3$             ;SAME
1171 003320 005237 001246              INC      TEMP2         ;UPDATE COUNTER
1172 003324 001356              BNE      4$             ;KEEP GOING
1173 003326 104005              HLT      5             ;RX FAILED TO CONTINUSLY INTERUPT
1174                                ;*****STRONGLY SUGGEST SW08=1 (GOTO TOP OF TEST OF ERROR
1175 003330 000754              BR       4$             ;KEEP IT GOING.
1176 003332 104400      ENDTS2: SCOPE      ;SCOPE THIS TEST.....
1177
1178
1179 003334 017737 176026 014266 TXISR: MOV      ADQERR,ERR      ;ANY ERRORS
1180 003342 100001              BPL      .+4            ;BR IF NO
1181 003344 104004              HLT      4             ;DQ11 ERROR FLAG IS SET.
1182                                ;*****STRONGLY SUGGEST SW08=1 (GOTO TOP OF TEST OF ERROR
1183 003346 032777 000004 176010      BIT      #BIT2,ADQTCR   ;WHO SHOULD I SERVICE PRI OR SEC?
1184 003354 001425              BEQ      1$             ;BR IF SEC NEEDS SERVICE
1185 003356 112777 000002 176004      MOVB     #2,ADQREG       ;SEL TX BA PRI
1186 003364 042777 000200 175772      BIC      #BIT7,ADQTCR   ;CLEAR TX PRI DONE.
1187 003372 012777 013054 175772      MOV      #TXBFA,ADQSEC  ;LOAD THE TX BA PRI
1188 003400 105277 175764      INCB     ADQREG         ;SEL THE TX WC PRI.
1189 003404 152777 000120 175756      BISB     #BIT6+BIT4,ADQREG ;SET WRITE EN. AND ENTER T
1190 003412 012777 177600 175752      MOV      #-200,ADQSEC   ;LOAD TX WC PRI.
1191 003420 142777 000017 175742      BICB     #17,ADQREG       ;CLEAR REG POINTER.
1192 003426 000002              RTI                     ;EXIT STAGE RIGHT
1193 003430 042777 000100 175726 1$:   BIC      #BIT6,ADQTCR   ;CLEAR TX SEC DONE
1194 003436 112777 000006 175724      MOVB     #6,ADQREG       ;SEL THE TX BA PRI.
1195 003444 012777 013662 175720      MOV      #XTXBUF,ADQSEC  ;LOAD THE TX BA SEC
1196 003452 105277 175712      INCB     ADQREG         ;SEL THE TX WC SEC
1197 003456 152777 000060 175704      BISB     #BIT5+BIT4,ADQREG ;SET WRITE EN. AND EXIT T
1198 003464 012777 177600 175700      MOV      #-200,ADQSEC   ;LOAD THE TX WC SEC
1199 003472 142777 000017 175670 2$:   BICB     #17,ADQREG       ;CLEAR REG POINTER
1200 003500 000002              RTI                     ;EXIT STAGE LEFT.
1201
1202                                RXISR:
1203 003502 005037 001246              CLR      TEMP2           ;LET TIMER KNOW THAT RX INTERUPTED
1204 003506 017737 175654 014266      MOV      ADQERR,ERR      ;ANY ERRORS
1205 003514 100001              BPL      .+4            ;BR IF NO
1206 003516 104004              HLT      4             ;DQ11 ERROR FLAG SET!!!!
1207                                ;*****STRONGLY SUGGEST SW08=1 (GOTO TOP OF TEST OF ERROR
1208 003520 032777 000004 175632      BIT      #BIT2,ADQRCR   ;WHO SERVICE PRI OR SEC
1209 003526 001426              BEQ      2$             ;BR IF SEC NEEDS SERVICE
1210 003530 042777 000200 175622      BIC      #BIT7,ADQRCR   ;CLEAR RX PRI. DONE
1211 003536 105077 175626      CLRB     ADQREG         ;SEL RX BA PRI.
1212 003542 012777 013256 175622      MOV      #RXBUFF,ADQSEC ;LOAD IT

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PROGRAM INITIALIZATION AND START UP.

SEQ 0025

1213	003550	105277	175614		INCB	@DQREG	:SEL THE RX WC PRI.
1214	003554	152777	000120	175606	BISB	#BIT6+BIT4,@DQREG	:SET WRITE EN. AND ENTER T
1215	003562	012777	177600	175602	MOV	#-200,@DQSEC	:LOAD RX WC SEC
1216	003570	012701	013054		MOV	#TXBFA,R1	:PREPARE TO CHECK DATA. SET TX POINTER
1217	003574	012702	013256		MOV	#RXBUF,R2	:SET RX POINTER
1218	003600	000157	003656		JMP	3\$	:GO AND CHECK DATA
1219	003604	042777	000100	175546	BIC	#BIT6,@DQRCR	:CLEAR RX SEC DONE
1220	003612	112777	000004	175550	MOVB	#4,@DQREG	:SEL RX BA SEC
1221	003620	012777	014064	175544	MOV	#XRXBUF,@DQSEC	:LOAD IT
1222	003626	105277	175536		INCB	@DQREG	:SEL THE RX WC SEC
1223	003632	152777	000060	175530	BISB	#BIT5+BIT4,@DQREG	:SET WRITE EN. AND EXIT T
1224	003640	012777	177600	175524	MOV	#-200,@DQSEC	:WRITE RX WC SEC
1225	003646	012701	013662		MOV	#XTXBUF,R1	:GET TX BUFFER POINTER
1226	003652	012702	014064		MOV	#XRXBUF,R2	:GET RX POINTER
1227	003656	012700	000200		MOV	#200,R0	:GET NUMBER OF CHARS
1228	003662	142711	000200		BICB	#BIT7,(R1)	:CLEAR VRC
1229	003666	142712	000200		BICB	#BIT7,(R2)	:CLEAR VRC
1230	003672	122122			CMPB	(R1)+,(R2)+	:DATA OK?
1231	003674	001414			BEQ	7\$	:BR IF YES
1232	003676	112777	000012	175464	MOVB	#12,@DQREG	:SEL MISC REG
1233	003704	052777	000002	175460	BIS	#BIT1,@DQSEC	:STOP THE DQ11 CLOCK.
1234	003712	114137	014302		MOVB	-(R1),GDCHAR	:STORE GOOD CHAR
1235	003716	114237	014274		MOVB	-(R2),CHAR	:STORE BAD CHAR.
1236	003722	104003			HLT	3	:DATA COMPARE ERROR
1237							:*****STRONGLY SUGGEST SW08=1 (GOTO TOP OF TEST OF ERROR
1238	003724	122122			CMPB	(R1)+,(R2)+	:POP PCINTERS
1239	003726	005300			DEC	R0	:ALL DATA CHECKED?
1240	003730	001354			BNE	4\$	:BR IF NO
1241	003732	005337	001250		DEC	TEMP3	:ALL INTERRUPTS DONE?
1242	003736	001003			BNE	6\$	:NO KEEP INTERRUPTING
1243	003740	000005			RESET		:STOP THE SHOW CLEAR THE WORLD
1244	003742	012716	003332		MOV	#ENDTS2,(SP)	:SET FOR END TEST RETURN
1245	003746	142777	000017	175414	BICB	#17,@DQREG	:CLEAR REG POINTER
1246	003754	000002			RTI		:EXIT STAGE MIDDLE
1247							

1248

1249

1250

1251

1252

1253

1254

1255

1256

1257 003756

012737

000003

001226

1258 003764

012737

004324

001216

1259 003772

104413

1260 003774

012700

013256

1261 004000

005001

1262 004002

005020

1263 004004

105201

1264 004006

100375

1265 004010

112777

000011

175352

1266 004016

013737

013052

001246

1267 004024

012737

177774

012370

1268 004032

143737

012370

001246

1269 004040

005737

001510

1270 004044

100003

1271 004046

000241

1272 004050

106037

001246

1273 004054

143737

012370

001247

1274 004062

000241

1275 004064

106037

001247

1276 004070

013737

001246

012372

1277 004076

013737

001246

012374

1278 004104

013777

001246

175260

1279 004112

105277

175252

1280 004116

012777

000010

175246

1281 004124

012700

000016

1282 004130

000300

1283 004132

050077

175234

1284 004136

052777

000002

175226

1285 004144

042777

000002

175220

1286 004152

105077

175212

1287 004156

012777

013256

175206

1288 004164

105277

175200

1289 004170

012777

177734

175174

1290 004176

105277

175166

1291 004202

012777

012374

175162

1292 004210

105277

175154

1293 004214

012777

177732

175150

1294 004222

005277

175132

1295 004226

005277

175132

1296 004232

005005

1297 004234

105777

175120

1298 004240

100404

1299 004242

062705

000001

1300 004246

001372

1301 004250

104001

1302 004252

012700

012376

1303 004256

012701

013256

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGHTHS
:THIS TEST WILL XMIT AND RECV CHARACTERS
:AT 2 BITS/PER/CHAR.
:DATA CHECKING WILL BE PERFORMED!

: TEST 3

:*****

TST3:

MOV

#3,TSTNO

MOV

#TST4,NEXT

MEMCLR

MOV

#RXBUFF,R0

CLR

R1

5\$:

CLR

(R0)+

INCB

R1

BPL

5\$

MOVB

#11,@DQREG

MOV

SYNC,TEMP2

MOV

#177774,MASK

BICB

MASK,TEMP2

TST

DOSTAT

BPL

10\$

CLC

RORB

TEMP2

10\$:

BICB

MASK,TEMP2+1

CLC

RORB

TEMP2+1

MOV

TEMP2,SYNC1

MOV

TEMP2,SYNC2

MOV

TEMP2,@DQSEC

INCB

@DQREG

MOV

#BIT3,@DQSEC

MOV

#16,R0

SWAB

R0

BIS

R0,@DQSEC

BIS

#BIT1,@DQSEC

BIC

#BIT1,@DQSEC

CLRB

@DQREG

MOV

#RXBUFF,@DQSEC

INCB

@DQREG

MOV

#-36,@DQSEC

INCB

@DQREG

MOV

#SYNC2,@DQSEC

INCB

@DQREG

MOV

#-38,@DQSEC

INC

@DQRCR

INC

@DQTCR

CLR

R5

1\$:

TSTB

@DQRCR

BMI

2\$

ADD

#1,R5

BNE

1\$

HLT

1

2\$:

MOV

#TXBUFF,R0

MOV

#RXBUFF,R1

:CLEAR ALL THE DQ11
:LOAD THE BUFFER POINTER
:SET UP TO CLEAR THE BUFFER
:CLEAR IT
:DONE?
:BRANCH IF NO
:SELECT THE SYNC REG
:LOAD SYNC
:LOAD THE MASK
:SET UP A MASK TO GET THE
:SINGLE SYNC CHARACTER?
:IF YES,BR.
:CORRECT SYNC CHARACTER
:FOR THIS CHARACTER LENGTH
:MANIPULATE DATA TO
:COME UP WITH THE
:PROPER SYNC CHARACTER
:LOAD THE CHARACTER
:DITTO
:LOAD THE SYNC REGISTER
:SEL THE MISC REGISTER
:SET TEST LOOP
:FLIP THE BYTES
:SET CHARACTER LENGTH
:TURN CLOCK OFF...
:AND ON
:SEL RX PRIMARY ADDRESS
:SET ADDRESS
:SEL RX PRIMARY CHAR COUNT
:SET CHAR COUNT
:SEL TX PRIMARY ADDRESS
:LOAD THE SYNC CHAR
:SEL TX PRI CHAR COUNT
:SET CHAR COUNT
:SET RX GO
:SET TX GO
:START TIMING
:IS DONE UP?
:BRANCH IF YES
:WAIT
:BR IF MORE TO GO
:ERROR--NO RX DONE
:LOAD BUFFER POINTER
:LOAD RX BUFFER POINTER

::++D
::++D

::++D

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 CZDQHE.P11 03-DEC-80 08:27 PROGRAM INITIALIZATION AND START UP.

SEQ 0027

1304	004262	012702	000044		MOV	#36.,R2	:SET UP TO COUNT CHARACTERS
1305	004266			3\$:			
1306	004266	112005			MOVB	(R0)+,R5	:GET A CHARACTER TO COPMARE
1307	004270	005037	001246		CLR	TEMP2	::
1308	004274	112137	001246		MOVB	(R1)+,TEMP2	:GET REC CHARACTER
1309	004300	013704	001246		MOV	TEMP2,R4	:MOVE TO R4
1310	004304	043705	012370		BIC	MASK,R5	:MASK OUT UNWANTED BITS
1311	004310	020504			CMP	R5,R4	:DO THE CHARACTERS MATCH?
1312	004312	001401			BEQ	4\$	:BR IF OK
1313	004314	104002			HLT	2	:ERROR--DATA DOESN'T MATCH
1314	004316	005302		4\$:	DEC	R2	:ALL DONE?
1315	004320	001362			BNE	3\$	:NO--GO BACK FOR MORE
1316	004322	104400			SCOPE		:SCOPE THIS TEST

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGHTHS
 :THIS TEST WILL XMIT AND RECV CHARACTERS
 :AT 3 BITS/PER/CHAR.
 :DATA CHECKING WILL BE PERFORMED!

: TEST 4

1325					:*****			
1326	004324	012737	000004	001226	TST4:	MOV	#4,TSTNO	
1327	004332	012737	004672	001216		MOV	#TST5,NEXT	
1328	004340	104413				MEMCLR		:CLEAR ALL THE DQ11
1329	004342	012700	013256			MOV	#RXBUFF,R0	:LOAD THE BUFFER POINTER
1330	004346	005001				CLR	R1	:SET UP TO CLEAR THE BUFFER
1331	004350	005020			5\$:	CLR	(R0)+	:CLEAR IT
1332	004352	105201				INCB	R1	:DONE?
1333	004354	100375				BPL	5\$	:BRANCH IF NO
1334	004356	112777	000011	175004		MOVB	#11,@DQREG	:SELECT THE SYNC REG
1335	004364	013737	013052	001246		MOV	SYNC,TEMP2	:LOAD SYNC
1336	004372	012737	177770	012370		MOV	#177770,MASK	:LOAD THE MASK
1337	004400	143737	012370	001246		BICB	MASK,TEMP2	:SET UP A MASK TO GET THE
1338	004406	005737	001510			TST	DQSTAT	:SINGLE SYNC CHARACTER? :++D
1339	004412	100003				BPL	10\$	:IF YES,BR. :++D
1340	004414	000241				CLC		:CORRECT SYNC CHARACTER
1341	004416	106037	001246			RORB	TEMP2	:FOR THIS CHARACTER LENGTH
1342	004422	143737	012370	001247	10\$:	BICB	MASK,TEMP2+1	:MANIPULATE DATA TO :++D
1343	004430	000241				CLC		:COME UP WITH THE
1344	004432	106037	001247			RORB	TEMP2+1	:PROPER SYNC CHARACTER
1345	004436	013737	001246	012372		MOV	TEMP2,SYNC1	:LOAD THE CHARACTER
1346	004444	013737	001246	012374		MOV	TEMP2,SYNC2	:DITTO
1347	004452	013777	001246	174712		MOV	TEMP2,@DQSEC	:LOAD THE SYNC REGISTER
1348	004460	105277	174704			INCB	@DQREG	:SEL THE MISC REGISTER
1349	004464	012777	000010	174700		MOV	#BIT3,@DQSEC	:SET TEST LOOP
1350	004472	012700	000015			MOV	#15,R0	:
1351	004476	000300				SWAB	R0	:FLIP THE BYTES
1352	004500	050077	174666			BIS	R0,@DQSEC	:SET CHARACTER LENGTH
1353	004504	052777	000002	174660		BIS	#BIT1,@DQSEC	:TURN CLOCK OFF...
1354	004512	042777	000002	174652		BIC	#BIT1,@DQSEC	:AND ON
1355	004520	105077	174644			CLRB	@DQREG	:SEL RX PRIMARY ADRESS
1356	004524	012777	013256	174640		MOV	#RXBUFF,@DQSEC	:SET ADRESS
1357	004532	105277	174632			INCB	@DQREG	:SEL RX PRIMARY CHAR COUNT
1358	004536	012777	177734	174626		MOV	#-36.,@DQSEC	:SET CHAR COUNT
1359	004544	105277	174620			INCB	@DQREG	:SEL TX PRIMARY ADDRESS

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PROGRAM INITIALIZATION AND START UP.

SEQ 0028

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1360 004550 012777 012374 174614      MOV    #SYNC2,@DQSEC    ;LOAD THE SYNC CHAR
1361 004556 105277 174606      INCB   @DQREG          ;SEL TX PRI CHAR COUNT
1362 004562 012777 177732 174602      MOV    #-38.,@DQSEC    ;SET CHAR COUNT
1363 004570 005277 174564      INC    @DQRCR          ;SET RX GO
1364 004574 005277 174564      INC    @DQTCR          ;SET TX GO
1365 004600 005005              CLR    R5              ;START TIMING
1366 004602 105777 174552      1$:    TSTB   @DQRCR          ;IS DONE UP?
1367 004606 100404              BMI    2$              ;BRANCH IF YES
1368 004610 062705 000001      ADD    #1,R5          ;WAIT
1369 004614 001372              BNE    1$              ;BR IF MORE TO GO
1370 004616 104001              HLT    1              ;ERROR--NO RX DONE
1371 004620 012700 012376      2$:    MOV    #TXBUFF,R0        ;LOAD BUFFER POINTER
1372 004624 012701 013256      MOV    #RXBUFF,R1        ;LOAD RX BUFFER POINTER
1373 004630 012702 000044      MOV    #36.,R2        ;SET UP TO COUNT CHARACTERS
1374 004634              3$:
1375 004634 112005              MOVB   (R0)+,R5          ;GET A CHARACTER TO COPMARE
1376 004636 005037 001246      CLR    TEMP2          ;
1377 004642 112137 001246      MOVB   (R1)+,TEMP2        ;GET REC CHARACTER
1378 004646 013704 001246      MOV    TEMP2,R4        ;MOVE TO R4
1379 004652 043705 012370      BIC    MASK,R5          ;MASK OUT UNWANTED BITS
1380 004656 020504              CMP    R5,R4          ;DO THE CHARACTERS MATCH?
1381 004660 0C1401              BEQ    4$              ;BR IF OK
1382 004662 104002              HLT    2              ;ERROR--DATA DOESN'T MATCH
1383 004664 005302              4$:    DEC    R2              ;ALL DONE?
1384 004666 001362              BNE    3$              ;NO--GO BACK FOR MORE
1385 004670 104400              SCOPE

```

;TEST OF TRANSMITTER AND RECEIVER CHARATER LENGHTHS
 ;THIS TEST WILL XMIT AND RECV CHARACTERS
 ;AT 4 BITS/PER/CHAR.
 ;DATA CHECKING WILL BE PERFORMED!

: TEST 5

```

1395 004672 012737 000005 001226      TST5:  MOV    #5,TSTNO
1396 004700 012737 005240 001216      MOV    #TST6,NEXT
1397 004706 104413              MEMCLR
1398 004710 012700 013256      MOV    #RXBUFF,R0        ;CLEAR ALL THE DQ11
1399 004714 005001              CLR    R1              ;LOAD THE BUFFER POINTER
1400 004716 005020              5$:    CLR    (R0)+          ;SET UP TO CLEAR THE BUFFER
1401 004720 105201              CLR    R1              ;CLEAR IT
1402 004722 100375              BPL    5$              ;DONE?
1403 004724 112777 000011 174436      MOVB   #11,@DQREG        ;BRANCH IF NO
1404 004732 013737 013052 001246      MOV    SYNC,TEMP2        ;SELECT THE SYNC REG
1405 004740 012737 177760 012370      MOV    #177760,MASK      ;LOAD SYNC
1406 004746 143737 012370 001246      BICB   MASK,TEMP2        ;LOAD THE MASK
1407 004754 005737 001510      TST    DQSTAT          ;SET UP A MASK TO GET THE
1408 004760 100003              BPL    10$          ;SINGLE SYNC CHARACTER?
1409 004762 000241              CLC              ;IF YES,BR.
1410 004764 106037 001246      RORB   TEMP2          ;CORRECT SYNC CHARACTER
1411 004770 143737 012370 001247 10$:  BICB   MASK,TEMP2+1      ;FOR THIS CHARACTER LENGTH
1412 004776 000241              CLC              ;MANIPULATE DATA TO
1413 005000 106037 001247      RORB   TEMP2+1          ;COME UP WITH THE
1414 005004 013737 001246 012372      MOV    TEMP2,SYNC1        ;PROPER SYNC CHARACTER
1415 005012 013737 001246 012374      MOV    TEMP2,SYNC2        ;LOAD THE CHARACTER

```

;DITTO

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PROGRAM INITIALIZATION AND START UP.

SEQ 0029

```

1416 005020 013777 001246 174344      MOV     TEMP2,@DQSEC      ;LOAD THE SYNC REGISTER
1417 005026 105277 174336      INCB    @DQREG          ;SEL THE MISC REGISTER
1418 005032 012777 000010 174332      MOV     #BIT3,@DQSEC    ;SET TEST LOOP
1419 005040 012700 000014      MOV     #14,R0          ;
1420 005044 000300      SWAB    R0              ;FLIP THE BYTES
1421 005046 050077 174320      BIS     R0,@DQSEC       ;SET CHARACTER LENGTH
1422 005052 052777 000002 174312      BIS     #BIT1,@DQSEC    ;TURN CLOCK OFF...
1423 005060 042777 000002 174304      BIC     #BIT1,@DQSEC    ;AND ON
1424 005066 105077 174276      CLRB    @DQREG          ;SEL RX PRIMARY ADDRESS
1425 005072 012777 013256 174272      MOV     #RXBUFF,@DQSEC  ;SET ADDRESS
1426 005100 105277 174264      INCB    @DQREG          ;SEL RX PRIMARY CHAR COUNT
1427 005104 012777 177734 174260      MOV     #-36.,@DQSEC    ;SET CHAR COUNT
1428 005112 105277 174252      INCB    @DQREG          ;SEL TX PRIMARY ADDRESS
1429 005116 012777 012374 174246      MOV     #SYNC2,@DQSEC   ;LOAD THE SYNC CHAR
1430 005124 105277 174240      INCB    @DQREG          ;SEL TX PRI CHAR COUNT
1431 005130 012777 177732 174234      MOV     #-38.,@DQSEC    ;SET CHAR COUNT
1432 005136 005277 174216      INC     @DQRCR          ;SET RX GO
1433 005142 005277 174216      INC     @DQTCR          ;SET TX GO
1434 005146 005005      CLR     R5              ;START TIMING
1435 005150 105777 174204      1$:    TSTB    @DQRCR      ;IS DONE UP?
1436 005154 100404      BMI     2$             ;BRANCH IF YES
1437 005156 062705 000001      ADD     #1,R5           ;WAIT
1438 005162 001372      BNE     1$             ;BR IF MORE TO GO
1439 005164 104001      HLT     1              ;ERROR--NO RX DONE
1440 005166 012700 012376      2$:    MOV     #TXBUFF,R0 ;LOAD BUFFER POINTER
1441 005172 012701 013256      MOV     #RXBUFF,R1      ;LOAD RX BUFFER POINTER
1442 005176 012702 000044      MOV     #36.,R2         ;SET UP TO COUNT CHARACTERS
1443 005202      3$:
1444 005202 112005      MOVB    (R0)+,R5        ;GET A CHARACTER TO COMPARE
1445 005204 005037 001246      CLR     TEMP2           ;
1446 005210 112137 001246      MOVB    (R1)+,TEMP2     ;GET REC CHARACTER
1447 005214 013704 001246      MOV     TEMP2,R4        ;MOVE TO R4
1448 005220 043705 012370      BIC     MASK,R5         ;MASK OUT UNWANTED BITS
1449 005224 020504      CMP     R5,R4          ;DO THE CHARACTERS MATCH?
1450 005226 001401      BEQ     4$             ;BR IF OK
1451 005230 104002      HLT     2              ;ERROR--DATA DOESN'T MATCH
1452 005232 005302      4$:    DEC     R2       ;ALL DONE?
1453 005234 001362      BNE     3$             ;NO--GO BACK FOR MORE
1454 005236 104400      SCOPE                ;SCOPE THIS TEST
1455
1456
1457
1458
1459
1460
1461
1462
1463
1464 005240 012737 000006 001226      ;TEST OF TRANSMITTER AND RECEIVER CHARACTER LENGTHS
1465 005246 012737 005606 001216      ;THIS TEST WILL XMIT AND RECV CHARACTERS
1466 005254 104413      ;AT 5 BITS/PER/CHAR.
1467 005256 012700 013256      ;DATA CHECKING WILL BE PERFORMED!
1468 005262 005001
1469 005264 005020
1470 005266 105201
1471 005270 100375

```

: TEST 6

:*****

```

TST6:  MOV     #6,TSTNO
        MOV     #TST7,NEXT
        MEMCLR
        MOV     #RXBUFF,R0      ;CLEAR ALL THE DQ11
        CLR     R1              ;LOAD THE BUFFER POINTER
        CLR     (R0)+           ;SET UP TO CLEAR THE BUFFER
        INCB    R1              ;CLEAR IT
        BPL     5$              ;DONE?

```

:BRANCH IF NO

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SEQ 0030

1472	005272	112777	000011	174070	MOV	#11,@DQREG	:SELECT THE SYNC REG	
1473	005300	013737	013052	001246	MOV	SYNC,TEMP2	:LOAD SYNC	
1474	005306	012737	177740	012370	MOV	#177740,MASK	:LOAD THE MASK	
1475	005314	143737	012370	001246	BICB	MASK,TEMP2	:SET UP A MASK TO GET THE	
1476	005322	005737	001510		TST	DQSTAT	:SINGLE SYNC CHARACTER?	::++D
1477	005326	100003			BPL	10\$	:IF YES,BR.	::++D
1478	005330	000241			CLC		:CORRECT SYNC CHARACTER	
1479	005332	106037	001246		RORB	TEMP2	:FOR THIS CHARACTER LENGTH	
1480	005336	143737	012370	001247	BICB	MASK,TEMP2+1	:MANIPULATE DATA TO	::++D
1481	005344	000241			CLC		:COME UP WITH THE	
1482	005346	106037	001247		RORB	TEMP2+1	:PROPER SYNC CHARACTER	
1483	005352	013737	001246	012372	MOV	TEMP2,SYNC1	:LOAD THE CHARACTER	
1484	005360	013737	001246	012374	MOV	TEMP2,SYNC2	:DITTO	
1485	005366	013777	001246	173776	MOV	TEMP2,@DQSEC	:LOAD THE SYNC REGISTER	
1486	005374	105277	173770		INCB	@DQREG	:SEL THE MISC REGISTER	
1487	005400	012777	000010	173764	MOV	#BIT3,@DQSEC	:SET TEST LOOP	
1488	005406	012700	000013		MOV	#13,R0	:	
1489	005412	000300			SWAB	R0	:FLIP THE BYTES	
1490	005414	050077	173752		BIS	R0,@DQSEC	:SET CHARACTER LENGTH	
1491	005420	052777	000002	173744	BIS	#BIT1,@DQSEC	:TURN CLOCK OFF...	
1492	005426	042777	000002	173736	BIC	#BIT1,@DQSEC	:AND ON	
1493	005434	105077	173730		CLRB	@DQREG	:SEL RX PRIMARY ADDRESS	
1494	005440	012777	013256	173724	MOV	#RXBUFF,@DQSEC	:SET ADDRESS	
1495	005446	105277	173716		INCB	@DQREG	:SEL RX PRIMARY CHAR COUNT	
1496	005452	012777	177734	173712	MOV	#-36.,@DQSEC	:SET CHAR COUNT	
1497	005460	105277	173704		INCB	@DQREG	:SEL TX PRIMARY ADDRESS	
1498	005464	012777	012374	173700	MOV	#SYNC2,@DQSEC	:LOAD THE SYNC CHAR	
1499	005472	105277	173672		INCB	@DQREG	:SEL TX PRI CHAR COUNT	
1500	005476	012777	177732	173666	MOV	#-38.,@DQSEC	:SET CHAR COUNT	
1501	005504	005277	173650		INC	@DQRCR	:SET RX GO	
1502	005510	005277	173650		INC	@DQTCR	:SET TX GO	
1503	005514	005005			CLR	R5	:START TIMING	
1504	005516	105777	173636		TSTB	@DQRCR	:IS DONE UP?	
1505	005522	100404			BMI	2\$	:BRANCH IF YES	
1506	005524	062705	000001		ADD	#1,R5	:WAIT	
1507	005530	001372			BNE	1\$	:BR IF MORE TO GO	
1508	005532	104001			HLT	1	:ERROR--NO RX DONE	
1509	005534	012700	012376		MOV	#TXBUFF,R0	:LOAD BUFFER POINTER	
1510	005540	012701	013256		MOV	#RXBUFF,R1	:LOAD RX BUFFER POINTER	
1511	005544	012702	000044		MOV	#36.,R2	:SET UP TO COUNT CHARACTERS	
1512	005550							3\$:
1513	005550	112005			MOVB	(R0)+,R5	:GET A CHARACTER TO COMPARE	
1514	005552	005037	001246		CLR	TEMP2	:	
1515	005556	112137	001246		MOVB	(R1)+,TEMP2	:GET REC CHARACTER	
1516	005562	013704	001246		MOV	TEMP2,R4	:MOVE TO R4	
1517	005566	043705	012370		BIC	MASK,R5	:MASK OUT UNWANTED BITS	
1518	005572	020504			CMP	R5,R4	:DO THE CHARACTERS MATCH?	
1519	005574	001401			BEQ	4\$	:BR IF OK	
1520	005576	104002			HLT	2	:ERROR--DATA DOESN'T MATCH	
1521	005600	005302			DEC	R2	:ALL DONE?	
1522	005602	001362			BNE	3\$	:NO--GO BACK FOR MORE	
1523	005604	104400			SCOPE		:SCOPE THIS TEST	
1524								
1525								
1526								
1527								

:TEST OF TRANSMITTER AND RECEIVER CHARACTER LENGTHS
 :THIS TEST WILL XMIT AND RECV CHARACTERS

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SEQ 0031

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1528                                     :AT 6 BITS/PER/CHAR.
1529                                     :DATA CHECKING WILL BE PERFORMED!
1530
1531                                     : TEST 7
1532                                     :*****
1533 005606 012737 000007 001226 TST7: MOV #7,TSTNO
1534 005614 012737 006154 001216 MOV #TST10,NEXT
1535 005622 104413 MEMCLR                                     :CLEAR ALL THE DQ11
1536 005624 012700 013256 MOV #RXBUFF,R0                :LOAD THE BUFFER POINTER
1537 005630 005001 CLR R1                                :SET UP TO CLEAR THE BUFFER
1538 005632 005020 5$: CLR (R0)+                          :CLEAR IT
1539 005634 105201 INCB R1                                :DONE?
1540 005636 100375 BPL 5$                                :BRANCH IF NO
1541 005640 112777 000011 173522 MOVB #11,@DQREG        :SELECT THE SYNC REG
1542 005646 013737 013052 001246 MOV SYNC,TEMP2         :LOAD SYNC'S
1543 005654 012737 177700 012370 MOV #177700,MASK       :LOAD THE MASK
1544 005662 143737 012370 001246 BICB MASK,TEMP2        :SET UP A MASK TO GET THE
1545 005670 005737 001510 TST DQSTAT                    :SINGLE SYNC CHARACTER?      :++D
1546 005674 100003 BPL 10$                                :IF YES,BR.                :++D
1547 005676 000241 CLC                                     :CORRECT SYNC CHARACTER
1548 005700 106037 001246 RORB TEMP2                     :FOR THIS CHARACTER LENGTH
1549 005704 143737 012370 001247 10$: BICB MASK,TEMP2+1 :MANIPULATE DATA TO      :++D
1550 005712 000241 CLC                                     :COME UP WITH THE
1551 005714 106037 001247 RORB TEMP2+1                    :PROPER SYNC CHARACTER
1552 005720 013737 001246 012372 MOV TEMP2,SYNC1         :LOAD THE CHARACTER
1553 005726 013737 001246 012374 MOV TEMP2,SYNC2         :DITTO
1554 005734 013777 001246 173430 MOV TEMP2,@DQSEC        :LOAD THE SYNC REGISTER
1555 005742 105277 173422 INCB @DQREG                    :SEL THE MISC REGISTER
1556 005746 012777 000010 173416 MOV #BIT3,@DQSEC       :SET TEST LOOP
1557 005754 012700 000012 MOV #12,R0
1558 005760 000300 SWAB R0                                :FLIP THE BYTES
1559 005762 050077 173404 BIS R0,@DQSEC                  :SET CHARACTER LENGTH
1560 005766 052777 000002 173376 BIS #BIT1,@DQSEC       :TURN CLOCK OFF...
1561 005774 042777 000002 173370 BIC #BIT1,@DQSEC       :AND ON
1562 006002 105077 173362 CLRB @DQREG                    :SEL RX PRIMARY ADDRESS
1563 006006 012777 013256 173356 MOV #RXBUFF,@DQSEC     :SET ADDRESS
1564 006014 105277 173350 INCB @DQREG                    :SEL RX PRIMARY CHAR COUNT
1565 006020 012777 177734 173344 MOV #-36.,@DQSEC       :SET CHAR COUNT
1566 006026 105277 173336 INCB @DQREG                    :SEL TX PRIMARY ADDRESS
1567 006032 012777 012374 173332 MOV #SYNC2,@DQSEC     :LOAD THE SYNC CHAR
1568 006040 105277 173324 INCB @DQREG                    :SEL TX PRI CHAR COUNT
1569 006044 012777 177732 173320 MOV #-38.,@DQSEC       :SET CHAR COUNT
1570 006052 005277 173302 INC @DQRCR                    :SET RX GO
1571 006056 005277 173302 INC @DQTCR                    :SET TX GO
1572 006062 005005 CLR R5                                :START TIMING
1573 006064 105777 173270 1$: TSTB @DQRCR               :IS DONE UP?
1574 006070 100404 BMI 2$                                :BRANCH IF YES
1575 006072 062705 000001 ADD #1,R5                     :WAIT
1576 006076 001372 BNE 1$                                :BR IF MORE TO GO
1577 006100 104001 HLT 1                                  :ERROR--NO RX DONE
1578 006102 012700 012376 2$: MOV #TXBUFF,R0            :LOAD BUFFER POINTER
1579 006106 012701 013256 MOV #RXBUFF,R1                :LOAD RX BUFFER POINTER
1580 006112 012702 000044 MOV #36.,R2                  :SET UP TO COUNT CHARACTERS
1581 006116 3$:
1582 006116 112005 MOVB (R0)+,R5                          :GET A CHARACTER TO COMPARE
1583 006120 005037 001246 CLR TEMP2                      :

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SEQ 0C32

```

1584 006124 112137 001246      MOV      (R1)+,TEMP2      ;GET REC CHARACTER
1585 006130 013704 001246      MOV      TEMP2,R4        ;MOVE TO R4
1586 006134 043705 012370      BIC      MASK,R5        ;MASK OUT UNWANTED BITS
1587 006140 020504              CMP      R5,R4        ;DO THE CHARACTERS MATCH?
1588 006142 001401              BEQ      4$          ;BR IF OK
1589 006144 104002              HLT      2          ;ERROR--DATA DOESN'T MATCH
1590 006146 005302              4$: DEC      R2          ;ALL DONE?
1591 006150 001362              BNE      3$          ;NO--GO BACK FOR MORE
1592 006152 104400              SCOPE          ;SCOPE THIS TEST

```

```

;TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
;THIS TEST WILL XMIT AND RECV CHARACTERS
;AT 7 BITS/PER/CHAR.
;DATA CHECKING WILL BE PERFORMED!

```

: TEST 10

:*****

```

1601 006154 012737 000010 001226  TST10: MOV      #10,TSTNO
1602 006162 012737 006522 001216      MOV      #TST11,NEXT
1603 006170 104413              MEMCLR          ;CLEAR ALL THE DQ11
1604 006172 012700 013256      MOV      #RXBUFF,R0      ;LOAD THE BUFFER POINTER
1605 006176 005001              CLR      R1          ;SET UP TO CLEAR THE BUFFER
1606 006200 005020              5$: CLR      (R0)+        ;CLEAR IT
1607 006202 105201              INCB     R1          ;DONE?
1608 006204 100375              BPL      5$          ;BRANCH IF NO
1609 006206 112777 000011 173154      MOV      #11,@DQREG      ;SELECT THE SYNC REG
1610 006214 013737 013052 001246      MOV      SYNC,TEMP2     ;LOAD SYNC
1611 006222 012737 177600 012370      MOV      #177600,MASK   ;LOAD THE MASK
1612 006230 143737 012370 001246      BICB     MASK,TEMP2     ;SET UP A MASK TO GET THE
1613 006236 005737 001510              TST      DQSTAT        ;SINGLE SYNC CHARACTER?
1614 006242 100003              BPL      10$         ;IF YES,BR.
1615 006244 000241              CLC          ;CORRECT SYNC CHARACTER
1616 006246 106037 001246              RORB     TEMP2        ;FOR THIS CHARACTER LENGTH
1617 006252 143737 012370 001247 10$: BICB     MASK,TEMP2+1    ;MANIPULATE DATA TO
1618 006260 000241              CLC          ;COME UP WITH THE
1619 006262 106037 001247              RORB     TEMP2+1      ;PROPER SYNC CHARACTER
1620 006266 013737 001246 012372      MOV      TEMP2,SYNC1    ;LOAD THE CHARACTER
1621 006274 013737 001246 012374      MOV      TEMP2,SYNC2    ;DITTO
1622 006302 013777 001246 173062      MOV      TEMP2,@DQSEC   ;LOAD THE SYNC REGISTER
1623 006310 105277 173054              INCB     @DQREG        ;SEL THE MISC REGISTER
1624 006314 012777 000010 173050      MOV      #BIT3,@DQSEC   ;SET TEST LOOP
1625 006322 012700 000011              MOV      #11,R0
1626 006326 000300              SWAB     R0          ;FLIP THE BYTES
1627 006330 050077 173036              BIS      R0,@DQSEC     ;SET CHARACTER LENGTH
1628 006334 052777 000002 173030      BIS      #BIT1,@DQSEC   ;TURN CLOCK OFF...
1629 006342 042777 000002 173022      BIC      #BIT1,@DQSEC   ;AND ON
1630 006350 105077 173014              CLRB     @DQREG        ;SEL RX PRIMARY ADRESS
1631 006354 012777 013256 173010      MOV      #RXBUFF,@DQSEC ;SET ADDRESS
1632 006362 105277 173002              INCB     @DQREG        ;SEL RX PRIMARY CHAR COUNT
1633 006366 012777 177734 172776      MOV      #-36.,@DQSEC   ;SET CHAR COUNT
1634 006374 105277 172770              INCB     @DQREG        ;SEL TX PRIMARY ADDRESS
1635 006400 012777 012374 172764      MOV      #SYNC2,@DQSEC  ;LOAD THE SYNC CHAR
1636 006406 105277 172756              INCB     @DQREG        ;SEL TX PRI CHAR COUNT
1637 006412 012777 177732 172752      MOV      #-38.,@DQSEC   ;SET CHAR COUNT
1638 006420 005277 172734              INC      @DQRCR        ;SET RX GO

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SEQ 0033

```

1640 006424 005277 172734      INC      @DQTCR      :SET TX GO
1641 006430 005005              CLR      R5          :START TIMING
1642 006432 105777 172722      1$:  TSTB      @DQRCR      :IS DONE UP?
1643 006436 100404              BMI      2$          :BRANCH IF YES
1644 006440 062705 000001      ADD      #1,R5       :WAIT
1645 006444 001372              BNE      1$          :BR IF MORE TO GO
1646 006446 104001              HLT      1           :ERROR--NO RX DONE
1647 006450 012700 012376      2$:  MOV      #TXBUFF,R0    :LOAD BUFFER POINTER
1648 006454 012701 013256      MOV      #RXBUFF,R1    :LOAD RX BUFFER POINTER
1649 006460 012702 000044      MOV      #36.,R2     :SET UP TO COUNT CHARACTERS
1650 006464              3$:  MOVB      (R0)+,R5       :GET A CHARACTER TO COMPARE
1651 006464 112005              CLR      TEMP2        :
1652 006466 005037 001246      MOVB      (R1)+,TEMP2    :GET REC CHARACTER
1653 006472 112137 001246      MOV      TEMP2,R4      :MOVE TO R4
1654 006476 013704 001246      BIC      MASK,R5      :MASK OUT UNWANTED BITS
1655 006502 043705 012370      CMP      R5,R4      :DO THE CHARACTERS MATCH?
1656 006506 020504              BEQ      4$          :BR IF OK
1657 006510 001401              HLT      2           :ERROR--DATA DOESN'T MATCH
1658 006512 104002              4$:  DEC      R2          :ALL DONE?
1659 006514 005302              BNE      3$          :NO--GO BACK FOR MORE
1660 006516 001362              SCOPE                :SCOPE THIS TEST
1661 006520 104400
1662
1663
1664      :TEST OF TRANSMITTER AND RECEIVER CHARACTER LENGTHS
1665      :THIS TEST WILL XMIT AND RECV CHARACTERS
1666      :AT 8 BITS/PER/CHAR.
1667      :DATA CHECKING WILL BE PERFORMED!
1668
1669      : TEST 11
1670      :*****

```

```

1671 006522 012737 000011 001226  TST11:  MOV      #11,TSTNO
1672 006530 012737 007070 001216      MOV      #TST12,NEXT
1673 006536 104413              MEMCLR
1674 006540 012700 013256      MOV      #RXBUFF,R0    :CLEAR ALL THE DQ11
1675 006544 005001              CLR      R1          :LOAD THE BUFFER POINTER
1676 006546 005020      5$:  CLR      (R0)+       :SET UP TO CLEAR THE BUFFER
1677 006550 105201              INCB     R1          :CLEAR IT
1678 006552 100375              BPL      5$          :DONE?
1679 006554 112777 000011 172606      MOVB     #11,@DQREG    :BRANCH IF NO
1680 006562 013737 013052 001246      MOV      SYNC,TEMP2    :SELECT THE SYNC REG
1681 006570 012737 177400 012370      MOV      #177400,MASK  :LOAD SYNC
1682 006576 143737 012370 001246      BICB     MASK,TEMP2    :LOAD THE MASK
1683 006604 005737 001510              TST      DQSTAT     :SET UP A MASK TO GET THE
1684 006610 100003              BPL      10$         :SINGLE SYNC CHARACTER?
1685 006612 000241              CLC                :IF YES,BR.
1686 006614 106037 001246      RORB      TEMP2        :CORRECT SYNC CHARACTER
1687 006620 143737 012370 001247 10$:  BICB     MASK,TEMP2+1  :FOR THIS CHARACTER LENGTH
1688 006626 000241              CLC                :MANIPULATE DATA TO
1689 006630 106037 001247      RORB      TEMP2+1      :COME UP WITH THE
1690 006634 013737 001246 012372      MOV      TEMP2,SYNC1    :PROPER SYNC CHARACTER
1691 006642 013737 001246 012374      MOV      TEMP2,SYNC2    :LOAD THE CHARACTER
1692 006650 013777 001246 172514      MOV      TEMP2,@DQSEC   :DITTO
1693 006656 105277 172506      INCB     @DQREG     :LOAD THE SYNC REGISTER
1694 006662 012777 000010 172502      MOV      #BIT3,@DQSEC  :SEL THE MISC REGISTER
1695 006670 012700 000010              MOV      #10,R0      :SET TEST LOOP

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1696	006674	000300		SWAB	R0	:FLIP THE BYTES
1697	006676	050077	172470	BIS	R0,@DQSEC	:SET CHARACTER LENGTH
1698	006702	052777	000002	BIS	#BIT1,@DQSEC	:TURN CLOCK OFF...
1699	006710	042777	000002	BIC	#BIT1,@DQSEC	:AND ON
1700	006716	105077	172446	CLRB	@DQREG	:SEL RX PRIMARY ADRESS
1701	006722	012777	013256	MOV	#RXBUFF,@DQSEC	:SET ADRESS
1702	006730	105277	172434	INCB	@DQREG	:SEL RX PRIMARY CHAR COUNT
1703	006734	012777	177734	MOV	#-36,@DQSEC	:SET CHAR COUNT
1704	006742	105277	172422	INCB	@DQREG	:SEL TX PRIMARY ADDRESS
1705	006746	012777	012374	MOV	#SYNC2,@DQSEC	:LOAD THE SYNC CHAR
1706	006754	105277	172410	INCB	@DQREG	:SEL TX PRI CHAR COUNT
1707	006760	012777	177732	MOV	#-38,@DQSEC	:SET CHAR COUNT
1708	006766	005277	172366	INC	@DQRCR	:SET RX GO
1709	006772	005277	172366	INC	@DQTCR	:SET TX GO
1710	006776	005005		CLR	R5	:START TIMING
1711	007000	105777	172354	1\$: TSTB	@DQRCR	:IS DONE UP?
1712	007004	100404		BMI	2\$	:BRANCH IF YES
1713	007006	062705	000001	ADD	#1,R5	:WAIT
1714	007012	001372		BNE	1\$	:BR IF MORE TO GO
1715	007014	104001		HLT	1	:ERROR--NO RX DONE
1716	007016	012700	012376	2\$: MOV	#TXBUFF,R0	:LOAD BUFFER POINTER
1717	007022	012701	013256	MOV	#RXBUFF,R1	:LOAD RX BUFFER POINTER
1718	007026	012702	000044	MOV	#36,R2	:SET UP TO COUNT CHARACTERS
1719	007032			3\$:		
1720	007032	112005		MOVB	(R0)+,R5	:GET A CHARACTER TO COPMARE
1721	007034	005037	001246	CLR	TEMP2	:
1722	007040	112137	001246	MOVB	(R1)+,TEMP2	:GET REC CHARACTER
1723	007044	013704	001246	MOV	TEMP2,R4	:MOVE TO R4
1724	007050	043705	012370	BIC	MASK,R5	:MASK OUT UNWANTED BITS
1725	007054	020504		CMP	R5,R4	:DO THE CHARACTERS MATCH?
1726	007056	001401		BEQ	4\$	:BR IF OK
1727	007060	104002		HLT	2	:ERROR--DATA DOESN'T MATCH
1728	007062	005302		4\$: DEC	R2	:ALL DONE?
1729	007064	001362		BNE	3\$	:NO--GO BACK FOR MORE
1730	007066	104400		SCOPE		:SCOPE THIS TEST

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHHS
:THIS TEST WILL XMIT AND RECV CHARACTERS
:AT 9 BITS/PER/CHAR.
:DATA CHECKING WILL BE PERFORMED!

: TEST 12

1739				:*****		
1740	007070	012737	000012	001226	TST12: MOV	#12,TSTNO
1741	007076	012737	007420	001216	MOV	#TST13,NEXT
1742	007104	104413			MEMCLR	
1743	007106	012700	013256		MOV	#RXBUFF,R0
1744	007112	005001			CLR	R1
1745	007114	005020			5\$: CLR	(R0)+
1746	007116	105201			INCB	R1
1747	007120	100375			BPL	5\$
1748	007122	112777	000011	172240	MOVB	#11,@DQREG
1749	007130	013737	013052	001246	MOV	SYNC,TEMP2
1750	007136	012737	177000	012370	MOV	#177000,MASK
1751	007144	043737	012370	001246	BIC	MASK,TEMP2

:CLEAR ALL THE DQ11
:LOAD THE BUFFER POINTER
:SET UP TO CLEAR THE BUFFER
:CLEAR IT
:DONE?
:BRANCH IF NO
:SELECT THE SYNC REG
:LOAD SYNC
:LOAD THE MASK
:SET UP THE MASK FOR THE

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SEQ 0035

1752	007152	000241		CLC		:CORRECT SYNC CHARACTER	
1753	007154	006037	001246	ROR	TEMP2	:SHIFT IT	
1754	007160	005737	001510	TST	DQSTAT	:SINGLE SYNC CHARACTER?	::++D
1755	007164	100404		BMI	10\$	:IF NO,BR.	::++D
1756	007166	012737	177777 012372	MOV	#-1,SYNC1	:IF YES, MARK.	::++D
1757	007174	000403		BR	20\$	:CONTINUE.	::++D
1758	007176	013737	001246 012372	10\$: MOV	TEMP2,SYNC1	:LOAD THE CHARACTER	::++D
1759	007204	013737	001246 012374	20\$: MOV	TEMP2,SYNC2	:DITTO	::++D
1760	007212	013777	001246 172152	MOV	TEMP2,ADQSEC	:LOAD THE SYNC REGISTER	
1761	007220	105277	172144	INCB	ADQREG	:SEL THE MISC REGISTER	
1762	007224	012777	000010 172140	MOV	#BIT3,ADQSEC	:SET TEST LOOP	
1763	007232	012700	000007	MOV	#7,R0		
1764	007236	000300		SWAB	R0	:FLIP THE BYTES	
1765	007240	050077	172126	BIS	R0,ADQSEC	:SET CHARACTER LENGTH	
1766	007244	052777	000002 172120	BIS	#BIT1,ADQSEC	:TURN CLOCK OFF...	
1767	007252	042777	000002 172112	BIC	#BIT1,ADQSEC	:AND ON	
1768	007260	105077	172104	CLRB	ADQREG	:SEL RX PRIMARY ADRESS	
1769	007264	012777	013256 172100	MOV	#RXBUFF,ADQSEC	:SET ADDRESS	
1770	007272	105277	172072	INCB	ADQREG	:SEL RX PRIMARY CHAR COUNT	
1771	007276	012777	177734 172066	MOV	#-36.,ADQSEC	:SET CHAR COUNT	
1772	007304	105277	172060	INCB	ADQREG	:SEL TX PRIMARY ADDRESS	
1773	007310	012777	012372 172054	MOV	#SYNC1,ADQSEC	:LOAD THE SYNC CHAR	
1774	007316	105277	172046	INCB	ADQREG	:SEL TX PRI CHAR COUNT	
1775	007322	012777	177732 172042	MOV	#-38.,ADQSEC	:SET CHAR COUNT	
1776	007330	005277	172024	INC	ADQRCR	:SET RX GO	
1777	007334	005277	172024	INC	ADQTCR	:SET TX GO	
1778	007340	005005		CLR	R5	:START TIMING	
1779	007342	105777	172012	1\$: TSTB	ADQRCR	:IS DONE UP?	
1780	007346	100404		BMI	2\$	:BRANCH IF YES	
1781	007350	062705	000001	ADD	#1,R5	:WAIT	
1782	007354	001372		BNE	1\$	:BR IF MORE TO GO	
1783	007356	104001		HLT	1	:ERROR--NO RX DONE	
1784	007360	012700	012376	2\$: MOV	#TXBUFF,R0	:LOAD BUFFER POINTER	
1785	007364	012701	013256	MOV	#RXBUFF,R1	:LOAD RX BUFFER POINTER	
1786	007370	012702	000044	MOV	#36.,R2	:SET UP TO COUNT CHARACTERS	
1787	007374			3\$:			
1788	007374	012005		MOV	(R0)+,R5	:GET ANOTHER CHAR	
1789	007376	012104		MOV	(R1)+,R4	:GET A REC CHAR	
1790	007400	043705	012370	BIC	MASK,R5	:MASK OUT UNWANTED BITS	
1791	007404	020504		CMP	R5,R4	:DO THE CHARACTERS MATCH?	
1792	007406	001401		BEQ	4\$	:BR IF OK	
1793	007410	104002		HLT	2	:ERROR--DATA DOESN'T MATCH	
1794	007412	005302		4\$: DEC	R2	:ALL DONE?	
1795	007414	001367		BNE	3\$	:NO--GO BACK FOR MORE	
1796	007416	104400		SCOPE		:SCOPE THIS TEST	
1797							
1798							
1799							
1800						:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS	
1801						:THIS TEST WILL XMIT AND RECV CHARACTERS	
1802						:AT 10 BITS/PER/CHAR.	
1803						:DATA CHECKING WILL BE PERFORMED!	
1804						: TEST 13	
1805						*****	
1806	007420	012737	000013 001226	TST13: MOV	#13,TSTNO		
1807	007426	012737	007750 001216	MOV	#TST14,NEXT		

Address	Hex	Dec	Label	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op41
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PROGRAM INITIALIZATION AND START UP.

SEQ 0037

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1864
1865
1866
1867
1868
1869
1870
1871
1872 007750 012737 000014 001226
1873 007756 012737 010300 001216
1874 007764 104413
1875 007766 012700 013256
1876 007772 005001
1877 007774 005020
1878 007776 105201
1879 010000 100375
1880 010002 112777 000011 171360
1881 010010 013737 013052 001246
1882 010016 012737 174000 012370
1883 010024 043737 012370 001246
1884 010032 000241
1885 010034 006037 001246
1886 010040 005737 001510
1887 010044 100404
1888 010046 012737 177777 012372
1889 010054 000403
1890 010056 013737 001246 012372
1891 010064 013737 001246 012374
1892 010072 013777 001246 171272
1893 010100 105277 171264
1894 010104 012777 000010 171260
1895 010112 012700 000005
1896 010116 000300
1897 010120 050077 171246
1898 010124 052777 000002 171240
1899 010132 042777 000002 171232
1900 010140 105077 171224
1901 010144 012777 013256 171220
1902 010152 105277 171212
1903 010156 012777 177734 171206
1904 010164 105277 171200
1905 010170 012777 012372 171174
1906 010176 105277 171166
1907 010202 012777 177732 171162
1908 010210 005277 171144
1909 010214 005277 171144
1910 010220 005005
1911 010222 105777 171132
1912 010226 100404
1913 010230 062705 000001
1914 010234 001372
1915 010236 104001
1916 010240 012700 012376
1917 010244 012701 013256
1918 010250 012702 000044
1919 010254

: TEST 14
:*****
TST14: MOV #14,TSTNO
MOV #TST15,NEXT
MEMCLR
MOV #RXBUFF,R0
CLR R1
5$: CLR (R0)+
INCB R1
BPL 5$
MOVB #11,@DQREG
MOV SYNC,TEMP2
MOV #174000,MASK
BIC MASK,TEMP2
CLC
ROR TEMP2
TST DQSTAT
BMI 10$
MOV #-1,SYNC1
BR 20$
10$: MOV TEMP2,SYNC1
20$: MOV TEMP2,SYNC2
MOV TEMP2,@DQSEC
INCB @DQREG
MOV #BIT3,@DQSEC
MOV #5,R0
SWAB R0
BIS R0,@DQSEC
BIS #BIT1,@DQSEC
BIC #BIT1,@DQSEC
CLRB @DQREG
MOV #RXBUFF,@DQSEC
INCB @DQREG
MOV #-36,@DQSEC
INCB @DQREG
MOV #SYNC1,@DQSEC
INCB @DQREG
MOV #-38,@DQSEC
INC @DQRCR
INC @DQTCR
CLR R5
1$: TSTB @DQRCR
BMI 2$
ADD #1,R5
BNE 1$
HLT 1
2$: MOV #TXBUFF,R0
MOV #RXBUFF,R1
3$: MOV #36,R2

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
:THIS TEST WILL XMIT AND RECV CHARACTERS
:AT 11 BITS/PER/CHAR.
:DATA CHECKING WILL BE PERFORMED!

: CLEAR ALL THE DQ11
: LOAD THE BUFFER POINTER
: SET UP TO CLEAR THE BUFFER
: CLEAR IT
: DONE?
: BRANCH IF NO
: SELECT THE SYNC REG
: LOAD SYNCs
: LOAD THE MASK
: SET UP THE MASK FOR THE
: CORRECT SYNC CHARACTER
: SHIFT IT
: SINGLE SYNC CHARACTER?
: IF NO,BR.
: IF YES, MARK.
: CONTINUE.
: LOAD THE CHARACTER
: DITTO
: LOAD THE SYNC REGISTER
: SEL THE MISC REGISTER
: SET TEST LOOP
:
: FLIP THE BYTES
: SET CHARACTER LENGTH
: TURN CLOCK OFF...
: AND ON
: SEL RX PRIMARY ADDRESS
: SET ADDRESS
: SEL RX PRIMARY CHAR COUNT
: SET CHAR COUNT
: SEL TX PRIMARY ADDRESS
: LOAD THE SYNC CHAR
: SEL TX PRI CHAR COUNT
: SET CHAR COUNT
: SET RX GO
: SET TX GO
: START TIMING
: IS DONE UP?
: BRANCH IF YES
: WAIT
: BR IF MORE TO GO
: ERROR--NO RX DONE
: LOAD BUFFER POINTER
: LOAD RX BUFFER POINTER
: SET UP TO COUNT CHARACTERS

```


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SEQ 0038

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1920 010254 012005      MOV      (R0)+,R5      ;GET ANOTHER CHAR
1921 010256 012104      MOV      (R1)+,R4      ;GET A REC CHAR
1922 010260 043705 012370 BIC      MASK,R5      ;MASK OUT UNWANTED BITS
1923 010264 020504      CMP      R5,R4      ;DO THE CHARACTERS MATCH?
1924 010266 001401      BEQ      4$          ;BR IF OK
1925 010270 104002      HLT      2          ;ERROR--DATA DOESN'T MATCH
1926 010272 005302      4$: DEC      R2      ;ALL DONE?
1927 010274 001367      BNE      3$      ;NO--GO BACK FOR MORE
1928 010276 104400      SCOPE      3$      ;SCOPE THIS TEST
1929
1930
1931
1932
1933
1934
1935
1936
1937

```

```

;TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
;THIS TEST WILL XMIT AND RECV CHARACTERS
;AT 12 BITS/PER/CHAR.
;DATA CHECKING WILL BE PERFORMED!

```

: TEST 15

:*****

```

1938 010300 012737 000015 001226 TST15: MOV      #15,TSTNO
1939 C10306 012737 010630 001216      MOV      #TST16,NEXT
1940 010314 104413      MEMCLR      ;CLEAR ALL THE DQ11
1941 010316 012700 013256      MOV      #RXBUFF,R0      ;LOAD THE BUFFER POINTER
1942 010322 005001      CLR      R1      ;SET UP TO CLEAR THE BUFFER
1943 010324 005020      5$: CLR      (R0)+      ;CLEAR IT
1944 010326 105201      INCB     R1      ;DONE?
1945 010330 100375      BPL      5$      ;BRANCH IF NO
1946 010332 112777 000011 171030      MOV      #11,@DQREG      ;SELECT THE SYNC REG
1947 010340 013737 013052 001246      MOV      SYNC,TEMP2      ;LOAD SYNC
1948 010346 012737 170000 012370      MOV      #170000,MASK      ;LOAD THE MASK
1949 010354 043737 012370 001246      BIC      MASK,TEMP2      ;SET UP THE MASK FOR THE
1950 010362 000241      CLC          ;CORRECT SYNC CHARACTER
1951 010364 006037 001246      ROR      TEMP2      ;SHIFT IT
1952 010370 005737 001510      TST      DQSTAT      ;SINGLE SYNC CHARACTER?
1953 010374 100404      BMI      10$      ;IF NO,BR.
1954 010376 012737 177777 012372      MOV      #-1,SYNC1      ;IF YES, MARK.
1955 010404 000403      BR      20$      ;CONTINUE.
1956 010406 013737 001246 012372 10$: MOV      TEMP2,SYNC1      ;LOAD THE CHARACTER
1957 010414 013737 001246 012374 20$: MOV      TEMP2,SYNC2      ;DITTO
1958 010422 013777 001246 170742      MOV      TEMP2,@DQSEC      ;LOAD THE SYNC REGISTER
1959 010430 105277 170734      INCB     @DQREG      ;SEL THE MISC REGISTER
1960 010434 012777 000010 170730      MOV      #BIT3,@DQSEC      ;SET TEST LOOP
1961 010442 012700 000004      MOV      #4,R0
1962 010446 000300      SWAB     R0      ;FLIP THE BYTES
1963 010450 050077 170716      BIS      R0,@DQSEC      ;SET CHARACTER LENGTH
1964 010454 052777 000002 170710      BIS      #BIT1,@DQSEC      ;TURN CLOCK OFF...
1965 010462 042777 000002 170702      BIC      #BIT1,@DQSEC      ;AND ON
1966 010470 105077 170674      CLR      @DQREG      ;SEL RX PRIMARY ADDRESS
1967 010474 012777 013256 170670      MOV      #RXBUFF,@DQSEC      ;SET ADDRESS
1968 010502 105277 170662      INCB     @DQREG      ;SEL RX PRIMARY CHAR COUNT
1969 010506 012777 177734 170656      MOV      #-36,@DQSEC      ;SET CHAR COUNT
1970 010514 105277 170650      INCB     @DQREG      ;SEL TX PRIMARY ADDRESS
1971 010520 012777 012372 170644      MOV      #SYNC1,@DQSEC      ;LOAD THE SYNC CHAR
1972 010526 105277 170636      INCB     @DQREG      ;SEL TX PRI CHAR COUNT
1973 010532 012777 177732 170632      MOV      #-38,@DQSEC      ;SET CHAR COUNT
1974 010540 005277 170614      INC      @DQRCR      ;SET RX GO
1975 010544 005277 170614      INC      @DQTCR      ;SET TX GO

```

```

::++D
::++D
::++D
::++D
::++D
::++D

```


1976	010550	005005			CLR	R5	:START TIMING
1977	010552	105777	170602	1\$:	TSTB	@DQRCR	:IS DONE UP?
1978	010556	100404			BMI	2\$	:BRANCH IF YES
1979	010560	062705	000001		ADD	#1,R5	:WAIT
1980	010564	001372			BNE	1\$	:BR IF MORE TO GO
1981	010566	104001			HLT	1	:ERROR--NO RX DONE
1982	010570	012700	012376	2\$:	MOV	#TXBUFF,R0	:LOAD BUFFER POINTER
1983	010574	012701	013256		MOV	#RXBUFF,R1	:LOAD RX BUFFER POINTER
1984	010600	012702	000044		MOV	#36.,R2	:SET UP TO COUNT CHARACTERS
1985	010604			3\$:			
1986	010604	012005			MOV	(R0)+,R5	:GET ANOTHER CHAR
1987	010606	012104			MOV	(R1)+,R4	:GET A REC CHAR
1988	010610	043705	012370		BIC	MASK,R5	:MASK OUT UNWANTED BITS
1989	010614	020504			CMP	R5,R4	:DO THE CHARACTERS MATCH?
1990	010616	001401			BEQ	4\$	:BR IF OK
1991	010620	104002			HLT	2	:ERROR--DATA DOESN'T MATCH
1992	010622	005302		4\$:	DEC	R2	:ALL DONE?
1993	010624	001367			BNE	3\$	:NO--GO BACK FOR MORE
1994	010626	104400			SCOPE		:SCOPE THIS TEST
1995							
1996							
1997							
1998							
1999							
2000							
2001							
2002							
2003							

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
:THIS TEST WILL XMIT AND RECV CHARACTERS
:AT 13 BITS/PER/CHAR.
:DATA CHECKING WILL BE PERFORMED!

: TEST 16

2004	010630	012737	000016	001226	TST16:	MOV	#16,TSTNO		
2005	010636	012737	011160	001216		MOV	#TST17,NEXT		
2006	010644	104413				MEMCLR		:CLEAR ALL THE DQ11	
2007	010646	012700	013256			MOV	#RXBUFF,R0	:LOAD THE BUFFER POINTER	
2008	010652	005001				CLR	R1	:SET UP TO CLEAR THE BUFFER	
2009	010654	005020			5\$:	CLR	(R0)+	:CLEAR IT	
2010	010656	105201				INCB	R1	:DONE?	
2011	010660	100375				BPL	5\$	:BRANCH IF NO	
2012	010662	112777	000011	170500		MOVB	#11,@DQREG	:SELECT THE SYNC REG	
2013	010670	013737	013052	001246		MOV	SYNC,TEMP2	:LOAD SYNC	
2014	010676	012737	160000	012370		MOV	#160000,MASK	:LOAD THE MASK	
2015	010704	043737	012370	001246		BIC	MASK,TEMP2	:SET UP THE MASK FOR THE	
2016	010712	000241				CLC		:CORRECT SYNC CHARACTER	
2017	010714	006037	001246			ROR	TEMP2	:SHIFT IT	
2018	010720	005737	001510			TST	DQSTAT	:SINGLE SYNC CHARACTER?	
2019	010724	100404				BMI	10\$	:IF NO,BR.	:++D
2020	010726	012737	177777	012372		MOV	#-1,SYNC1	:IF YES, MARK.	:++D
2021	010734	000403				BR	20\$	:CONTINUE.	:++D
2022	010736	013737	001246	012372	10\$:	MOV	TEMP2,SYNC1	:LOAD THE CHARACTER	:++D
2023	010744	013737	001246	012374	20\$:	MOV	TEMP2,SYNC2	:DITTO	:++D
2024	010752	013777	001246	170412		MOV	TEMP2,@DQSEC	:LOAD THE SYNC REGISTER	:++D
2025	010760	105277	170404			INCB	@DQREG	:SEL THE MISC REGISTER	
2026	010764	012777	000010	170400		MOV	#BIT3,@DQSEC	:SET TEST LOOP	
2027	010772	012700	000003			MOV	#3,R0		
2028	010776	000300				SWAB	R0	:FLIP THE BYTES	
2029	011000	050077	170366			BIS	RC,@DQSEC	:SET CHARACTER LENGTH	
2030	011004	052777	000002	170360		BIS	#BIT1,@DQSEC	:TURN CLOCK OFF...	
2031	011012	042777	000002	170352		BIC	#BIT1,@DQSEC	:AND ON	

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SEQ 0040

2032	011020	105077	170344		CLRB	@DQREG	:SEL RX PRIMARY ADRESS
2033	011024	012777	013256	170340	MOV	#RXBUFF,@DQSEC	:SET ADDRESS
2034	011032	105277	170332		INCB	@DQREG	:SEL RX PRIMARY CHAR COUNT
2035	011036	012777	177734	170326	MOV	#-36.,@DQSEC	:SET CHAR COUNT
2036	011044	105277	170320		INCB	@DQREG	:SEL TX PRIMARY ADDRESS
2037	011050	012777	012372	170314	MOV	#SYNC1,@DQSEC	:LOAD THE SYNC CHAR
2038	011056	105277	170306		INCB	@DQREG	:SEL TX PRI CHAR COUNT
2039	011062	012777	177732	170302	MOV	#-38.,@DQSEC	:SET CHAR COUNT
2040	011070	005277	170264		INC	@DQRCR	:SET RX GO
2041	011074	005277	170264		INC	@DQTCR	:SET TX GO
2042	011100	005005			CLR	R5	:START TIMING
2043	011102	105777	170252		1\$: TSTB	@DQRCR	:IS DONE UP?
2044	011106	100404			BMI	2\$	:BRANCH IF YES
2045	011110	062705	000001		ADD	#1,R5	:WAIT
2046	011114	001372			BNE	1\$	:BR IF MORE TO GO
2047	011116	104001			HLT	1	:ERROR--NO RX DONE
2048	011120	012700	012376		2\$: MOV	#TXBUFF,R0	:LOAD BUFFER POINTER
2049	011124	012701	013256		MOV	#RXBUFF,R1	:LOAD RX BUFFER POINTER
2050	011130	012702	000044		MOV	#36.,R2	:SET UP TO COUNT CHARACTERS
2051	011134				3\$: MOV	(R0)+,R5	:GET ANOTHER CHAR
2052	011134	012005			MOV	(R1)+,R4	:GET A REC CHAR
2053	011136	012104			BIC	MASK,R5	:MASK OUT UNWANTED BITS
2054	011140	043705	012370		CMP	R5,R4	:DO THE CHARACTERS MATCH?
2055	011144	020504			BEQ	4\$	:BR IF OK
2056	011146	001401			HLT	2	:ERROR--DATA DOESN'T MATCH
2057	011150	104002			4\$: DEC	R2	:ALL DONE?
2058	011152	005302			BNE	3\$	:NO--GO BACK FOR MORE
2059	011154	001367			SCOPE		:SCOPE THIS TEST
2060	011156	104400					

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
 :THIS TEST WILL XMIT AND RECV CHARACTERS
 :AT 14 BITS/PER/CHAR.
 :DATA CHECKING WILL BE PERFORMED!

: TEST 17

:*****

2069					TST17: MOV	#17,TSTNO	
2070	011160	012737	000017	001226	MOV	#TST20,NEXT	
2071	011166	012737	011510	001216	MEMCLR		:CLEAR ALL THE DQ11
2072	011174	104413			MOV	#RXBUFF,R0	:LOAD THE BUFFER POINTER
2073	011176	012700	013256		CLR	R1	:SET UP TO CLEAR THE BUFFER
2074	011202	005001			5\$: CLR	(R0)+	:CLEAR IT
2075	011204	005020			INCB	R1	:DONE?
2076	011206	105201			BPL	5\$	:BRANCH IF NO
2077	011210	100375			MOVB	#11,@DQREG	:SELECT THE SYNC REG
2078	011212	112777	000011	170150	MOV	SYNC,TEMP2	:LOAD SYNC
2079	011220	013737	013052	001246	MOV	#140000,MASK	:LOAD THE MASK
2080	011226	012737	140000	012370	BIC	MASK,TEMP2	:SET UP THE MASK FOR THE
2081	011234	043737	012370	001246	CLC		:CORRECT SYNC CHARACTER
2082	011242	000241			ROR	TEMP2	:SHIFT IT
2083	011244	006037	001246		TST	DQSTAT	:SINGLE SYNC CHARACTER?
2084	011250	005737	001510		BMI	10\$	:IF NO,BR.
2085	011254	100404			MOV	#-1,SYNC1	:IF YES, MARK.
2086	011256	012737	177777	012372	BR	20\$	:CONTINUE.
2087	011264	000403					

::++D
 ::++D
 ::++D
 ::++D

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SEQ 0041

```

2088 011266 013737 001246 012372 10$: MOV TEMP2,SYNC1 ;LOAD THE CHARACTER ;:++D
2089 011274 013737 001246 012374 20$: MOV TEMP2,SYNC2 ;DITTO ;:++D
2090 011302 013777 001246 170062 MOV TEMP2,@DQSEC ;LOAD THE SYNC REGISTER
2091 011310 105277 170054 INCB @DQREG ;SEL THE MISC REGISTER
2092 011314 012777 000010 170050 MOV #BIT3,@DQSEC ;SET TEST LOOP
2093 011322 012700 000002 MOV #2,R0 ;
2094 011326 000300 SWAB R0 ;FLIP THE BYTES
2095 011330 050077 170036 BIS R0,@DQSEC ;SET CHARACTER LENGTH
2096 011334 052777 000002 170030 BIS #BIT1,@DQSEC ;TURN CLOCK OFF...
2097 011342 042777 000002 170022 BIC #BIT1,@DQSEC ;AND ON
2098 011350 105077 170014 CLRB @DQREG ;SEL RX PRIMARY ADDRESS
2099 011354 012777 013256 170010 MOV #RXBUFF,@DQSEC ;SET ADDRESS
2100 011362 105277 170002 INCB @DQREG ;SEL RX PRIMARY CHAR COUNT
2101 011366 012777 177734 167776 MOV #-36,@DQSEC ;SET CHAR COUNT
2102 011374 105277 167770 INCB @DQREG ;SEL TX PRIMARY ADDRESS
2103 011400 012777 012372 167764 MOV #SYNC1,@DQSEC ;LOAD THE SYNC CHAR
2104 011406 105277 167756 INCB @DQREG ;SEL TX PRI CHAR COUNT
2105 011412 012777 177732 167752 MOV #-38,@DQSEC ;SET CHAR COUNT
2106 011420 005277 167734 INC @DQRCSR ;SET RX GO
2107 011424 005277 167734 INC @DQTCSR ;SET TX GO
2108 011430 005005 CLR R5 ;START TIMING
2109 011432 105777 167722 1$: TSTB @DQRCSR ;IS DONE UP?
2110 011436 100404 BMI 2$ ;BRANCH IF YES
2111 011440 062705 000001 ADD #1,R5 ;WAIT
2112 011444 001372 BNE 1$ ;BR IF MORE TO GO
2113 011446 104001 HLT 1 ;ERROR--NO RX DONE
2114 011450 012700 012376 2$: MOV #TXBUFF,R0 ;LOAD BUFFER POINTER
2115 011454 012701 013256 MOV #RXBUFF,R1 ;LOAD RX BUFFER POINTER
2116 011460 012702 000044 MOV #36,R2 ;SET UP TO COUNT CHARACTERS
2117 011464 3$: MOV (R0)+,R5 ;GET ANOTHER CHAR
2118 011464 012005 MOV (R1)+,R4 ;GET A REC CHAR
2119 011466 012104 BIC MASK,R5 ;MASK OUT UNWANTED BITS
2120 011470 043705 012370 CMP R5,R4 ;DO THE CHARACTERS MATCH?
2121 011474 020504 BEQ 4$ ;BR IF OK
2122 011476 001401 HLT 2 ;ERROR--DATA DOESN'T MATCH
2123 011500 104002 4$: DEC R2 ;ALL DONE?
2124 011502 005302 BNE 3$ ;NO--GO BACK FOR MORE
2125 011504 001367 SCOPE ;SCOPE THIS TEST
2126 011506 104400

```

;TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
 ;THIS TEST WILL XMIT AND RECV CHARACTERS
 ;AT 15 BITS/PER/CHAR.
 ;DATA CHECKING WILL BE PERFORMED!

; TEST 20

;*****

```

2136 011510 012737 000020 001226 TST20: MOV #20,TSTNO
2137 011516 012737 012040 001216 MOV #TST21,NEXT
2138 011524 104413 MEMCLR ;CLEAR ALL THE DQ11
2139 011526 012700 013256 MOV #RXBUFF,R0 ;LOAD THE BUFFER POINTER
2140 011532 005001 CLR R1 ;SET UP TO CLEAR THE BUFFER
2141 011534 005020 5$: CLR (R0)+ ;CLEAR IT
2142 011536 105201 INCB R1 ;DONE?
2143 011540 100375 BPL 5$ ;BRANCH IF NO

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SEQ 0042

2144	011542	112777	000011	167620	MOVB	#11,@DQREG	:SELECT THE SYNC REG	
2145	011550	013737	013052	001246	MOV	SYNC,TEMP2	:LOAD SYNC	
2146	011556	012737	100000	012370	MOV	#100000,MASK	:LOAD THE MASK	
2147	011564	043737	012370	001246	BIC	MASK,TEMP2	:SET UP THE MASK FOR THE	
2148	011572	000241			CLC		:CORRECT SYNC CHARACTER	
2149	011574	006037	001246		ROR	TEMP2	:SHIFT IT	
2150	011600	005737	001510		TST	DQSTAT	:SINGLE SYNC CHARACTER?	::++D
2151	011604	100404			BMI	10\$	:IF NO,BR.	::++D
2152	011606	012737	177777	012372	MOV	#-1,SYNC1	:IF YES, MARK.	::++D
2153	011614	000403			BR	20\$	:CONTINUE.	::++D
2154	011616	013737	001246	012372	MOV	TEMP2,SYNC1	:LOAD THE CHARACTER	::++D
2155	011624	013737	001246	012374	MOV	TEMP2,SYNC2	:DITTO	::++D
2156	011632	013777	001246	167532	MOV	TEMP2,@DQSEC	:LOAD THE SYNC REGISTER	
2157	011640	105277	167524		INCB	@DQREG	:SEL THE MISC REGISTER	
2158	011644	012777	000010	167520	MOV	#BIT3,@DQSEC	:SET TEST LOOP	
2159	011652	012700	000001		MOV	#1,R0	:	
2160	011656	000300			SWAB	R0	:FLIP THE BYTES	
2161	011660	050077	167506		BIS	R0,@DQSEC	:SET CHARACTER LENGTH	
2162	011664	052777	000002	167500	BIS	#BIT1,@DQSEC	:TURN CLOCK OFF...	
2163	011672	042777	000002	167472	BIC	#BIT1,@DQSEC	:AND ON	
2164	011700	105077	167464		CLRB	@DQREG	:SEL RX PRIMARY ADDRESS	
2165	011704	012777	013256	167460	MOV	#RXBUFF,@DQSEC	:SET ADDRESS	
2166	011712	105277	167452		INCB	@DQREG	:SEL RX PRIMARY CHAR COUNT	
2167	011716	012777	177734	167446	MOV	#-36,@DQSEC	:SET CHAR COUNT	
2168	011724	105277	167440		INCB	@DQREG	:SEL TX PRIMARY ADDRESS	
2169	011730	012777	012372	167434	MOV	#SYNC1,@DQSEC	:LOAD THE SYNC CHAR	
2170	011736	105277	167426		INCB	@DQREG	:SEL TX PRI CHAR COUNT	
2171	011742	012777	177732	167422	MOV	#-38,@DQSEC	:SET CHAR COUNT	
2172	011750	005277	167404		INC	@DQRCR	:SET RX GO	
2173	011754	005277	167404		INC	@DQTCR	:SET TX GO	
2174	011760	005005			CLR	R5	:START TIMING	
2175	011762	105777	167372	1\$:	TSTB	@DQRCR	:IS DONE UP?	
2176	011766	100404			BMI	2\$	:BRANCH IF YES	
2177	011770	062705	000001		ADD	#1,R5	:WAIT	
2178	011774	001372			BNE	1\$	:BR IF MORE TO GO	
2179	011776	104001			HLT	1	:ERROR--NO RX DONE	
2180	012000	012700	012376	2\$:	MOV	#TXBUFF,R0	:LOAD BUFFER POINTER	
2181	012004	012701	013256		MOV	#RXBUFF,R1	:LOAD RX BUFFER POINTER	
2182	012010	012702	000044		MOV	#36,R2	:SET UP TO COUNT CHARACTERS	
2183	012014			3\$:				
2184	012014	012005			MOV	(R0)+,R5	:GET ANOTHER CHAR	
2185	012016	012104			MOV	(R1)+,R4	:GET A REC CHAR	
2186	012020	043705	012370		BIC	MASK,R5	:MASK OUT UNWANTED BITS	
2187	012024	020504			CMP	R5,R4	:DO THE CHARACTERS MATCH?	
2188	012026	001401			BEQ	4\$	:BR IF OK	
2189	012030	104002			HLT	2	:ERROR--DATA DOESN'T MATCH	
2190	012032	005302		4\$:	DEC	R2	:ALL DONE?	
2191	012034	001367			BNE	3\$	:NO--GO BACK FOR MORE	
2192	012036	104400			SCOPE		:SCOPE THIS TEST	
2193								
2194								
2195								
2196								
2197								
2198								
2199								

:TEST OF TRANSMITTER AND RECEIVER CHARATER LENGTHS
 :THIS TEST WILL XMIT AND RECV CHARACTERS
 :AT 16 BITS/PER/CHAR.
 :DATA CHECKING WILL BE PERFORMED!

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SEQ 0043

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2200      ; TEST 21
2201      ;*****
2202      TST21: MOV    #21,TSTNO
2203      MOV    #.EOP,NEXT
2204      MEMCLR
2205      MOV    #RXBUFF,R0      ;CLEAR ALL THE DQ11
2206      CLR    R1              ;LOAD THE BUFFER POINTER
2207      CLR    (R0)+           ;SET UP TO CLEAR THE BUFFER
2208      INCB   R1              ;CLEAR IT
2209      BPL    5$              ;DONE?
2210      MOV    #11,@DQREG      ;BRANCH IF NO
2211      MOV    SYNC,TEMP2      ;SELECT THE SYNC REG
2212      MOV    #000000,MASK    ;LOAD SYNC
2213      BIC    MASK,TEMP2      ;LOAD THE MASK
2214      CLC                    ;SET UP THE MASK FOR THE
2215      ROR    TEMP2           ;CORRECT SYNC CHARACTER
2216      TST    DQSTAT          ;SHIFT IT
2217      BMI    10$            ;SINGLE SYNC CHARACTER?
2218      MOV    #-1,SYNC1       ;IF NO,BR.
2219      BR     20$             ;IF YES, MARK.
2220      MOV    TEMP2,SYNC1      ;CONTINUE.
2221      MOV    TEMP2,SYNC2      ;LOAD THE CHARACTER
2222      MOV    TEMP2,@DQSEC     ;DITTO
2223      INCB   @DQREG           ;LOAD THE SYNC REGISTER
2224      MOV    #BIT3,@DQSEC     ;SEL THE MISC REGISTER
2225      MOV    #0,R0           ;SET TEST LOOP
2226      SWAB   R0              ;
2227      BIS    R0,@DQSEC        ;FLIP THE BYTES
2228      BIS    #BIT1,@DQSEC     ;SET CHARACTER LENGTH
2229      BIC    #BIT1,@DQSEC     ;TURN CLOCK OFF...
2230      CLRB   @DQREG          ;AND ON
2231      MOV    #RXBUFF,@DQSEC   ;SEL RX PRIMARY ADDRESS
2232      INCB   @DQREG           ;SET ADDRESS
2233      MOV    #-36,@DQSEC      ;SEL RX PRIMARY CHAR COUNT
2234      INCB   @DQREG           ;SET CHAR COUNT
2235      MOV    #SYNC1,@DQSEC    ;SEL TX PRIMARY ADDRESS
2236      INCB   @DQREG           ;LOAD THE SYNC CHAR
2237      MOV    #-38,@DQSEC      ;SEL TX PRI CHAR COUNT
2238      INC    @DQRCR           ;SET CHAR COUNT
2239      INC    @DQTCR          ;SET RX GO
2240      CLR    R5              ;SET TX GO
2241      TSTB   @DQRCR           ;START TIMING
2242      BMI    2$              ;IS DONE UP?
2243      ADD    #1,R5            ;BRANCH IF YES
2244      BNE    1$              ;WAIT
2245      HLT    1                ;BR IF MORE TO GO
2246      MOV    #TXBUFF,R0      ;ERROR--NO RX DONE
2247      MOV    #RXBUFF,R1      ;LOAD BUFFER POINTER
2248      MOV    #36,R2          ;LOAD RX BUFFER POINTER
2249      ;                          ;SET UP TO COUNT CHARACTERS
2250      MOV    (R0)+,R5         ;GET ANOTHER CHAR
2251      MOV    (R1)+,R4         ;GET A REC CHAR
2252      BIC    MASK,R5          ;MASK OUT UNWANTED BITS
2253      CMP    R5,R4            ;DO THE CHARACTERS MATCH?
2254      BEQ    4$              ;BR IF OK
2255      HLT    2                ;ERROR--DATA DOESN'T MATCH

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SEQ 0044

2256	012362	005302		4\$:	DEC	R2		:ALL DONE?
2257	012364	001367			BNE	3\$		:NO--GO BACK FOR MORE
2258	012366	104400			SCOPE			:SCOPE THIS TEST
2259								
2260								
2261								
2262	012370	000000		MASK:	0			
2263	012372	026	026	SYNC1:	.BYTE	26,26		
2264	012374	026	026	SYNC2:	.BYTE	26,26		
2265	012376			TXBUFF:				
2266	012376	177777						^B<1111111111111111>
2267	012400	000000						^B<0000000000000000>
2268	012402	125252						^B<1010101010101010>
2269	012404	052525						^B<0101010101010101>
2270	012406	000001						^B<0000000000000001>
2271	012410	000002						^B<0000000000000010>
2272	012412	000004						^B<0000000000000100>
2273	012414	000010						^B<00000000000001000>
2274	012416	000020						^B<000000000000010000>
2275	012420	000040						^B<0000000000000100000>
2276	012422	000100						^B<00000000000001000000>
2277	012424	000200						^B<000000000000010000000>
2278	012426	000400						^B<0000000000000100000000>
2279	012430	001000						^B<00000000000001000000000>
2280	012432	002000						^B<000000000000010000000000>
2281	012434	004000						^B<0000000000000100000000000>
2282	012436	010000						^B<00000000000001000000000000>
2283	012440	020000						^B<000000000000010000000000000>
2284	012442	040000						^B<0000000000000100000000000000>
2285	012444	100000						^B<00000000000001000000000000000>
2286	012446	077777						^B<0111111111111111>
2287	012450	137777						^B<1011111111111111>
2288	012452	157777						^B<1101111111111111>
2289	012454	167777						^B<1110111111111111>
2290	012456	173777						^B<1111011111111111>
2291	012460	175777						^B<1111101111111111>
2292	012462	176777						^B<1111110111111111>
2293	012464	177377						^B<1111111011111111>
2294	012466	177577						^B<1111111101111111>
2295	012470	177677						^B<1111111110111111>
2296	012472	177737						^B<1111111111011111>
2297	012474	177757						^B<1111111111101111>
2298	012476	177767						^B<1111111111110111>
2299	012500	177773						^B<1111111111111011>
2300	012502	177775						^B<1111111111111101>
2301	012504	177776						^B<1111111111111110>
2302	012506	000100						^B<1111111111111111>
2303	012706							.BLKW 100
2304	012706	005077	166446	.MEMCLR:				
2305	012712	005077	166446		CLR	@DQRC SR		
2306	012716	005077	166444		CLR	@DQTCS R		
2307	012722	012705	000020		CLR	@DQERR		
2308	012726	152777	000020	166434	MOV	#16, R5		
2309	012734	142777	000140	166426	1\$:	BISB	#BIT4, @DQREG	
2310	012742	005077	166424			BICB	#140, @DQREG	
2311	012746	105277	166416			CLR	@DQSEC	
						INCB	@DQREG	

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 CZDQHE.P11 03-DEC-80 08:27 PROGRAM INITIALIZATION AND START UP.

SEQ 0045

2312	012752	005305		DEC	R5	
2313	012754	001364		BNE	1\$	
2314	012756	105077	166406	CLRB	@DQREG	
2315	012762	105077	166374	CLRB	@DQRC SH	
2316	012766	012705	000020	MOV	#16.,R5	
2317	012772	112777	000010	MOVB	#10,@DQREG	
2318	013000	005077	166366	CLR	@DQSEC	
2319	013004	112777	000014	MOVB	#14,@DQREG	
2320	013012	005077	166354	CLR	@DQSEC	
2321	013016	105277	166340	INCB	@DQRC SH	
2322	013022	005305		DEC	R5	
2323	013024	001362		BNE	2\$	
2324	013026	105077	166330	CLRB	@DQRC SH	
2325	013032			.MSTCLR:		
2326	013032	112777	000012	MOVB	#MISC.,@DQREG	
2327	013040	012777	000040	MOV	#BIT5,@DQSEC	
2328	013046	000002		RTI		
2329	013050	026	026	.SYNC:	.BYTE	26,26
2330	013052	026	026	SYNC:	.BYTE	26,26
2331	013054	000000		TXBFA:	0	
2332		013256			.=.+200	
2333	013256			RXBUF:		
2334	013256	000200			.BLKW	200
2335	013656	026	026	XSYNC:	.BYTE	26,26
2336	013660	026	026	XSYNC2:	.BYTE	26,26
2337	013662	000000		XTXBUF:	0	
2338		014064			.=.+200	
2339	014064	000000		XRBUF:	0	
2340		014266			.=.+200	
2341	014266	000000		ERR:	0	
2342	014270	000000		POLY:	0	
2343	014272	000000		XPOLY:	0	
2344	014274	000000		CHAR:	0	
2345	014276	000000		COUNT:	0	
2346	014300	000000		ADDR:	0	
2347	014302	000000		GDCHAR:	0	
2348	014304	000000		DETCAR:	0	
2349						
2350						
2351						
2352						
2353						
2354						
2355						
2356	014306	005037	001234	.EOP:	CLR	LSTERR
2357	014312	005037	001312		CLR	ERRFLG
2358	014316	005237	001230		INC	PASCNT
2359	014322	104402			TYPE	
2360	014324	016536			MEPASS	
2361	014326	104402			TYPE	
2362	014330	016717			MCSRX	
2363	014332	104411			CNVRT	
2364	014334	014444			XCSR	
2365	014336	104402			TYPE	
2366	014340	016725			MVECX	
2367	014342	104411			CNVRT	

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

:CLEAR LAST ERROR PC
 :CLEAR ERROR FLAG
 :UPDATE PASS COUNT

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 CZDQHE.P11 03-DEC-80 08:27 END OF PASS ROUTINE

SEQ 0046

2368	014344	014452			XVEC		
2369	014346	104402			TYPE		
2370	014350	016733			MPASSX		
2371	014352	104411			CNVRT		
2372	014354	014460			XPASS		
2373	014356	104402			TYPE		
2374	014360	016744			MERRX		
2375	014362	104411			CNVRT		
2376	014364	014466			XERR		
2377	014366	013777	001230	164606	MOV	PASCNT,@LIGHTS	:DISPLAY PASS COUNT
2378	014374	005337	001276		DEC	SAVNUM	
2379	014400	001013			BNE	RESTR	
2380	014402	013737	001504	001276	MOV	DQNUM,SAVNUM	
2381	014410	013701	000042		MOV	@#42,R1	:CHECK FOR ACT-11 OR DDP
2382	014414	001405			BEQ	RESTR	:IF NOT, CONTINUE TESTING
2383	014416	000005			RESET		
2384	014420				LOGICAL:		
2385	014420	004711			JSR	PC,(R1)	
2386	014422	000240			NOP		
2387	014424	000240			NOP		
2388	014426	000240			NOP		
2389	014430	104414			RESTR:	CKSWR	
2390	014432	012737	002254	001214	MOV	#TST1,RETURN	
2391	014440	000137	002254		JMP	TST1	
2392	014444	000001			XCSR:	1	
2393	014446	006	002		.BYTE	6,2	
2394	014450	001360			DQRCR		
2395	014452	000001			XVEC:	1	
2396	014454	003	002		.BYTE	3,2	
2397	014456	001350			DQREVC		
2398	014460	000001			XPASS:	1	
2399	014462	006	002		.BYTE	6,2	
2400	014464	001230			PASCNT		
2401	014466	000001			XERR:	1	
2402	014470	006	002		.BYTE	6,2	
2403	014472	001232			ERRCNT		
2404							
2405					:SCOPE LOOP AND INTERATION HANDLER		
2406							
2407	014474	104414			.SCOPE:	CKSWR	
2408	014476	032777	040000	164474	BIT	#BIT14,@SWR	
2409	014504	001407			TTST:	BEQ	1\$
2410	014506	000432			BR	3\$	
2411	014510	105777	164470		TSTB	@TKCSR	
2412	014514	100027			BPL	3\$	
2413	014516	017700	164464		MOV	@TKDBR,R0	
2414	014522	000412			BR	2\$	
2415	014524	032777	004000	164446	1\$:	BIT	#SW11,@SWR
2416	014532	001006			BNE	2\$	
2417	014534	005237	001224		INC	LPCNT	
2418	014540	023737	001224	001222	CMP	LPCNT,ICOUNT	
2419	014546	001012			BNE	3\$	
2420	014550	105037	001312		2\$:	CLRB	ERRFLG
2421	014554	005037	001224		CLR	LPCNT	
2422	014560	012737	000017	001222	MOV	#15,ICOUNT	
2423	014566	013737	001216	001214	MOV	NEXT,RETURN	

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 CZDQHE.P11 03-DEC-80 08:27 GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

SEQ 0047

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2424 014574 013716 001214      3$:  MOV    RETURN,(SP)
2425 014600 000002
2426 014602 001407      BRW:   1407
2427 014604 000432      BRX:   432
2428
2429      :CHECK FOR FREEZE ON CURRENT DATA
2430
2431 014606 104414
2432 014610 032777 001000 164362 .SCOP1: CKSWR
2433 014616 001402      BIT     #SW09,@SWR
2434 014620 013716 001220      BEQ    1$
2435 014624 000002      1$:    MOV    LOCK,(SP)
2436      RTI
2437      :TELETYPE OUTPUT ROUTINE
2438
2439 014626 010546      .TYPE:  MOV    R5,-(SP)
2440 014630 017605      MOV    @2(SP),R5
2441 014634 062766 000002 000002      ADD    #2,2(SP)
2442 014642 005737 016316      1$:    TST    @#RDSW
2443 014646 001004      BNE     300$
2444 014650 032777 010000 164322      BIT     #SW12,@SWR
2445 014656 001024      BNE     3$
2446 014660 105715      300$:  TSTB   (R5)
2447 014662 100014      BPL     2$
2448 014664 105777 164320      TSTB   @TPCSR
2449 014670 100375      BPL     -4
2450 014672 012777 000015 164312      MOV    #15,@TPDBR
2451 014700 105777 164304      TSTB   @TPCSR
2452 014704 100375      BPL     -4
2453 014706 012777 000012 164276      MOV    #12,@TPDBR
2454 014714 105777 164270      2$:    TSTB   @TPCSR
2455 014720 100375      BPL     2$
2456 014722 112577 164264      MOVB   (R5)+,@TPDBR
2457 014726 001345      BNE     1$
2458 014730 012605      3$:    MOV    (SP)+,R5
2459 014732 000002      RTI
2460
2461      :ASCII STRING INPUT ROUTINE
2462
2463 014734 010346      .INSTR: MOV    R3,-(SP)
2464 014736 010446      MOV    R4,-(SP)
2465 014740 017637 000004 014756      MOV    @4(SP),.MSG
2466 014746 062766 000002 000004      ADD    #2,4(SP)
2467 014754 104402      .INST1: TYPE
2468 014756 000000      .MSG:   0
2469 014760 012704 017110      MOV    #INBUF,R4
2470 014764 012703 000007      MOV    #7,R3
2471 014770 105777 164210      1$:    TSTB   @TKCSR
2472 014774 100375      BPL     1$
2473 014776 117714 164204      MOVB   @TKDBR,(R4)
2474 015002 142714 000200      BICB   #200,(R4)
2475 015006 121427 000025      CMPB   (R4),#25
2476 015012 001003      BNE     200$
2477 015014 104402 016476      TYPE,MCRLF
2478 015020 000755      BR     .INST1
2479 015022 122427 000015      200$:  CMPB   (R4)+,#15

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:IS IT <^G>

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

SEQ 0048

2480	015026	001423		BEQ	INSTR2	
2481	015030	117777	164152 164154	MOVB	@TKDBR,@TPDBR	
2482	015036	105777	164146	2\$: TSTB	@TPCSR	
2483	015042	100375		BPL	2\$	
2484	015044	005303		DEC	R3	
2485	015046	001350		BNE	1\$	
2486	015050	000402		BR	.INSTG	
2487	015052	010346		.INSTE: MOV	R3,-(SP)	
2488	015054	010446		MOV	R4,-(SP)	
2489	015056	104402		.INSTG: TYPE		
2490	015060	016472		MQM		
2491	015062	005737	016316	TST	@#RDSW	
2492	015066	001402		BEQ	400\$	
2493	015070	104402	016476	TYPE,MCRLF		
2494	015074	000727		400\$: BR	.INST1	
2495	015076	012604		INSTR2: MOV	(SP)+,R4	
2496	015100	012603		MOV	(SP)+,R3	
2497	015102	000002		RTI		
2498						
2499						
2500						:CONVERT ASCII STRING TO OCTAL
2501	015104	010546		.PARAM: MOV	R5,-(SP)	
2502	015106	010446		MOV	R4,-(SP)	
2503	015110	016605	000004	MOV	4(SP),R5	
2504	015114	012537	015310	MOV	(R5)+,LOLIM	
2505	015120	012537	015312	MOV	(R5)+,HILIM	
2506	015124	012537	015314	MOV	(R5)+,DEVADR	
2507	015130	112537	015316	MOVB	(R5)+,LOBITS	
2508	015134	112537	015317	MOVB	(R5)+,ADRCNT	
2509	015140	010566	000004	MOV	R5,4(SP)	
2510	015144	005005		PARAM1: CLR	R5	
2511	015146	012704	017110	MOV	#INBUF,R4	
2512	015152	122714	000015	CMPB	#15,(R4)	
2513	015156	001420		BEQ	PARERR	
2514	015160	121427	000060	1\$: CMPB	(R4),#60	
2515	015164	002415		BLT	PARERR	
2516	015166	121427	000067	CMPB	(R4),#67	
2517	015172	003012		BGT	PARERR	
2518	015174	142714	000060	BICB	#60,(R4)	
2519	015200	152405		BISB	(R4)+,R5	
2520	015202	122714	000015	CMPB	#15,(R4)	
2521	015206	001414		BEQ	LIMITS	
2522	015210	006305		ASL	R5	
2523	015212	006305		ASL	R5	
2524	015214	006305		ASL	R5	
2525	015216	000760		BR	1\$	
2526	015220	122714	000015	PARERR: CMPB	#15,(R4)	:IS FIRST CHARACTER A <CR>
2527	015224	001003		BNE	120\$	
2528	015226	005737	016316	TST	@#RDSW	:IS CKSWR ROUTINE BEING USED
2529	015232	001023		BNE	PARTI	
2530	015234	104404		120\$: INSTER		
2531	015236	000742		BR	PARAM1	
2532						
2533						:TEST TO SEE IF NUMBER IS WITHIN LIMITS
2534						
2535	015240	020537	015312	LIMITS: CMP	R5,HILIM	

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SEQ 0049

2536	015244	101365			BHI	PARERR
2537	015246	020537	015310		CMP	R5,LOLIM
2538	015252	103762			BLO	PARERR
2539	015254	133705	015316		BITB	LOBITS,R5
2540	015260	001357			BNE	PARERR
2541						
2542						;STORE NUMBER AT SPECIFIED ADDRESS
2543						
2544	015262	013704	015314		MOV	DEVADR,R4
2545	015266	010524		1\$:	MOV	R5,(R4)+
2546	015270	062705	000002		ADD	#2,R5
2547	015274	105337	015317		DECB	ADRCNT
2548	015300	001372			BNE	1\$
2549	015302	012604		PARTI:	MOV	(SP)+,R4
2550	015304	012605			MOV	(SP)+,R5
2551	015306	000002			RTI	
2552	015310	000000		LOLIM:	0	
2553	015312	000000		HILIM:	0	
2554	015314	000000		DEVADR:	0	
2555	015316	000000		LOBITS:	0	
2556		015317			ADRCNT=LOBITS+1	
2557						
2558						;SAVE PC OF TEST THAT FAILED AND R0-R5
2559						
2560	015320	016637	000004	001274	.SAV05:	MOV 4(SP),SAVPC
2561						
2562						;SAVE R0-R5
2563						
2564	015326	010537	001270		SV05:	MOV R5,SAVR5
2565	015332	010437	001266		MOV	R4,SAVR4
2566	015336	010337	001264		MOV	R3,SAVR3
2567	015342	010237	001262		MOV	R2,SAVR2
2568	015346	010137	001260		MOV	R1,SAVR1
2569	015352	010037	001256		MOV	R0,SAVR0
2570	015356	000002			RTI	
2571						
2572						;RESTORE R0-R5
2573						
2574	015360	013700	001256		.RES05:	MOV SAVR0,R0
2575	015364	013701	001260		MOV	SAVR1,R1
2576	015370	013702	001262		MOV	SAVR2,R2
2577	015374	013703	001264		MOV	SAVR3,R3
2578	015400	013704	001266		MOV	SAVR4,R4
2579	015404	013705	001270		MOV	SAVR5,R5
2580	015410	000002			RTI	
2581						
2582						;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
2583						
2584	015412	104402			.CONVR:	TYPE
2585	015414	016476				MCRLF
2586	015416	010046			.CNVRT:	MOV R0,-(SP)
2587	015420	010146				MOV R1,-(SP)
2588	015422	010346				MOV R3,-(SP)
2589	015424	010446				MOV R4,-(SP)
2590	015426	010546				MOV R5,-(SP)
2591	015430	017601	000012			MOV @12(SP),R1

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 CZDQHE.P11 03-DEC-80 08:27 GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

SEQ 0050

2592	015434	013737	017152	001250	MOV	TEMP,TEMP3	
2593	015442	062766	000002	000012	ADD	#2,12(SP)	
2594	015450	012137	015632		MOV	(R1)+,WRDCNT	
2595	015454	112137	015634		1\$: MOV	(R1)+,CHRCNT	
2596	015460	112137	015635		MOVB	(R1)+,SPACNT	
2597	015464	013137	015636		MOV	@(R1)+,BINWRD	
2598	015470	013704	015636		2\$: MOV	BINWRD,R4	
2599	015474	113705	015634		MOVB	CHRCNT,R5	
2600	015500	012700	017152		MOV	#TEMP,R0	
2601	015504	010403			3\$: MOV	R4,R3	
2602	015506	042703	177770		BIC	#177770,R3	
2603	015512	062703	000060		ADD	#060,R3	
2604	015516	110320			MOVB	R3,(R0)+	
2605	015520	000241			CLC		
2606	015522	006004			ROR	R4	
2607	015524	000241			CLC		
2608	015526	006004			ROR	R4	
2609	015530	000241			CLC		
2610	015532	006004			ROR	R4	
2611	015534	005305			DEC	R5	
2612	015536	001362			BNE	3\$	
2613	015540	012703	017214		MOV	#MDATA,R3	
2614	015544	114023			4\$: MOVB	-(R0),(R3)+	
2615	015546	105337	015634		DECB	CHRCNT	
2616	015552	001374			BNE	4\$	
2617	015554	105737	015635		TSTB	SPACNT	
2618	015560	001405			BEQ	6\$	
2619	015562	112723	000040		5\$: MOVB	#040,(R3)+	
2620	015566	105337	015635		DECB	SPACNT	
2621	015572	001373			BNE	5\$	
2622	015574	105013			6\$: CLRB	(R3)	
2623	015576	104402			TYPE		
2624	015600	017214			MDATA		
2625	015602	005337	015632		DEC	WRDCNT	
2626	015606	001322			BNE	1\$	
2627	015610	013737	001250	017152	MOV	TEMP3,TEMP	
2628	015616	012605			MOV	(SP)+,R5	
2629	015620	012604			MOV	(SP)+,R4	
2630	015622	012603			MOV	(SP)+,R3	
2631	015624	012601			MOV	(SP)+,R1	
2632	015626	012600			MOV	(SP)+,R0	
2633	015630	000002			RTI		
2634	015632	000000			WRDCNT: 0		
2635	015634	000000			CHRCNT: 0		
2636		015635			SPACNT=CHRCNT+1		
2637	015636	000000			BINWRD: 0		
2638					:TRAP DISPATCH SERVICE		
2639					:ARGUMENT OF TRAP IS EXTRACTED		
2640					:AND USED AS OFFSET TO OBTAIN POINTER		
2641					:TO SELECTED SUBROUTINE		
2642							
2643	015640	011646			.TRPSR: MOV	(SP),-(SP)	:GET PC OF RETURN
2644	015642	162716	000002		SUB	#2,(SP)	:PC OF TRAP
2645	015646	017616	000000		MOV	@(SP),(SP)	:GET TRP
2646	015652	006316			TRPOK: ASL	(SP)	:MULTIPLY TRAP ARG BY 2
2647	015654	042716	177001		BIC	#177001,(SP)	:CLEAR UNWANTED BITS

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 CZDQHE.P11 03-DEC-80 08:27 GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

SEQ 0051

2648	015660	062716	001314		ADD	#.TRPTAB,(SP)	: POINTER TO SUBROUTINE ADDRESS
2649	015664	017616	000000		MOV	@(SP),(SP)	: SUBROUTINE ADDRESS
2650	015670	000136			JMP	@(SP)+	: GO TO SUBROUTINE
2651							
2652						: ERROR HANDLER	
2653							
2654	015672	104414			.HLT:	CKSWR	
2655	015674	032777	010000	163276		BIT	#SW12,@SWR
2656	015702	001406				BEQ	XBX
2657	015704	105777	163300			TSTB	@TPCSR
2658	015710	100003				BPL	XBX
2659	015712	112777	000207	163272		MOVB	#207,@TPDBR
2660	015720	032777	020000	163252	XBX:	BIT	#SW13,@SWR
2661	015726	001074				BNE	HALTS
2662	015730	021637	001234			CMP	(SP),LSTERR
2663	015734	001404				BEQ	1\$
2664	015736	011637	001234			MOV	(SP),LSTERR
2665	015742	105037	001312			CLRB	ERRFLG
2666	015746	104406			1\$:	SAV05	
2667	015750	011605				MOV	(SP),R5
2668	015752	162705	000002			SUB	#2,R5
2669	015756	011504				MOV	(R5),R4
2670	015760	006304				ASL	R4
2671	015762	061504				ADD	(R5),R4
2672	015764	006304				ASL	R4
2673	015766	042704	177001			BIC	#177001,R4
2674	015772	062704	017624			ADD	#.ERRTAB,R4
2675	015776	012437	016070			MOV	(R4)+,ERRMSG
2676	016002	012437	016102			MOV	(R4)+,DATAHD
2677	016006	011437	016114			MOV	(R4),DATABP
2678	016012	105737	001312			TSTB	ERRFLG
2679	016016	001403				BEQ	TYPMSG
2680	016020	005737	016114			TST	DATABP
2681	016024	001027				BNE	TYPDAT
2682	016026	104402			TYPMSG:	TYPE	
2683	016030	016755				MTSTN	
2684	016032	104411				CNVRT	
2685	016034	016214				XTSTN	
2686	016036	104402				TYPE	
2687	016040	017043				MERRPC	
2688	016042	104411				CNVRT	
2689	016044	016206				ERTAB0	
2690	016046	104402				TYPE	
2691	016050	016476				MCRLF	
2692	016052	112737	177777	001312		MOVB	#-1,ERRFLG
2693	016060	005737	016070			TST	ERRMSG
2694	016064	001402				BEQ	WRKO.FM
2695	016066	104402				TYPE	
2696	016070	000000			ERRMSG:	0	
2697	016072				WRKO.FM:		
2698	016072	005737	016102			TST	DATAHD
2699	016076	001402				BEQ	TYPDAT
2700	016100	104402				TYPE	
2701	016102	000000			DATAHD:	0	
2702	016104	005737	016114		TYPDAT:	TST	DATABP
2703	016110	001402				BEQ	RESREG

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

SEQ 0052

```

2704 016112 104410
2705 016114 000000
2706 016116 104407
2707 016120 005777 163054
2708 016124 100005
2709 016126 010046
2710 016130 016600 000002
2711 016134 000000
2712 016136 012600
2713 016140 104414
2714 016142 005237 001232
2715 016146 032777 000400 163024
2716 016154 001007
2717 016156 032777 002000 163014
2718 016164 001407
2719 016166 013737 001216 001214
2720 016174 012706 001200
2721 016200 000177 163010
2722 016204 000002
2723 016206 000001
2724 016210 006 002
2725 016212 001274
2726 016214 000001
2727 016216 003 002
2728 016220 001226
2729
2730
2731
2732 016222
2733 016222 012737 016234 000024
2734 016230 000000
2735 016232 000777
2736
2737
2738
2739 016234
2740 016234 012737 016222 000024
2741 016242 012706 001200
2742 016246 005037 017152
2743 016252 005237 017152
2744 016256 001375
2745 016260 104402
2746 016262 016500
2747 016264 104411
2748 016266 016310
2749 016270 005037 001312
2750 016274 005037 001234
2751 016300 104412
2752 016302 104413
2753 016304 000177 162704
2754 016310 000001
2755 016312 003 002
2756 016314 001226
2757
2758
2759

CONVRT
DATABP: 0
RESREG: RES05
HALTS: TST @SWR
        BPL EXITER
        PUSHRO
        MOV 2(SP),R0
        HALT
        POPRO
EXITER: CKSWR
        INC ERRCNT
        BIT #SW08,@SWR
        BNE 1$
        BIT #SW10,@SWR
        BEQ 2$
        MOV NEXT,RETURN
1$: MOV #STACK,SP
    JMP @RETURN
2$: RTI
ERTAB0: 1
        .BYTE 6,2
        SAVPC
XTSTN: 1
        .BYTE 3,2
        TSTNO
        ;ENTER HERE ON POWER FAILURE

.PFAIL:
        MOV #RESTART,24
        HALT
        BR
        ;SET UP FOR POWER UP TRAP
        ;HALT ON POWER DOWN NORMAL
        ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED

RESTAR:
        MOV #.PFAIL,24
        MOV #STACK,SP
        CLR TEMP
        INC TEMP
        BNE -4
        TYPE
        MPFAIL
        CNVRT
        PFTAB
        CLR ERRFLG
        CLR LSTERR
        MSTCLR
        MEMCLR
        JMP @RETURN
PFTAB: 1
        .BYTE 3,2
        TSTNO

;CHECK SWITCH REGISTER ROUTINE, CHECKS FOR *G TO ALLOW CHANGING

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 CZDQHE.P11 03-DEC-80 08:27 GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

SEQ 0053

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2760                                     :OF LOC.176.
2761                                     :LOCATIONS USED:
2762 016316 000000                      RDSW: .WORD 0
2763
2764
2765 016320 005737 000042                .CKSWR: TST @#42
2766 016324 001042                      BNE OUT
2767 016326 022737 000176 001200        CMP #SWREG,SWR ;SOFTWARE SWITCH REGISTER PRESENT
2768 016334 001036                      BNE OUT ;NO, GET OUT
2769 016336 105777 162642                TSTB @TKCSR ;YES, WAIT FOR
2770 016342 100033                      BPL OUT ;READY, GET CHARACTER
2771 016344 017737 162636 014756        MOV @TKDBR,.MSG ;AND STRIP OFF
2772 016352 042737 177600 014756        BIC #177600,.MSG ;THE GARBAGE
2773 016360 122737 000007 014756        CMPB #7,.MSG ;IS IT ^G?
2774 016366 001021                      BNE OUT
2775 016370 104402 016446                TYPE,$CNTG
2776 016374 005137 016316                .CNTLU: COM @#RDSW
2777 016400 104402 016452                TYPE,$MSWR
2778 016404 104411 016440                CNVRT,SWREGC
2779 016410 104403 016461                INSTR,$MNEW
2780 016414 104405                      PARAM
2781 016416 000000                      0
2782 016420 177777                      177777
2783 016422 000176                      SWREG
2784 016424 000 001                    .BYTE 0,1
2785 016426 104402 016476                TYPE,MCRLF
2786 016432 005037 016316                OUT: CLR @#RDSW
2787 016436 000002                      RTJ
2788 016440 000001                      SWREGC: 1
2789 016442 006 002                    .BYTE 6,2
2790 016444 000176                      SWREG
2791 016446 057377 000107                $CNTG: .ASCIZ <377>/^G/
2792 016452 051777 051127 020075        $MSWR: .ASCIZ <377>/SWR= /
2793 016460 000
2794 016461 040 047040 053505          $MNEW: .ASCIZ / NEW= /
2795 016466 020075 000
2796 016472                      .EVEN
2797 016472 020040 000077                MQM: .ASCIZ / ?/
2798 016476 000377                      MCRLF: .ASCIZ <377>
2799 016500 050377 051127 043040        MPFAIL: .ASCIZ <377>/PWR FAILED. RESTART AT TEST /
2800 016506 044501 042514 027104
2801 016514 051040 051505 040524
2802 016522 052122 040440 020124
2803 016530 042524 052123 000040
2804 016536 042777 042116 050040        MEPASS: .ASCIZ <377>/END PASS DZDQH /
2805 016544 051501 020123 055104
2806 016552 050504 020110 000040
2807 016560 051377 000
2808 016563 377 051120 043517          MR: .ASCIZ <377>/R/
2809 016570 040522 020115 047111        MERR2: .ASCIZ <377>/PROGRAM INDICATES NO DEVICES PRESENT./
2810 016576 044504 040503 042524
2811 016604 020123 047516 042040
2812 016612 053105 041511 051505
2813 016620 050040 042522 042523
2814 016626 052116 000056
2815 016632 044777 051516 043125        MERR3: .ASCIZ <377>/INSUFFICIENT DATA!/

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 CZDQHE.P11 03-DEC-80 08:27 GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

SEQ 0054

2816	016640	044506	044503	047105	
2817	016646	020124	040504	040524	
2818	016654	000041			
2819	016656	052377	051505	020124	MTSTPC: .ASCIZ <377>/TEST PC-/
2820	016664	041520	000055		
2821	016670	046377	041517	020113	MLOCK: .ASCIZ <377>/LOCK ON! SELECTED TEST/
2822	016676	047117	051440	046105	
2823	016704	041505	042524	020104	
2824	016712	042524	052123	000	
2825	016717	103	051123	020072	MCSRX: .ASCIZ /CSR: /
2826	016724	000			
2827	016725	126	041505	020072	MVECX: .ASCIZ /VEC: /
2828	016732	000			
2829	016733	120	051501	042523	MPASSX: .ASCIZ /PASSES: /
2830	016740	035123	000040		
2831	016744	051105	047522	051522	MERRX: .ASCIZ /ERRORS: /
2832	016752	020072	000		
2833	016755	377	052377	051505	MTSTN: .ASCIZ <377><377> /TEST NO: /
2834	016762	020124	047516	020072	
2835	016770	000			
2836	016771	377	042523	020124	MNEW: .ASCIZ <377>/SET SWITCH REG TO DQ11'S DESIRED ACTIVE./
2837	016776	053523	052111	044103	
2838	017004	051040	043505	052040	
2839	017012	020117	050504	030461	
2840	017020	051447	042040	051505	
2841	017026	051111	042105	040440	
2842	017034	052103	053111	027105	
2843	017042	000			
2844	017043	120	035103	000040	MERRPC: .ASCIZ /PC: /
2845	017050	046777	050101	047440	XHEAD: .ASCIZ <377>/MAP OF DQ11 STATUS/<377>
2846	017056	020106	050504	030461	
2847	017064	051440	040524	052524	
2848	017072	177523	000		
2849		017076			.EVEN
2850	017076	000002			XSTATQ: 2
2851	017100	006	003		.BYTE 6,3
2852	017102	001244			TEMP1
2853	017104	006	002		.BYTE 6,2
2854	017106	001246			TEMP2
2855					.EVEN
2856					
2857					;BUFFERS FOR INPUT-OUTPUT
2858					
2859	017110	000000			INBUF: 0
2860		017152			.=. +40
2861	017152	000000			TEMP: 0
2862		017214			.=. +40
2863	017214	000000			MDATA: 0
2864		017256			.=. +40
2865	017256	005015	042522	042503	EM0: .ASCIZ <15><12>/RECEIVER DONE PRIMARY NOT SET! /
	017317	015	042012	052101	EM1: .ASCIZ <15><12>/DATA COMPARISON ERROR... /
	017352	005015	050504	042440	EM2: .ASCIZ <15><12>/DQ ERROR FLAG SET. /
	017400	005015	047516	051040	EM3: .ASCIZ <15><12>/NO RECEIVER INTERRUPTS!!!! /
	017436	005015	054105	042520	DH0: .ASCIZ <15><12>/EXPECTED FOUND RX ADDR. TX ADDR. MASK /
	017513	015	042412	050130	DH1: .ASCIZ <15><12>/EXPECTED RECEIVED /
	017541	015	042012	042521	DH2: .ASCIZ <15><12>/DQERR /

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 CZDQHE.P11 03-DEC-80 08:27 GENERAL UTILITIES (TYPE OUT,ERROR,SCOPE,ETC.)

SEQ 0055

	017556	000005		.EVEN			
2866	017560	006	004	DT0:	5		
2867	017562	001270			.BYTE	6,4	
2868	017564	006	001		SAVR5		
2869	017566	001266			.BYTE	6,1	
2870	017570	006	004		SAVR4		
2871	017572	001260			.BYTE	6,4	
2872	017574	006	004		SAVR1		
2873	017576	001256			.BYTE	6,4	
2874	017600	006	002		SAVR0		
2875	017602	012370			.BYTE	6,2	
2876	017604	000002		DT1:	MASK		
2877	017606	003	006		2		
2878	017610	014302			.BYTE	3,6	
2879	017612	003	002		GDCHAR		
2880	017614	014274			.BYTE	3,2	
2881	017616	000001		DT2:	CHAR		
2882	017620	006	002		1		
2883	017622	014266			.BYTE	6,2	
2884	017624				ERR		
2885	017624	000000		.ERRTAB:	0		
2886	017626	000000			0		
2887	017630	000000			0		
2888	017632	017256			EM0		
2889	017634	000000			0	:HALT	1
2890	017636	000000			0		
2891	017640	017317			EM1		
2892	017642	017436			DH0	:HALT	2
2893	017644	017556			DT0		
2894	017646	017317			EM1		
2895	017650	017513			DH1	:HALT	3
2896	017652	017604			DT1		
2897	017654	017352			EM2		
2898	017656	017541			DH2	:HALT	4
2899	017660	017616			DT2		
2900	017662	017400			EM3		
2901	017664	000000			0	:HALT	5
2902	017666	000000			0		
2903		000001		.END			

[illegible]

SAVNUM	001276	747*	816#	936*	2378*	2380*												
SAVPC	001274	815#	2560*	2725														
SAVRO	001256	808#	2569*	2574	2873													
SAVR1	001260	809#	2568*	2575	2871													
SAVR2	001262	810#	2567*	2576														
SAVR3	001264	811#	2566*	2577														
SAVR4	001266	812#	2565*	2578	2869													
SAVR5	001270	813#	2564*	2579	2867													
SAVSP	001272	814#																
SAV05 =	104406	849#	2666															
SCOPE =	104400	837#	1176	1316	1385	1454	1523	1592	1661	1730	1796	1862	1928	1994				
		2060	2126	2192	2258													
SCOP1 =	104401	839#																
SEQ. =	000014	633#																
SETON	002752	1120#																
SPACNT=	015635	2596*	2617	2620*	2636#													
STACK =	001200	576#	934	1009	2720	2741												
STFLG	001311	825#	937*															
SV05	015326	2564#																
SWR	001200	779#	947*	952	956*	967	970	981	988	994	1013	1021	2408	2415				
		2432	2444	2655	2660	2707	2715	2717	2767									
SWREG	000176	690#	956	967	2767	2783	2790											
SWREGC	016440	2778	2788#															
SW00 =	000001	556#	981															
SW01 =	000002	555#	1021															
SW02 =	000004	554#																
SW03 =	000010	553#																
SW04 =	000020	552#																
SW05 =	000040	551#																
SW06 =	000100	550#																
SW08 =	000400	549#	2715															
SW09 =	001000	548#	2432															
SW10 =	002000	547#	2717															
SW11 =	004000	546#	2415															
SW12 =	010000	545#	2444	2655														
SW13 =	020000	544#	2660															
SW14 =	040000	543#																
SW15 =	100000	542#																
SYNBIT=	100000	615#	712	1109														
SYNC	013052	1111*	1114*	1125	1266	1335	1404	1473	1542	1611	1680	1749	1815	1881				
		1947	2013	2079	2145	2211	2330#											
SYNC. =	000011	630#																
SYNC1	012372	1276*	1345*	1414*	1483*	1552*	1621*	1690*	1756*	1758*	1773	1822*	1824*	1839				
		1888*	1890*	1905	1954*	1956*	1971	2020*	2022*	2037	2086*	2088*	2103	2152*				
		2154*	2169	2218*	2220*	2235	2263#											
SYNC2	012374	1277*	1291	1346*	1360	1415*	1429	1484*	1498	1553*	1567	1622*	1636	1691*				
		1705	1759*	1825*	1891*	1957*	2023*	2089*	2155*	2221*	2264#							
TEMP	017152	2592	2600	2627*	2742*	2743*	2861#											
TEMP1	001244	669*	670*	803#	974*	975	979*	2852										
TEMP2	001246	804#	975*	1162*	1171*	1203*	1266*	1268*	1272*	1273*	1275*	1276	1277	1278				
		1307*	1308*	1309	1335*	1337*	1341*	1342*	1344*	1345	1346	1347	1376*	1377*				
		1378	1404*	1406*	1410*	1411*	1413*	1414	1415	1416	1445*	1446*	1447	1473*				
		1475*	1479*	1480*	1482*	1483	1484	1485	1514*	1515*	1516	1542*	1544*	1548*				
		1549*	1551*	1552	1553	1554	1583*	1584*	1585	1611*	1613*	1617*	1618*	1620*				
		1621	1622	1623	1652*	1653*	1654	1680*	1682*	1686*	1687*	1689*	1690	1691				
		1692	1721*	1722*	1723	1749*	1751*	1753*	1758	1759	1760	1815*	1817*	1819*				

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 CZDQHE.P11 03-DEC-80 08:27 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0063

DQEND	1#	2349																
DQFRNT	1#	522																
HLT	586#	1173	1181	1206	1236	1301	1313	1370	1382	1439	1451	1508	1520	1577	1589			
	1646	1658	1715	1727	1783	1793	1849	1859	1915	1925	1981	1991	2047	2057	2113			
	2123	2179	2189	2245	2255													
IDENT	1#																	
ORANGE	1#	1035																
TESTA1	1#																	
TESTB1	1#																	
TESTC1	1#																	
TESTD1	1#																	
TESTE1	1#																	
TESTF1	1#																	
TESTH1	1#																	
TESTH2	1#																	
\$BEGIN	1#	1005																
\$BUFFE	1#	2856																
\$CATCH	1#	639																
\$CLRVE	1#	970																
\$CONVR	1#	2581																
\$DQCHR	1090#	1249	1318	1387	1456	1525	1594	1663	1732	1798	1864	1930	1996	2062	2128			
	2194																	
\$EOP	1#	2349																
\$GETFL	1#																	
\$GETPA	1#	1023																
\$HEADE	1#	522																
\$HLT	1#	2651																
\$INSTR	1#	2460																
\$INTNP	1#																	
\$MAINT	1#																	
\$MSG	1#	2797																
\$PARAM	1#	2498																
\$PFAIL	1#	2729																
\$REG	1#	2557																
\$SCOPE	1#	2404																
\$SCOP1	1#	2428																
\$SETFL	1#																	
\$SETVE	1#	641																
\$START	1#	925																
\$SYMB0	1#	539																
\$STRAP	1#	828																
\$TRPDE	1#	837	839	841	843	845	847	849	851	853	855	857	859	861	863			
\$TRPSR	1#	2638																
\$TSTN	1#	1035	1101	1255	1324	1393	1462	1531	1600	1669	1738	1804	1870	1936	2002			
	2068	2134	2200															
\$TYPE	1#	2436																
\$VARIA	1#	768																

. ABS. 017670 000

ERRORS DETECTED: 0

CZDQHE.BIN,CZDQHE.LST/CRF/SOL/NL:TOC=CZDQXX.MAC,CZDQHE.P11
 RUN-TIME: 19 28 2 SECONDS

M 5

CZDQH MACY11 30A(1052) 03-DEC-80 08:29 PAGE 67
CZDQHE.P11 03-DEC-80 08:27 CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0064

RUN-TIME RATIO: 78/50=1.5
CORE USED: 19K (37 PAGES)