

DH11

SPEED SELECT LOGIC
MD-11-DZDHD-C

EP-DZDHD-C-DL-A

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDHD-C-D
PRODUCT NAME: DH11 SPEED SELECTION LOGIC TEST
DATE: JUNE 1976
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: MICHAEL DAVIS

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UNCLASSIFIED

1. ABSTRACT

THE DH11 SPEED SELECTION LOGIC TEST VERIFIES THAT THE SPEED SELECTION FUNCTIONS OF THE LINE PARAMETER REGISTER OPERATE PROPERLY FOR EACH TRANSMITTER AND RECEIVER LINE. TRANSMITTER TIMING IS CHECKED FIRST, AND THEN RECEIVER TIMING IS TESTED. THE PROGRAM USES A RELATIVE TIMING COMPARISON TO DETERMINE IF LINE SPEED SELECTION IS CORRECT.

NOTE: THE EXTERNAL CLOCK FUNCTIONS (SPEED CODES 16 AND 17) ARE NOT TESTED.

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4.3 (CONT'D)

4.3.1.6 TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR FOR THE DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

NOTE: WORDS IN ANGLE BRACKETS, I.E. <CARRIAGE RETURN> MEAN THAT THE TELETYPE KEY WITH THE NAMED FUNCTION SHOULD BE STRUCK

IF AN INCORRECT ADDRESS IS ENTERED, THE PROGRAM WILL TYPE "?" AND WILL REPEAT THE SECOND MESSAGE OF 4.3.1.5
4.3.1.7 THE PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.1.9 TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER OF THE DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL TYPE "?" AND WILL THEN REPEAT THE MESSAGE OF 4.3.1.7
4.3.1.9 THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT IS ABOUT TO START TESTING, AND THEN TESTING WILL BEGIN

4.3.2 PROGRAM RESTART WITH ALL SWITCHES DOWN

4.3.2.1 PERFORM 4.3.1.2 TO 4.3.1.5
4.3.2.2 THE PROGRAM WILL TYPE "DH11 SPEED SELECTION LOGIC TEST" AND WILL THEN CONTINUE AS DESCRIBED IN 4.3.1.9

4.3.3 PROGRAM RESTART WITH SW00=1

4.3.3.1 LOAD ADDRESS 000200
4.3.3.2 SET SW01=1
4.3.3.3 PRESS START
4.3.3.4 THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.1.5 TO 4.3.1.9

4.3.4 PROGRAM RESTART WITH SW01=1

4.3.4.1 LOAD ADDRESS 000200
4.3.4.2 SET SW01=1
4.3.4.3 PRESS START
4.3.4.4 THE PROGRAM WILL TYPE "DH11 SPEED SELECTION LOGIC TEST" AND WILL THEN TYPE "TEST PC-" AND WILL WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD
4.3.4.5 TYPE IN THE ADDRESS OF THE TEST AT WHICH THE PROGRAM IS TO BE STARTED FOLLOWED BY <CARRIAGE RETURN>
4.3.4.6 THE PROGRAM WILL TYPE R TO INDICATE THAT IT HAS STARTED AND WILL START TESTING AT THE SELECTED TEST.

NOTE: CARE MUST BE TAKEN WHEN THIS FEATURE IS USED, SINCE THERE IS NO PROTECTION AGAINST SELECTING AN ADDRESS THAT IS IN THE MIDDLE OF A TEST

NOTE: IF IT IS DESIRED TO LOOP ON THE TEST THAT IS SELECTED SET SW14=1 BEFORE ENTERING THE TEST ADDRESS

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5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

SW15=1, HALT ON ERROR
SW14=1, LOOP ON CURRENT TEST
SW13=1, SUPPRESS ERROR TYPEOUT
SW11=1, INHIBIT ITERATIONS
SW10=1, ESCAPE TO NEXT TEST ON ERROR
SW09=1, FREEZE VARIABLE PARAMETER IN CURRENT TEST
SW01=1, START PROGRAM AT SELECTED TEST
SW00=1, CHANGE PARAMETERS AT PROGRAM RESTART

5.2 SUBROUTINE ABSTRACTS

5.2.1 TRAPCATCHER (LOCATIONS 000000-000776)

THIS ROUTINE IS USED TO INTERCEPT UNEXPECTED INTERRUPTS AND TRAPS. THE AREA FROM 000000-000776 IS LOADED WITH THE FOLLOWING SEQUENCE

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IF AN UNEXPECTED INTERRUPT OR TRAP OCCURS, THE PROGRAM WILL HALT WITH THE PC 2 GREATER THAN THE ADDRESS TO WHICH THE PROGRAM TRAPPED. THE PROCESSOR STACK MAY BE EXAMINED TO DETERMINE WHERE THE PROGRAM WAS WHEN THE TRAP OR INTERRUPT OCCURED.

5.2.2 START (PROGRAM INITIALIZATION)

THIS ROUTINE INITIALIZES ALL PROGRAM FLAGS AND COUNTERS, TYPES THE PROGRAM TITLE MESSAGE, AND INPUTS THE VECTOR AND CONTROL REGISTER ADDRESSES OF THE DHI1 TO BE TESTED.

5.2.3 BEGIN (PROGRAM START AND RESTART)

THIS ROUTINE IS ENTERED IMMEDIATLY AFTER "START" AND EACH TIME A PROGRAM PASS HAS BEEN COMPLETED. THE ROUTINE SETS UP THE PROCESSOR STACK AND STATUS WORD AND THEN TRANSFERS CONTROL TO THE TEST AT WHICH TESTING WILL BEGIN. IF SW01=0 WHEN THIS ROUTINE IS ENTERED TESTING WILL START AT T1 (TEST 1). IF SW01=1 WHEN THIS ROUTINE IS ENTERED, TESTING WILL START AT THE PC ENTERED FROM THE TELETYPE KEYBOARD.

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5.2.4 EOP (END OF PASS)

THIS ROUTINE IS ENTERED ONCE PER PASS AFTER ALL TESTS HAVE BEEN COMPLETED. THIS ROUTINE TYPES THE MAINDEC IDENTIFICATION CODE OF THE PROGRAM, CLEARS ERROR FLAGS AND UPDATES THE PASS COUNT. IF THE PROGRAM WAS LOADED UNDER ACT11 OR DDP, THE ROUTINE CHECKS FOR RETURN TO THE ACT11 OR DDP MONITOR. IF THE PROGRAM IS NOT UNDER MONITOR CONTROL, THE ROUTINE TRANSFERS TO BEGIN.

5.2.5 SCOPER (SCOPE LOOP AND ITERATION HANDLER)

THIS ROUTINE IS ENTERED EACH TIME A TEST IS COMPLETED. THE ROUTINE CHECKS FOR THE FOLLOWING UPON ENTRY
A) IF SW10=1, THE ROUTINE WILL TRANSFER TO THE NEXT TEST IN SEQUENCE, AFTER CLEARING ERROR FLAGS.
B) IF SW11=1, THE ROUTINE WILL TRANSFER TO THE NEXT TEST SEQUENCE, AFTER CLEARING ERROR FLAGS.
C) IF SW14=1, THE ROUTINE WILL LOOP ON THE CURRENT TEST REGARDLESS OF THE ITERATION COUNT.

IF NONE OF THE ABOVE IS TRUE, THE ROUTINE WILL ADD 1 TO THE COUNT OF TEST ITERATIONS, AND COMPARE THIS VALUE TO THE NUMBER OF ITERATIONS THAT SHOULD BE PERFORMED. IF THESE NUMBERS ARE EQUAL, THE ROUTINE WILL TRANSFER TO THE NEXT TEST IN SEQUENCE. IF THE NUMBERS ARE NOT EQUAL, THE TEST CURRENTLY IN PROGRESS WILL BE REPEATED.

5.2.6 SCOP1R (FREEZE ON CURRENT DATA)

THE CALL TO THIS ROUTINE FOLLOWS IMMEDIATELY AFTER THE CALL TO THE ERROR HANDLER IN THOSE TESTS THAT HAVE VARIABLE PARAMETERS. THIS ROUTINE IS ALWAYS ENTERED IN THOSE TESTS, WHETHER OR NOT AN ERROR OCCURS. IF SW09=1, THE ROUTINE WILL TRANSFER CONTROL BACK TO THE TEST AT A POINT WHICH WILL ALLOW REPEATING THE FUNCTION UNDER TEST CONTINUOUSLY WITH THE SAME DATA. IF THIS OPTION IS SELECTED, THE ROUTINE "SCOPER" IS NEVER ENTERED AND ITERATION COUNTS WILL NOT BE UPDATED.

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5.2.7 ERRORS (ERROR HANDLER)

THIS ROUTINE IS ENTERED UPON ERROR DETECTION ONLY.
WITH ALL CONSOLE SWITCHES DOWN, THE ROUTINE PROCEEDS AS FOLLOWS:
A) THE PC OF THE INSTRUCTION THAT CALLED THE ERROR HANDLER
IS ACCESSED THRU THE STACK, AND THEN THE EMT INSTRUCTION
ITSELF IS FETCHED. THE 8 LSB OF THE EMT
INSTRUCTION ARE THE ERROR CODE. THIS CODE IS
USED TO ACCESS A TABLE OF ERROR MESSAGES AND ERROR
DATA STORAGE LOCATIONS.
B) IF THE TEST THAT FAILED DID NOT FAIL PREVIOUSLY
DURING THIS PASS, A COMPLETE ERROR REPORT IS MADE
IF THE TEST THAT FAILED FAILED MOR THAT ONCE DURING
THE CURRENT PASS, ONLY THE DATA RELATING TO THE FAILUER
IS TYPED. IF SW13=1, NO ERROR TYPEOUT IS MADE.
C) THE ROUTINE NOW CHECKS FOR HALT ON ERROR. IF SW15=1
THE PROGRAM WILL HALT WITH THE PC OF THE CALL TO
THE ERROR ROUTINE IN RO. IF SW15=0, THE PROGRAM WILL
NOT HALT, BUT WILL CHECK FOR ESCAPE TO NEXT TEST.
D) IF SW10=0, THE ROUTINE WILL RETURN
TO THE TEST IN PROGRESS. IF SW10=1, THE ROUTINE WILL
ABORT THE CURRENT TEST, AND TRANSFER TO THE NEXT
TEST IN SEQUENCE, THRU THE ROUTINE "SCOPER".

5.2.8 TRPSRV (TRAP DECODE AND DISPATCH)

THIS ROUTINE DECODES THE 8 LSB OF THE TRAP INSTRUCTION
THAT CAUSED TH PROGRAM INTERRUPT, AND TRANSFERS CONTROL
TO THE ROUTINE THRU THE TABLE "TRPTAB" USING THE 8 LSB
OF THE TRAP INSTRUCTION AS AN OFFSET TO THE POINTER TO
THE ROUTINE TO BE ENTERED.

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- 5.3 PROGRAM AND OR OPERATOR ACTION
- 5.3.1 PROGRAM START WITH ALL SWITCHES DOWN
- 5.3.1.1 REFER TO SECTIONS 4.3.1 AND 4.3.2 FOR INITIAL PROGRAM BEHAVIOR.
- 5.3.1.2 AFTER "R" HAS BEEN TYPED BY THE PROGRAM, TEST EXECUTION WILL BEGIN. EACH TEST WILL BE REPEATED A SELECTED NUMBER OF ITERATIONS (SEE LISTING FOR EXACT NUMBER FOR EACH TEST) AND THEN THE PROGRAM WILL PROCEED TO THE NEXT TEST.
- 5.3.1.3 WHEN ALL ITERATIONS HAVE BEEN COMPLETED, THE PROGRAM WILL TYPE "DZDHD" AND THEN RESTART TESTING AT TEST 1 (LOCATION T1 IN THE PROGRAM).
- 5.3.1.4 IF AN ERROR OCCURS, THE PROGRAM WILL TYPE AN APPROPRIATE ERROR MESSAGE, AND THEN CONTINUE THE TEST IN PROGRESS.
- 5.3.2 PROGRAM START WITH SW00=1
THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.1 AND 5.3.1
- 5.3.3 PROGRAM START WITH SW01=1
- 5.3.3.1 REFER TO SECTION 4.3.4 FOR INITIAL PROGRAM BEHAVIOR
- 5.3.3.2 TEST EXECUTION WILL START AT THE ADDRESS SPECIFIED AND WILL CONTINUE AS DESCRIBED IN 5.3.1.2
- 5.3.3.3 AFTER "DZDHD" HAS BEEN TYPED, THE PROGRAM WILL RESUME TESTING AT TEST 1
- 5.3.4 PROGRAM OPERATION WITH SW15=1
SAME AS 5.3.1, EXCEPT THAT IN THE CASE OF AN ERROR, THE PROGRAM WILL HALT AFTER THE ERROR TYPEOUT, AND THE PC+2 OF THE CALL TO THE ERROR ROUTINE WILL BE DISPLAYED IN RO.
- 5.3.5 PROGRAM OPERATION WITH SW13=1
SAME AS 5.3.1 EXCEPT THAT NO ERROR TYPEOUTS WILL OCCUR
- 5.3.6 PROGRAM OPERATION WITH SW11=1
SAME AS 5.3.1 EXCEPT THAT EACH TEST WILL BE REPEATED ONCE ONLY
- 5.3.7 PROGRAM OPERATION WITH SW10=1
SAME AS 5.3.1, EXCEPT THAT IN THE CASE OF AN ERROR THE CURRENT TEST WILL BE ABORTED, AND THE PROGRAM WILL PROCEED TO THE NEXT TEST IN SEQUENCE.

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5. (CONT'D)

5.3.8 PROGRAM OPERATION WITH SW14=1, OR SW09=1

THESE FUNCTIONS ARE NORMALLY USED FOR TROUBLE SHOOTING.
SEE SECTION 6.3 FOR THEIR USE.

6. ERRORS

6.1 ERROR HALTS

THE ERROR MESSAGE FORMAT FOR ALL ERROR TYPEOUTS
IS AS FOLLOWS

```
PC+2  MESSAGE
      HEADER (IF APPLICABLE)
      DATA  (IF APPLICABLE)
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WHERE

PC+2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER + 2
MESSAGE IS AN ASCII MESSAGE DESCRIBING (BRIEFLY) THE FAILURE
HEADER IS A DESCRIPTION OF THE DATA TO FOLLOW
DATA IS OCTAL INFORMATION RELATING TO THE CAUSE OF THE FAILURE
IF THE SAME ERROR OCCURS IN A GIVEN TEST ON THE SAME
PASS, AND IF DATA IS ASSOCIATED WITH THAT ERROR, ONLY
DATA IS TYPE ON SUCCEEDING ERROR TYPEOUTS

IF NO DATA IS ASSOCIATED WITH THE ERROR
THE COMPLETE ERROR MESSAGE IS TYPED.

6.1.1 ERROR DESCRIPTIONS

SEE LISTING FOR DETAILS OF ERRORS

6.2 ERROR RECOVERY

6.2.1 SW15=0

IF THE PROGRAM IS RUN WITH SW15=0, NO OPERATOR ACTION IS
REQUIRED TO CONTINUE TESTING

6.2.2 SW15=1

IF THE PROGRAM IS RUN WITH SW15=1, TO CONTINUE TESTING
AFTER THE PROGRAM HAS HALTED, PRESS THE PROCESSOR
CONSOLE CONTINUE SWITCH

6.2.3 ILLEGAL INTERRUPTS

IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT
SELECTED DURING PROGRAM INITIALIZATION, THE PROGRAM WILL
HALT IN THE TRAPCATCHER. THE ADDRESS AT WHICH
THE PROGRAM HALTS IS 2 GREATER THAN THE ADDRESS
TO WHICH THE INTERRUPT OCCURED. THE PROGRAM MUST BE
RESTARTED AT 200 TO RECOVER FROM THIS ERROR.

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6.3 SCOPE LOOPING

6.3.1 TO SCOPE ON A SPECIFIC TEST, SET SW14=1 AND SW13=1
THIS WILL CAUSE THE PROGRAM TO CONTINUOUSLY LOOP ON THE
SAME TEST, AND WILL CAUSE ALL ERROR TYPEOUTS TO BE INHIBITED

6.3.2 TO SCOPE ON A SPECIFIC VALUE OF A PARAMETER WITHIN
A TEST, SET SW09=1 TO FREEZE THE DATA
(SEE LISTING FOR THOSE TESTS THAT INCORPORATE THIS FEATURE)

6. (CONT'D)

6.3.3 PROGRAM START TO SCOPE LOOP ON SELECTED TEST
PERFORM SECTION 4.3.4 WITH SW14=1

7. RESTRICTIONS

7.1 STARTING
THE DH11 TEST CARD MUST BE INSTALLED

7.2 RUNNING
NONE

8. MISCELLANEOUS

8.1 EXECUTION TIME
THE TIME FOR ONE PASS OF THE PROGRAM (END OF
TYPEOUT OF DZDHD TO END OF TYPEOUT OF DZDHD)
IS GIVEN FOR VARIOUS PROCESSORS IN THE TABLE BELOW

PROCESSOR	TIME
PDP-11/05,10	
PDP-11/20	
PDP-11/40	
PDP-11/45	

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9. PROGRAM DESCRIPTION

TRANSMITTER LINE SPEED SELECTION IS TESTED ON A LINE BY LINE BASIS USING A RELATIVE TIMING TECHNIQUE TO DETERMINE IF SPEED SELECTION FOR A SELECTED LINE IS CORRECT.

THE TEST PROCEEDS AS FOLLOWS:

A SPEED OF 50 BAUD IS SET FOR A SELECTED LINE, AND A COUNT IS RECORDED FROM THE TIME THAT THE BAR BIT IS SET FOR THAT LINE TO THE TIME THAT TRANSMITTER DONE IS SET. THREE CHARACTERS ARE TRANSMITTED. AT THE SAME TIME, A TIMEOUT COUNTER IS STARTED. IF THE TIMEOUT COUNTER DECREMENTS TO 0 BEFORE TRANSMITTER DONE IS RECEIVED, AN ERROR MESSAGE IS REPORTED. IF THE TIMEOUT DOES NOT OCCUR, THE TIME COUNT IS STORED, AND THE NEXT LINE SPEED IS SELECTED. TRANSMISSION IS RESTARTED AND THE TIME COUNT, AND TIMEOUT ARE RESTARTED. WHEN TRANSMITTER DONE IS RECEIVED, THE TIME COUNTS FOR THE CURRENT SPEED AND THE PREVIOUS SPEED ARE COMPARED. IF THE TIME COUNT FOR THE CURRENT SPEED IS GREATER THAN OR EQUAL TO THE COUNT FOR THE PREVIOUS SPEED, A TIMING ERROR HAS OCCURED, SINCE A HIGHER SELECTED BAUD RATE SHOULD MEAN THAT THE NUMBER OF COUNTS RECORDED IS LESS THAN AT A LOWER BAUD RATE. THIS PROCEDURE IS REPEATED FOR ALL SPEED CODES 1-15.

THE NEXT GROUP OF TESTS VERIFIES THAT RECEIVER SPEED SELECTION IS CORRECT, BY USING A RELATIVE TIMING COMPARISON AS DESCRIBED ABOVE. A CHARACTER IS TRANSMITTED AS ABOVE AND THE TIME FROM THE START OF TRANSMISSION TO THE TIME THAT CHARACTER AVAILABLE IS RECEIVED IS RECORDED. ALSO, THE TIMEOUT COUNT IS DECREMENTED. IF THE TIMEOUT COUNTER DECREMENTS TO 0 BEFORE CHARACTER AVAILABLE OCCURS, AN ERROR HAS OCCURED. THE PROCEDURE IS REPEATED AT THE NEXT HIGHEST BAUD RATE AND A COMPARISON IS MADE AS IN THE TRANSMITTER TESTS IF THE TIME COUNT AT THE PRESENT BAUD RATE IS GREATER THAN OR EQUAL TO THE PREVIOUS BAUD RATE, AN ERROR HAS OCCURED.

10. LISTING

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;DH11 SPEED SELECTION LOGIC TEST
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```
;STARTING PROCEDURE
;LOAD PROGRAM
;LOAD ADDRESS 000200
;PRESS START
;PROGRAM WILL TYPE DH11 SPEED SELECTION LOGIC TEST
;PROGRAM WILL TYPE "VECTOR ADDRESS-"
;TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
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DZDHD.C.PFC

```
512 ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>  
513 ;PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"  
514 ;TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER  
515 ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>  
516 ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED  
517 ;AT THE END OF A PASS, PROGRAM WILL TYPE " DZDHD "  
518 ;AND THEN RESUM TESTING
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;SWITCH REGISTER OPTIONS

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520  
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523 100000 SW15=100000 ;=1,HALT ON ERROR  
524 040000 SW14=40000 ;=1,LOOP ON CURRENT TEST  
525 020000 SW13=20000 ;=1,INHIBIT ERROR TYPEOUT  
526 010000 SW12=10000  
527 004000 SW11=4000 ;=1,INHIBIT ITERATIONS  
528 002000 SW10=2000 ;=1,ESCAPE TO NEXT TEST ON ERROR  
529 001000 SW09=1000 ;=1,LOOP WITH CURRENT DATA  
530 000400 SW08=400  
531 000100 SW06=100  
532 000040 SW05=40  
533 000020 SW04=20  
534 000010 SW03=10  
535 000004 SW02=4  
536 000002 SW01=2 ;RESTART PROGRAM AT SELECTED TEST  
537 000001 SW00=1 ;RESELECT VECTOR AND CONTROL REGISTER  
538 ;ADDRESS AFTER PROGRAM RESTART
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;REGISTER DEFINITIONS

000000	R0=%0	; GENERAL REGISTER
000001	R1=%1	; GENERAL REGISTER
000002	R2=%2	; GENERAL REGISTER
000003	R3=%3	; GENERAL REGISTER
000004	R4=%4	; GENERAL REGISTER
000005	R5=%5	; GENERAL REGISTER
000006	SP=%6	; PROCESSOR STACK POINTER
000007	PC=%7	; PROGRAM COUNTER

;LOCATION EQUIVALENCIES

177570	SWR=177570	; CONSOLE SWITCH REGISTER
177570	LIGHTS=177570	; PDP-11/45 DISPLAY REGISTER
177776	PS=177776	; PROCESSOR STATUS WORD
014734	STACK=ENDCOD+200	; START OF PROCESSOR STACK

;INSTRUCTION DEFINITIONS

005746	PUSH1SP=5746	; DECREMENT PROCESSOR STACK 1 WORD
005726	POP1SP=5726	; INCREMENT PROCESSOR STACK 1 WORD
010046	PUSHR0=10046	; SAVE R0 ON STACK
012600	POPPO=12600	; RESTORE R0 FROM STACK
024646	PUSH2SP=24646	; DECREMENT STACK TWICE
022626	POP2SP=22626	; INCREMENT STACK TWICE
	.EQUIV EMT,HLT	; BASIC DEFINITION OF ERROR CALL

100000	BIT15=100000
040000	BIT14=40000
020000	BIT13=20000
010000	BIT12=10000
004000	BIT11=4000
002000	BIT10=2000
001000	BIT09=1000
000400	BIT08=400
000200	BIT07=200
000100	BIT06=100
000040	BIT05=40
000020	BIT04=20
000010	BIT03=10
000004	BIT02=4
000002	BIT01=2
000001	BIT00=1

642	000154	000156	.+2	:UNEXPECTED TRAP TO THIS LOCATION
643	000156	000000	HALT	:EXAMINE STACK TO FIND CAUSE
644	000160	000162	.+2	:UNEXPECTED TRAP TO THIS LOCATION
645	000162	000000	HALT	:EXAMINE STACK TO FIND CAUSE
646	000164	000156	.+2	:UNEXPECTED TRAP TO THIS LOCATION
647	000166	000000	HALT	:EXAMINE STACK TO FIND CAUSE
648	000170	000172	.+2	:UNEXPECTED TRAP TO THIS LOCATION
649	000172	000000	HALT	:EXAMINE STACK TO FIND CAUSE
650	000174	000176	.+2	:UNEXPECTED TRAP TO THIS LOCATION
651	000176	000000	HALT	:EXAMINE STACK TO FIND CAUSE
652	000200	000202	.+2	:UNEXPECTED TRAP TO THIS LOCATION
653	000202	000000	HALT	:EXAMINE STACK TO FIND CAUSE
654	000204	000206	.+2	:UNEXPECTED TRAP TO THIS LOCATION
655	000206	000000	HALT	:EXAMINE STACK TO FIND CAUSE
656	000210	000212	.+2	:UNEXPECTED TRAP TO THIS LOCATION
657	000212	000000	HALT	:EXAMINE STACK TO FIND CAUSE
658	000214	000216	.+2	:UNEXPECTED TRAP TO THIS LOCATION
659	000216	000000	HALT	:EXAMINE STACK TO FIND CAUSE
660	000220	000222	.+2	:UNEXPECTED TRAP TO THIS LOCATION
661	000222	000000	HALT	:EXAMINE STACK TO FIND CAUSE
662	000224	000226	.+2	:UNEXPECTED TRAP TO THIS LOCATION
663	000226	000000	HALT	:EXAMINE STACK TO FIND CAUSE
664	000230	000232	.+2	:UNEXPECTED TRAP TO THIS LOCATION
665	000232	000000	HALT	:EXAMINE STACK TO FIND CAUSE
666	000234	000236	.+2	:UNEXPECTED TRAP TO THIS LOCATION
667	000236	000000	HALT	:EXAMINE STACK TO FIND CAUSE
668	000240	000242	.+2	:UNEXPECTED TRAP TO THIS LOCATION
669	000242	000000	HALT	:EXAMINE STACK TO FIND CAUSE
670	000244	000246	.+2	:UNEXPECTED TRAP TO THIS LOCATION
671	000246	000000	HALT	:EXAMINE STACK TO FIND CAUSE
672	000250	000252	.+2	:UNEXPECTED TRAP TO THIS LOCATION
673	000252	000000	HALT	:EXAMINE STACK TO FIND CAUSE
674	000254	000256	.+2	:UNEXPECTED TRAP TO THIS LOCATION
675	000256	000000	HALT	:EXAMINE STACK TO FIND CAUSE
676	000260	000262	.+2	:UNEXPECTED TRAP TO THIS LOCATION
677	000262	000000	HALT	:EXAMINE STACK TO FIND CAUSE
678	000264	000266	.+2	:UNEXPECTED TRAP TO THIS LOCATION
679	000266	000000	HALT	:EXAMINE STACK TO FIND CAUSE
680	000270	000272	.+2	:UNEXPECTED TRAP TO THIS LOCATION
681	000272	000000	HALT	:EXAMINE STACK TO FIND CAUSE
682	000274	000276	.+2	:UNEXPECTED TRAP TO THIS LOCATION
683	000276	000000	HALT	:EXAMINE STACK TO FIND CAUSE
684	000300	000302	.+2	:UNEXPECTED TRAP TO THIS LOCATION
685	000302	000000	HALT	:EXAMINE STACK TO FIND CAUSE
686	000304	000306	.+2	:UNEXPECTED TRAP TO THIS LOCATION
687	000306	000000	HALT	:EXAMINE STACK TO FIND CAUSE
688	000310	000312	.+2	:UNEXPECTED TRAP TO THIS LOCATION
689	000312	000000	HALT	:EXAMINE STACK TO FIND CAUSE
690	000314	000316	.+2	:UNEXPECTED TRAP TO THIS LOCATION
691	000316	000000	HALT	:EXAMINE STACK TO FIND CAUSE
692	000320	000322	.+2	:UNEXPECTED TRAP TO THIS LOCATION
693	000322	000000	HALT	:EXAMINE STACK TO FIND CAUSE
694	000324	000326	.+2	:UNEXPECTED TRAP TO THIS LOCATION
695	000326	000000	HALT	:EXAMINE STACK TO FIND CAUSE
696	000330	000332	.+2	:UNEXPECTED TRAP TO THIS LOCATION
697	000332	000000	HALT	:EXAMINE STACK TO FIND CAUSE

698	000334	000336	.+2	:UNEXPECTED TRAP TO THIS LOCATION
699	000336	000000	HALT	:EXAMINE STACK TO FIND CAUSE
700	000340	000342	.+2	:UNEXPECTED TRAP TO THIS LOCATION
701	000342	000000	HALT	:EXAMINE STACK TO FIND CAUSE
702	000344	000346	.+2	:UNEXPECTED TRAP TO THIS LOCATION
703	000346	000000	HALT	:EXAMINE STACK TO FIND CAUSE
704	000350	000352	.+2	:UNEXPECTED TRAP TO THIS LOCATION
705	000352	000000	HALT	:EXAMINE STACK TO FIND CAUSE
706	000354	000356	.+2	:UNEXPECTED TRAP TO THIS LOCATION
707	000356	000000	HALT	:EXAMINE STACK TO FIND CAUSE
708	000360	000362	.+2	:UNEXPECTED TRAP TO THIS LOCATION
709	000362	000000	HALT	:EXAMINE STACK TO FIND CAUSE
710	000364	000366	.+2	:UNEXPECTED TRAP TO THIS LOCATION
711	000366	000000	HALT	:EXAMINE STACK TO FIND CAUSE
712	000370	000372	.+2	:UNEXPECTED TRAP TO THIS LOCATION
713	000372	000000	HALT	:EXAMINE STACK TO FIND CAUSE
714	000374	000376	.+2	:UNEXPECTED TRAP TO THIS LOCATION
715	000376	000000	HALT	:EXAMINE STACK TO FIND CAUSE
716	000400	000402	.+2	:UNEXPECTED TRAP TO THIS LOCATION
717	000402	000000	HALT	:EXAMINE STACK TO FIND CAUSE
718	000404	000406	.+2	:UNEXPECTED TRAP TO THIS LOCATION
719	000406	000000	HALT	:EXAMINE STACK TO FIND CAUSE
720	000410	000412	.+2	:UNEXPECTED TRAP TO THIS LOCATION
721	000412	000000	HALT	:EXAMINE STACK TO FIND CAUSE
722	000414	000416	.+2	:UNEXPECTED TRAP TO THIS LOCATION
723	000416	000000	HALT	:EXAMINE STACK TO FIND CAUSE
724	000420	000422	.+2	:UNEXPECTED TRAP TO THIS LOCATION
725	000422	000000	HALT	:EXAMINE STACK TO FIND CAUSE
726	000424	000426	.+2	:UNEXPECTED TRAP TO THIS LOCATION
727	000426	000000	HALT	:EXAMINE STACK TO FIND CAUSE
728	000430	000432	.+2	:UNEXPECTED TRAP TO THIS LOCATION
729	000432	000000	HALT	:EXAMINE STACK TO FIND CAUSE
730	000434	000436	.+2	:UNEXPECTED TRAP TO THIS LOCATION
731	000436	000000	HALT	:EXAMINE STACK TO FIND CAUSE
732	000440	000442	.+2	:UNEXPECTED TRAP TO THIS LOCATION
733	000442	000000	HALT	:EXAMINE STACK TO FIND CAUSE
734	000444	000446	.+2	:UNEXPECTED TRAP TO THIS LOCATION
735	000446	000000	HALT	:EXAMINE STACK TO FIND CAUSE
736	000450	000452	.+2	:UNEXPECTED TRAP TO THIS LOCATION
737	000452	000000	HALT	:EXAMINE STACK TO FIND CAUSE
738	000454	000456	.+2	:UNEXPECTED TRAP TO THIS LOCATION
739	000456	000000	HALT	:EXAMINE STACK TO FIND CAUSE
740	000460	000462	.+2	:UNEXPECTED TRAP TO THIS LOCATION
741	000462	000000	HALT	:EXAMINE STACK TO FIND CAUSE
742	000464	000466	.+2	:UNEXPECTED TRAP TO THIS LOCATION
743	000466	000000	HALT	:EXAMINE STACK TO FIND CAUSE
744	000470	000472	.+2	:UNEXPECTED TRAP TO THIS LOCATION
745	000472	000000	HALT	:EXAMINE STACK TO FIND CAUSE
746	000474	000476	.+2	:UNEXPECTED TRAP TO THIS LOCATION
747	000476	000000	HALT	:EXAMINE STACK TO FIND CAUSE
748	000500	000502	.+2	:UNEXPECTED TRAP TO THIS LOCATION
749	000502	000000	HALT	:EXAMINE STACK TO FIND CAUSE
750	000504	000506	.+2	:UNEXPECTED TRAP TO THIS LOCATION
751	000506	000000	HALT	:EXAMINE STACK TO FIND CAUSE
752	000510	000512	.+2	:UNEXPECTED TRAP TO THIS LOCATION
753	000512	000000	HALT	:EXAMINE STACK TO FIND CAUSE

754	000514	000516	.+2	:UNEXPECTED TRAP TO THIS LOCATION
755	000516	000000	HALT	:EXAMINE STACK TO FIND CAUSE
756	000520	000522	.+2	:UNEXPECTED TRAP TO THIS LOCATION
757	000522	000000	HALT	:EXAMINE STACK TO FIND CAUSE
758	000524	000526	.+2	:UNEXPECTED TRAP TO THIS LOCATION
759	000526	000000	HALT	:EXAMINE STACK TO FIND CAUSE
760	000530	000532	.+2	:UNEXPECTED TRAP TO THIS LOCATION
761	000532	000000	HALT	:EXAMINE STACK TO FIND CAUSE
762	000534	000536	.+2	:UNEXPECTED TRAP TO THIS LOCATION
763	000536	000000	HALT	:EXAMINE STACK TO FIND CAUSE
764	000540	000542	.+2	:UNEXPECTED TRAP TO THIS LOCATION
765	000542	000000	HALT	:EXAMINE STACK TO FIND CAUSE
766	000544	000546	.+2	:UNEXPECTED TRAP TO THIS LOCATION
767	000546	000000	HALT	:EXAMINE STACK TO FIND CAUSE
768	000550	000552	.+2	:UNEXPECTED TRAP TO THIS LOCATION
769	000552	000000	HALT	:EXAMINE STACK TO FIND CAUSE
770	000554	000556	.+2	:UNEXPECTED TRAP TO THIS LOCATION
771	000556	000000	HALT	:EXAMINE STACK TO FIND CAUSE
772	000560	000562	.+2	:UNEXPECTED TRAP TO THIS LOCATION
773	000562	000000	HALT	:EXAMINE STACK TO FIND CAUSE
774	000564	000566	.+2	:UNEXPECTED TRAP TO THIS LOCATION
775	000566	000000	HALT	:EXAMINE STACK TO FIND CAUSE
776	000570	000572	.+2	:UNEXPECTED TRAP TO THIS LOCATION
777	000572	000000	HALT	:EXAMINE STACK TO FIND CAUSE
778	000574	000576	.+2	:UNEXPECTED TRAP TO THIS LOCATION
779	000576	000000	HALT	:EXAMINE STACK TO FIND CAUSE
780	000600	000602	.+2	:UNEXPECTED TRAP TO THIS LOCATION
781	000602	000000	HALT	:EXAMINE STACK TO FIND CAUSE
782	000604	000606	.+2	:UNEXPECTED TRAP TO THIS LOCATION
783	000606	000000	HALT	:EXAMINE STACK TO FIND CAUSE
784	000610	000612	.+2	:UNEXPECTED TRAP TO THIS LOCATION
785	000612	000000	HALT	:EXAMINE STACK TO FIND CAUSE
786	000614	000616	.+2	:UNEXPECTED TRAP TO THIS LOCATION
787	000616	000000	HALT	:EXAMINE STACK TO FIND CAUSE
788	000620	000622	.+2	:UNEXPECTED TRAP TO THIS LOCATION
789	000622	000000	HALT	:EXAMINE STACK TO FIND CAUSE
790	000624	000626	.+2	:UNEXPECTED TRAP TO THIS LOCATION
791	000626	000000	HALT	:EXAMINE STACK TO FIND CAUSE
792	000630	000632	.+2	:UNEXPECTED TRAP TO THIS LOCATION
793	000632	000000	HALT	:EXAMINE STACK TO FIND CAUSE
794	000634	000636	.+2	:UNEXPECTED TRAP TO THIS LOCATION
795	000636	000000	HALT	:EXAMINE STACK TO FIND CAUSE
796	000640	000642	.+2	:UNEXPECTED TRAP TO THIS LOCATION
797	000642	000000	HALT	:EXAMINE STACK TO FIND CAUSE
798	000644	000646	.+2	:UNEXPECTED TRAP TO THIS LOCATION
799	000646	000000	HALT	:EXAMINE STACK TO FIND CAUSE
800	000650	000652	.+2	:UNEXPECTED TRAP TO THIS LOCATION
801	000652	000000	HALT	:EXAMINE STACK TO FIND CAUSE
802	000654	000656	.+2	:UNEXPECTED TRAP TO THIS LOCATION
803	000656	000000	HALT	:EXAMINE STACK TO FIND CAUSE
804	000660	000662	.+2	:UNEXPECTED TRAP TO THIS LOCATION
805	000662	000000	HALT	:EXAMINE STACK TO FIND CAUSE
806	000664	000666	.+2	:UNEXPECTED TRAP TO THIS LOCATION
807	000666	000000	HALT	:EXAMINE STACK TO FIND CAUSE
808	000670	000672	.+2	:UNEXPECTED TRAP TO THIS LOCATION
809	000672	000000	HALT	:EXAMINE STACK TO FIND CAUSE

810	000674	000676	.+2	; UNEXPECTED TRAP TO THIS LOCATION
811	000676	000000	HALT	; EXAMINE STACK TO FIND CAUSE
812	000700	000702	.+2	; UNEXPECTED TRAP TO THIS LOCATION
813	000702	000000	HALT	; EXAMINE STACK TO FIND CAUSE
814	000704	000706	.+2	; UNEXPECTED TRAP TO THIS LOCATION
815	000706	000000	HALT	; EXAMINE STACK TO FIND CAUSE
816	000710	000712	.+2	; UNEXPECTED TRAP TO THIS LOCATION
817	000712	000000	HALT	; EXAMINE STACK TO FIND CAUSE
819	000714	000716	.+2	; UNEXPECTED TRAP TO THIS LOCATION
819	000716	000000	HALT	; EXAMINE STACK TO FIND CAUSE
820	000720	000722	.+2	; UNEXPECTED TRAP TO THIS LOCATION
821	000722	000000	HALT	; EXAMINE STACK TO FIND CAUSE
822	000724	000726	.+2	; UNEXPECTED TRAP TO THIS LOCATION
823	000726	000000	HALT	; EXAMINE STACK TO FIND CAUSE
824	000730	000732	.+2	; UNEXPECTED TRAP TO THIS LOCATION
825	000732	000000	HALT	; EXAMINE STACK TO FIND CAUSE
826	000734	000736	.+2	; UNEXPECTED TRAP TO THIS LOCATION
827	000736	000000	HALT	; EXAMINE STACK TO FIND CAUSE
828	000740	000742	.+2	; UNEXPECTED TRAP TO THIS LOCATION
829	000742	000000	HALT	; EXAMINE STACK TO FIND CAUSE
830	000744	000746	.+2	; UNEXPECTED TRAP TO THIS LOCATION
831	000746	000000	HALT	; EXAMINE STACK TO FIND CAUSE
832	000750	000752	.+2	; UNEXPECTED TRAP TO THIS LOCATION
833	000752	000000	HALT	; EXAMINE STACK TO FIND CAUSE
834	000754	000756	.+2	; UNEXPECTED TRAP TO THIS LOCATION
835	000756	000000	HALT	; EXAMINE STACK TO FIND CAUSE
836	000760	000762	.+2	; UNEXPECTED TRAP TO THIS LOCATION
837	000762	000000	HALT	; EXAMINE STACK TO FIND CAUSE
838	000764	000766	.+2	; UNEXPECTED TRAP TO THIS LOCATION
839	000766	000000	HALT	; EXAMINE STACK TO FIND CAUSE
840	000770	000772	.+2	; UNEXPECTED TRAP TO THIS LOCATION
841	000772	000000	HALT	; EXAMINE STACK TO FIND CAUSE
842	000774	000776	.+2	; UNEXPECTED TRAP TO THIS LOCATION
843	000776	000000	HALT	; EXAMINE STACK TO FIND CAUSE

```

844                                     :STANDARD INTERRUPT VECTORS
845
846
847                                     .=-24
848 000024 013732 PFAIL ;POWER FAIL HANDLER
849 000026 000340 340 ;SERVICE AT LEVEL 7
850 000030 012564 ERRORS ;ERROR HANDLER
851 000032 000340 340 ;SERVICE AT LEVEL 7
852 000034 012766 TRPSRV ;GENERAL HANDLER DISPATCH SERVICE
853 000036 000340 340 ;SERVICE AT LEVEL 7
854                                     .=-200
855 000200 000167 000574 JMP START ;GO TO START OF PROGRAM
856
857
858                                     :DEFINITIONS FOR TRAP SUBROUTINE CALLS
859                                     :POINTERS TO SUBROUTINES CAN BE FOUND STARTING
860                                     :AT LOCATION "TRPTAB"
861
862
863 104400 SCOPE=TRAP+Y ;SCOPE LOOP AND ITERATION HANDLER
864 104401 TYPE=TRAP+Y ;TELETYPE OUTPUT ROUTINE
865 104402 OCTASC=TRAP+Y ;OCTAL TO ASCII CONVERSION
866 104403 INSTR=TRAP+Y ;INPUT ASCII STRING
867 104404 INSTER=TRAP+Y ;STRING INPUT ERROR
868 104405 PARAM=TRAP+Y ;CONVERT STRING TO OCTAL. CHECK LIMITS
869 104406 SAVOSP=TRAP+Y ;SAVE R0-R5, PC
870 104407 RESOS=TRAP+Y ;RESTORE R0-R5
871 104410 SCOPE1=TRAP+Y ;CHECK FOR FREEZE ON CURRENT DATA
  
```


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 DZDHDC.PFC

```

872          001000          . =1000
873
874          ;PROGRAM INITIALIZATION
875          ;LOCK OUT INTERRUPTS
876          ;SET UP PROCESSOR STACK
877          ;SET UP POWER FAIL VECTOR
878          ;CLEAR PROGRAM FLAGS AND COUNTS
879          ;TYPE TITLE MESSAGE
880
881 00100C 012767 000340 176770 START: MOV #340,PS          ;LOCK OUT INTERRUPTS
882 001006 012706 014734          MOV #STACK,SP        ;SET UP PROCESSOR STACK
883 001012 012737 013732 000024 MOV #PFAIL,2#24      ;SET UP POWER FAIL TRAP
884 001020 005067 012670          CLR STFLG           ;CLEAR TEST START FLAG
885 001024 005067 012624          CLR PASCNT         ;CLEAR PASS COUNT
886 001030 005067 012622          CLR ERRCNT        ;CLEAR ERROR COUNT
887 001034 005067 012612          CLR ERRFLG       ;CLEAR ERROR FLAG
888 001040 005067 012606          CLR ERRFLG       ;CLEAR LAST ERROR PC
889 001044 104401 014076          TYPE ,MTITLE      ;TYPE TITLE MESSAGE
890 001050 005767 012636          TST INIFLG       ;CHECK INITIALIZATION FLAG
891 001054 001001          BNE VEC1          ;IF NOT 0, CHECK SWITCHES
892                                     ;FOR REINITIALIZATION
893 001056 000404          BR VEC2
894 001060 032767 000001 176502 VEC1: BIT #SW00,SWR        ;IF SW00=1, GET NEW VECTOR
895 001066 001445          BEQ BEGIN          ;AND CSR
896 001070 012701 000300          VEC2: MOV #300,R1
897 001074 012702 000302          MOV #302,R2
898 001100 012703 000004          MOV #4,R3
899 001104 010211          1$: MOV R2,(R1)        ;RESTORE TRAPCATCHER
900 001106 005012          CLR (R2)          ;IN FLOATING VECTOR AREA
901 001110 060301          ADD R3,R1
902 001112 060302          ADD R3,R2
903 001114 020127 001000          CMP R1,#1000
904 001120 001371          BNE 1$
905 001122 104403          INSTR          ;INPUT ADDRESS OF DEVICE VECTOR
906 001124 014144          MVECTOR        ;MESSAGE "VECTOR ADDRESS-"
907 001126 104405          PARAM         ;CONVERT STRING TO OCTAL
908 001130 000300          300           ;LOW LIMIT
909 001132 000770          770           ;HIGH LIMIT
910 001134 013642          DHRVEC        ;LOCATIONS TO BE FILLED
911 001136          003          .BYTE          ;NUMBER OF LOCATIONS
912 001137          004          .BYTE          ;LSB MASK
913 001140 104403          INSTR          ;INPUT ADDRESS OF DEVICE CSR
914 001142 014166          MREGAD        ;MESSAGE "CONTROL REGISTER ADDRESS-"
915 001144 104405          PARAM         ;CONVERT STRING TO OCTAL
916 001146 000000          0            ;LOW LIMIT
917 001150 177776          177776       ;HIGH LIMIT
918 001152 013620          DHSCR        ;LOCATIONS TO BE FILLED
919 001154          007          .BYTE          ;NUMBER OF LOCATIONS
920 001155          010          .BYTE          ;LSB MASK
921 001156 016767 012454 012454 MOV DHSSR,DHSLR   ;SET UP ADDRESS OF SILO
922 001164 005267 012450          INC DHSLR       ;STATUS REGISTER HIGH BYTE
923 001170 005767 012516          TST INIFLG     ;IF INITIALIZATION FLAG
924 001174 001002          BNE BEGIN      ;IS CLEARED
925 001176 005167 012510          COM INIFLG     ;SET IT
926
927          ;PROGRAM STAR
  
```

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928                                     :CHECK FOR PROGRAM START AT SELECTED ADDRESS
929
930 001202 012767 000340 176566 BEGIN: MOV #340,PS ;LCS' OUT INTERRUPTS
931 001210 012706 014734 MOV #STACK,SP ;SET UP PROCESSOR STACK
932 001214 032767 000002 176346 BIT #SW01,SWR ;IF SW01=1
933 001222 001410 BEQ 1$ ;GET PC FOR PROGRAM START
934 001224 104403 INSTR ;GET PC
935 001226 014332 MTSTPC ;MESSAGE "TEST PC"
936 001230 104405 PARAM ;CONVERT STRING TO OCTAL
937 001232 000000 0
938 001234 017500 17500
939 001236 000207 RETURN
940 001240 001 .BYTE 1
941 001241 001 .BYTE 1
942 001242 000410 BR 2$
943 001244 012767 001274 012406 1$: MOV #T1,RETURN ;NORMAL START, TEST 1
944 001252 005767 012436 TST STFLG ;IF LOOPING, BYPASS TYPEOUT
945 001256 001004 BNE 3$
946 001260 005167 012430 COM STFLG
947 001264 104401 014326 2$: TYPE MR ;TYPE "R" TO INDICATE START
948 001270 000177 012364 3$: JMP @RETURN ;START TESTING
  
```

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949
950      ; TRANSMITTER LINE SPEED SELECTION TEST
951      ; TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 0
952      ; VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
953      ; VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
954      ; AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
955
956 001274 012767 000340 176474 T1:  MOV    #340,PS      ; DISABLE ALL INTERRUPTS
957 001302 012767 000010 012356      MOV    #10,I,COUNT ; SET UP FOR 10 ITERATIONS
958 001310 012767 001514 012344      MOV    #5$,ESCAPE  ; SET UP TO ESCAPE TO NEXT TEST
959 001316 012767 001352 012340      MOV    #1$,FREEZ1  ; SET UP TO LOOP WITH DATA
960 001324 012705 000000                MOV    #0,R5        ; LINE 0 WILL BE TESTED
961 001330 012700 002000                MOV    #2000,RO     ; CONSTANT FOR SELECTION
962                                ; OF INITIAL (LOWEST) SPEED
963 001334 012701 000015                MOV    #15,R1      ; 15 DIFFERENT SPEEDS WILL BE TESTED
964 001340 012704 000001                MOV    #1,R4       ; BINARY CODE FOR INITIAL SPEED
965 001344 012767 177777 012350      MOV    #-1,TIME1   ; INITIALIZE COMPARISION VALUE
966 001352 012777 004000 012240 1$:  MOV    #BIT11,JDHSCR ; CLEAR INTERFACE
967 001360 010577 012234                MOV    R5,JDHSCR   ; SELECT LINE 0 FOR TESTING
968 001364 005077 012236                CLR    JDHBA       ; CLEAR BUS ADDRESS
969 001370 012777 177775 012232      MOV    #-3,JDHBC   ; SET UP TO TRANSMIT
970                                ; 3 CHARACTERS
971 001376 010077 012222                MOV    RO,JDHLPR   ; SELECT LINE SPEED
972 001402 005067 012315                CLR    TIME2       ; CLEAR TRANSMITTER TIME TIMER
973 001406 005067 012314                CLR    TEMP1       ; SET UP NO CLOCK TIMER
974 001412 012767 000010 012310      MOV    #10,TEMP2
975 001420 012777 000001 012204      MOV    #1,JDHBAR   ; SET BAR BIT FOR LINE 0
976                                ; TO START TRANSMISSIO'
977 001426 005777 012166                TST    JDHSCR      ; WAIT FOR TRANSMITTER
978                                ; TO FINISH
979 001432 100412                BMI    3$
980 001434 005267 012264                INC    TIME2       ; UPDATE TRANSMITTER TIMER
981 001440 005267 012262                INC    TEMP1       ; UPDATE NO CLOCK TIMER
982 001444 001370                BNE    2$
983 001446 005367 012256                DEC    TEMP2
984 001452 001365                BNE    2$
985 001454 104001                HLT    1           ; TRANSMITTER DID NOT FINISH, ERROR
986 001456 000405                BR     4$
987 001460 026767 012240 012234 3$:  CMP    TIME2,TIME1 ; VERIFY THAT TRANSMITTER
988 001466 103401                BLO    4$          ; WAS FASTER AT THIS SELECTED SPEED
989                                ; (NUMBER OF COUNTS IN TIME2
990                                ; LESS THAN TIME1)
991 001470 104002                HLT    2           ; TRANSMITTER TIMING ERROR FOR
992                                ; LINE 0
993 001472 104410                4$:  SCOPE1          ; CHECK FOR FREEZE ON CURRENT DATA
994 001474 016767 012224 012220      MOV    TIME2,TIME1 ; SET UP FOR NEXT COMPARISION
995 001502 005204                INC    R4          ; SELECT NEXT SPEED
996 001504 062700 002000                ADD    #2000,RO
997 001510 005301                DEC    R1
998 001512 001317                BNE    1$
999 001514 104400                5$:  SCOPE          ; CHECK FOR ITERATIONS, LOOP
1000
1001      ; TRANSMITTER LINE SPEED SELECTION TEST
1002      ; TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 1
1003      ; VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1004      ; VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
    
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1005                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1006
1007 001516 012767 000340 176252 T2:  MOV    #340,PS           ;DISABLE ALL INTERRUPTS
1008 001524 012767 000010 012134      MOV    #10,ICOUNT        ;SET UP FOR 10 ITERATIONS
1009 001532 012767 001736 012122      MOV    #5$,ESCAPE       ;SET UP TO ESCAPE TO NEXT TEST
1010 001540 012767 001574 012116      MOV    #1$,FREEZ1      ;SET UP TO LOOP WITH DATA
1011 001546 012705 000001                MOV    #1,R5           ;LINE 1 WILL BE TESTED
1012 001552 012700 002000                MOV    #2000,RO        ;CONSTANT FOR SELECTION
1013                                     ;OF INITIAL (LOWEST) SPEED
1014 001556 012701 000015                MOV    #15,R1         ;15 DIFFERENT SPEEDS WILL BE TESTED
1015 001562 012704 000001                MOV    #1,R4          ;BINARY CODE FOR INITIAL SPEED
1016 001566 012767 177777 012126      MOV    #-1,TIME1       ;INITIALIZE COMPARISION VALUE
1017 001574 012777 004000 012016 1$:  MOV    #BIT11,JDHSCR    ;CLEAR INTERFACE
1018 001602 010577 012012                MOV    R5,JDHSCR       ;SELECT LINE 1 FOR TESTING
1019 001606 005077 012014                CLR    JDHBA           ;CLEAR BUS ADDRESS
1020 001612 012777 177775 012010      MOV    #-3,JDHBC       ;SET UP TO TRANSMIT
1021                                     ;3 CHARACTERS
1022 001620 010077 012000                MOV    RO,JDHLPR       ;SELECT LINE SPEED
1023 001624 005067 012074                CLR    TIME2           ;CLEAR TRANSMITTER TIME TIMER
1024 001630 005067 012072                CLR    TEMP1           ;SET UP NO CLOCK TIMER
1025 001634 012767 000010 012066      MOV    #10,TEMP2
1026 001642 012777 000002 011762      MOV    #2,JDHBAR       ;SET BAR BIT FOR LINE 1
1027                                     ;TO START TRANSMISSION
1028 001650 005777 011744                2$:  TST    JDHSCR       ;WAIT FOR TRANSMITTER
1029                                     ;TO FINISH
1030 001654 100412                BMI    3$
1031 001656 005267 012042                INC    TIME2           ;UPDATE TRANSMITTER TIMER
1032 001662 005267 012040                INC    TEMP1           ;UPDATE NO CLOCK TIMER
1033 001666 001370                BNE    2$
1034 001670 005367 012034                DEC    TEMP2
1035 001674 001365                BNE    2$
1036 001676 104001                HLT    1               ;TRANSMITTER DID NOT FINISH, ERROR
1037 001700 000405                BR     4$
1038 001702 026767 012016 012012 3$:  CMP    TIME2,TIME1     ;VERIFY THAT TRANSMITTER
1039 001710 103401                BLO    4$              ;WAS FASTER AT THIS SELECTED SPEED
1040                                     ;(NUMBER OF COUNTS IN TIME2
1041                                     ;LESS THAN TIME1)
1042 001712 104002                HLT    2               ;TRANSMITTER TIMING ERROR FOR
1043                                     ;LINE 1
1044 001714 104410                4$:  SCOPE1           ;CHECK FOR FREEZE ON CURRENT DATA
1045 001716 016767 012002 011776      MOV    TIME2,TIME1     ;SET UP FOR NEXT COMPARISION
1046 001724 005204                INC    R4              ;SELECT NEXT SPEED
1047 001726 062700 002000                ADD    #2000,RO
1048 001732 005301                DEC    R1
1049 001734 001317                BNE    1$
1050 001736 104400                5$:  SCOPE              ;CHECK FOR ITERATIONS, LOOP
1051
1052                                     ;TRANSMITTER LINE SPEED SELECTION TEST
1053                                     ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 2
1054                                     ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1055                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1056                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1057
1058 001740 012767 000340 176030 T3:  MOV    #340,PS           ;DISABLE ALL INTERRUPTS
1059 001746 012767 000010 011712      MOV    #10,ICOUNT        ;SET UP FOR 10 ITERATIONS
1060 001754 012767 002160 011700      MOV    #5$,ESCAPE       ;SET UP TO ESCAPE TO NEXT TEST

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1061 001762 012767 002016 011674      MOV      #15,FREEZ1      ;SET UP TO LOOP WITH DATA
1062 001770 012705 000002              MOV      #2,R5          ;LINE 2 WILL BE TESTED
1063 001774 012700 002000              MOV      #2000,R0       ;CONSTANT FOR SELECTION
1064                                ;OF INITIAL (LOWEST) SPEED
1065 002000 012701 000015      MCV      #15,R1         ;15 DIFFERENT SPEEDS WILL BE TESTED
1066 002004 012704 000001      MOV      #1,R4          ;BINARY CODE FOR INITIAL SPEED
1067 002010 012767 177777 011704      MOV      #-1,TIME1      ;INITIALIZE COMPARISION VALUE
1068 002016 012777 004000 011574 1$:      MOV      #2111,@DHSCR   ;CLEAR INTERFACE
1069 002024 010577 011570      MOV      R5,@DHSCR     ;SELECT LINE 2 FOR TESTING
1070 002030 005077 011572      CLR      @DHBA         ;CLEAR BUS ADDRESS
1071 002034 012777 177775 011556      MOV      #-3,@DHBC     ;SET UP TO TRANSMIT
1072                                ;3 CHARACTERS
1073 002042 010077 011556      MOV      R0,@DHLPR     ;SELECT LINE SPEED
1074 002046 005067 011652      CLR      TIME2         ;CLEAR TRANSMITTER TIME TIMER
1075 002052 005067 011650      CLR      TEMP1         ;SET UP NO CLOCK TIMER
1076 002056 012767 000010 011644      MOV      #10,TEMP2
1077 002064 012777 000004 011540      MOV      #4,@DHBAR     ;SET BAR BIT FOR LINE 2
1078                                ;TO START TRANSMISSION
1079 002072 005777 011522      2$:      TST      @DHSCR        ;WAIT FOR TRANSMITTER
1080                                ;TO FINISH
1081 002076 100412              BMI      3$
1082 002100 005267 011620      INC      TIME2         ;UPDATE TRANSMITTER TIMER
1083 002104 005267 011616      INC      TEMP1         ;UPDATE NO CLOCK TIMER
1084 002110 001370              BNE      2$
1085 002112 005367 011612      DEC      TEMP2
1086 002116 001365              BNE      2$
1087 002120 104001              HLT      1$            ;TRANSMITTER DID NOT FINISH, ERROR
1088 002122 000405              BR       4$
1089 002124 026767 011574 011570 3$:      CMP      TIME2,TIME1   ;VERIFY THAT TRANSMITTER
1090 002132 103401              BLO     4$            ;WAS FASTER AT THIS SELECTED SPEED
1091                                ;(NUMBER OF COUNTS IN TIME2
1092                                ;LESS THAN TIME1)
1093 002134 104002              HLT      2$            ;TRANSMITTER TIMING ERROR FOR
1094                                ;LINE 2
1095 002136 104410              4$:      SCOPE1   ;CHECK FOR FREEZE ON CURRENT DATA
1096 002140 016767 011560 011554      MOV      TIME2,TIME1   ;SET UP FOR NEXT COMPARISION
1097 002146 005204              INC      R4            ;SELECT NEXT SPEED
1098 002150 062700 002000      ADD      #2000,R0
1099 002154 005301              DEC      R1
1100 002156 001317              BNE     1$
1101 002160 104400              5$:      SCOPE          ;CHECK FOR ITERATIONS, LOOP
1102
1103      ;TRANSMITTER LINE SPEED SELECTION TEST
1104      ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 3
1105      ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1106      ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1107      ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1108
1109 002162 012767 000340 175606 T:      MOV      #340,PS       ;DISABLE ALL INTERRUPTS
1110 002170 012767 000010 011470      MOV      #10,ICCOUNT ;SET UP FOR 10 ITERATIONS
1111 002176 012767 002402 011456      MOV      #5$,ESCAPE    ;SET UP TO ESCAPE TO NEXT TEST
1112 002204 012767 002240 011452      MOV      #1$,FREEZ1    ;SET UP TO LOOP WITH DATA
1113 002212 012705 000003              MOV      #3,R5          ;LINE 3 WILL BE TESTED
1114 002216 012700 002000      MOV      #2000,F0      ;CONSTANT FOR SELECTION
1115                                ;OF INITIAL (LOWEST) SPEED
1116 002222 012701 000015      MOV      #15,R1         ;15 DIFFERENT SPEEDS WILL BE TESTED
    
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1117 002226 012704 000001          MOV    #1,R4          ; BINARY CODE FOR INITIAL SPEED
1118 002232 012767 177777 011462    MOV    #-1,TIME1     ; INITIALIZE COMPARISON VALUE
1119 002240 012777 004000 011352 1$:  MOV    #BIT11,ADHSCR ; CLEAR INTERFACE
1120 002246 010577 011346          MOV    R5,ADHSCR     ; SELECT LINE 3 FOR TESTING
1121 002252 005077 011350          CLR    ADHBA         ; CLEAR BUS ADDRESS
1122 002256 012777 177775 011344    MOV    #-3,ADHBC     ; SET UP TO TRANSMIT
1123                                     ; 3 CHARACTERS
1124 002264 010077 011334          MOV    R0,ADHLPR     ; SELECT LINE SPEED
1125 002270 005067 011430          CLR    TIME2         ; CLEAR TRANSMITTER TIME TIMER
1126 002274 005067 011426          CLR    TEMP1        ; SET UP NO CLOCK TIMER
1127 002300 012767 000010 011422    MOV    #10,TEMP2
1128 002306 012777 000010 011316    MOV    #10,ADHBAR    ; SET BAR BIT FOR LINE 3
1129                                     ; TO START TRANSMISSION
1130 0C2314 005777 011300          2$:  TST    ADHSCR      ; WAIT FOR TRANSMITTER
1131                                     ; TO FINISH
1132 002320 100412          BMI    3$
1133 002322 005267 011376          INC    TIME2         ; UPDATE TRANSMITTER TIMER
1134 002326 005267 011374          INC    TEMP1        ; UPDATE NO CLOCK TIMER
1135 002332 001370          BNE    2$
1136 002334 005367 011370          DEC    TEMP2
1137 002340 001365          BNE    2$
1138 002342 104001          HLT    1             ; TRANSMITTER DID NOT FINISH, ERROR
1139 002344 000405          BR     4$
1140 002346 026767 011352 011346 3$:  CMP    TIME2,TIME1  ; VERIFY THAT TRANSMITTER
1141 002354 103401          BLO    4$            ; WAS FASTER AT THIS SELECTED SPEED
1142                                     ; (NUMBER OF COUNTS IN TIME2
1143                                     ; LESS THAN TIME1)
1144 002356 104002          HLT    2             ; TRANSMITTER TIMING ERROR FOR
1145                                     ; LINE 3
1146 002360 104410          4$:  SCOPE1 ; CHECK FOR FREEZE ON CURRENT DATA
1147 002362 016767 011336 011332    MOV    TIME2,TIME1  ; SET UP FOR NEXT COMPARISON
1148 002370 005204          INC    R4            ; SELECT NEXT SPEED
1149 002372 062700 002000          ADD    #2000,R0
1150 002376 005301          DEC    R1
1151 002400 001317          BNE    1$
1152 002402 104400          5$:  SCOPE          ; CHECK FOR ITERATIONS, LOOP
1153
1154                                     ; TRANSMITTER LINE SPEED SELECTION TEST
1155                                     ; TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 4
1156                                     ; VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1157                                     ; VERIFY THAT THE AMOUNT OF TIME TAKEN IS LESS
1158                                     ; AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEE
1159
1160 002404 012767 000340 175364 7$:  MOV    #340,PS       ; DISABLE ALL INTERRUPTS
1161 002412 012767 000010 011246    MOV    #10,ICOUNT   ; SET UP FOR 10 ITERATIONS
1162 002420 012767 002624 011234    MOV    #5$,ESCAPE   ; SET UP TO ESCAPE TO NEXT TEST
1163 002426 012767 002462 011230    MOV    #1$,FREEZ1   ; SET UP TO LOOP WITH DATA
1164 002434 012705 000004          MOV    #4,R5        ; LINE 4 WILL BE TESTED
1165 002440 012700 002000          MOV    #2000,R0     ; CONSTANT FOR SELECTION
1166                                     ; OF INITIAL (LOWEST) SPEED
1167 0C2444 012701 000015          MOV    #15,R1       ; 15 DIFFERENT SPEEDS WILL BE TESTED
1168 002450 012704 000001          MOV    #1,R4        ; BINARY CODE FOR INITIAL SPEED
1169 002454 012767 177777 011240    MOV    #-1,TIME1     ; INITIALIZE COMPARISON VALUE
1170 002462 012777 004000 011130 1$:  MOV    #BIT11,ADHSCR ; CLEAR INTERFACE
1171 002470 010577 011124          MOV    R5,ADHSCR     ; SELECT LINE 4 FOR TESTING
1172 002474 005077 011126          CLR    ADHBA         ; CLEAR BUS ADDRESS

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1173 002500 012777 177775 011122      MOV      #-3,JDHBC      ;SET UP TO TRANSMIT
1174                                     ;3 CHARACTERS
1175 002506 010077 011112      MOV      RO,JDHLPR    ;SELECT LINE SPEED
1176 002512 005067 011206      CLR      TIME2        ;CLEAR TRANSMITTER TIME TIMER
1177 002516 005067 011204      CLR      TEMP1        ;SET UP NO CLOCK TIMER
1178 002522 012767 000010 011200      MOV      #10,TEMP2
1179 002530 012777 000020 011074      MOV      #20,JDHBAR    ;SET BAR BIT FOR LINE 4
1180                                     ;TO START TRANSMISSION
1181 002536 005777 011056      2$:     TST      JDHSCR    ;WAIT FOR TRANSMITTER
1182                                     ;TO FINISH
1183 002542 100412                                     BMI      3$
1184 002544 005267 011154      INC      TIME2        ;UPDATE TRANSMITTER TIMER
1185 002550 005267 011152      INC      TEMP1        ;UPDATE NO CLOCK TIMER
1186 002554 001370                                     BNE      2$
1187 002556 005367 011146      DEC      TEMP2
1188 002562 001365                                     BNE      2$
1189 002564 104001                                     HLT      1             ;TRANSMITTER DID NOT FINISH, ERROR
1190 002566 000405                                     BR       4$
1191 002570 026767 011130 011124 3$:     CMP      TIME2,TIME1  ;VERIFY THAT TRANSMITTER
1192 002576 103401                                     BLO     4$            ;WAS FASTER AT THIS SELECTED SPEED
1193                                     ;(NUMBER OF COUNTS IN TIME2
1194                                     ;LESS THAN TIME1)
1195 002600 104002                                     HLT      2             ;TRANSMITTER TIMING ERROR FOR
1196                                     ;LINE 4
1197 002602 104410                                     SCOPE1  ;CHECK FOR FREEZE ON CURRENT DATA
1198 002604 016767 011114 011110 4$:     MOV      TIME2,TIME1  ;SET UP FOR NEXT COMPARIION
1199 002612 005204                                     INC      R4            ;SELECT NEXT SPEED
1200 002614 062700 002000      ADD      #2000,R0
1201 002620 005301      DEC      R1
1202 002622 001317      BNE      1$
1203 002624 104400      5$:     SCOPE          ;CHECK FOR ITERATIONS, LOOP
1204
1205                                     ;TRANSMITTER LINE SPEED SELECTION TEST
1206                                     ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 5
1207                                     ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1208                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1209                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1210
1211 002626 012767 000340 175142 T6:     MOV      #340,PS      ;DISABLE ALL INTERRUPTS
1212 002634 012767 000010 011024      MOV      #10,ICOUNT   ;SET UP FOR 10 ITERATIONS
1213 002642 012767 003046 011012      MOV      #5$,ESCAPE   ;SET UP TO ESCAPE TO NEXT TEST
1214 002650 012767 002704 011006      MOV      #1$,FREEZ1   ;SET UP TO LOOP WITH DATA
1215 002656 012705 000005      MOV      #5,R5        ;LINE 5 WILL BE TESTED
1216 002662 012700 002000      MOV      #2000,R0     ;CONSTANT FOR SELECTION
1217                                     ;OF INITIAL (LOWEST) SPEED
1218 002666 012701 000015      MOV      #15,R1       ;15 DIFFERENT SPEEDS WILL BE TESTED
1219 002672 012704 000001      MOV      #1,R4        ;BINARY CODE FOR INITIAL SPEED
1220 002676 012767 177777 011016      MOV      #-1,TIME1    ;INITIALIZE COMPARIION VALUE
1221 002704 012777 004000 010706 1$:     MOV      #BIT11,JDHSCR ;CLEAR INTERFACE
1222 002712 010577 010702      MOV      R5,JDHSCR    ;SELECT LINE 5 FOR TESTING
1223 002716 005077 010704      CLR      JDHBA        ;CLEAR BUS ADDRESS
1224 002722 012777 177775 010700      MOV      #-3,JDHBC    ;SET UP TO TRANSMIT
1225                                     ;3 CHARACTERS
1226 002730 010077 010670      MOV      RO,JDHLPR    ;SELECT LINE SPEED
1227 002734 005067 010764      CLR      TIME2        ;CLEAR TRANSMITTER TIME TIMER
1228 002740 005067 010762      CLR      TEMP1        ;SET UP NO CLOCK TIMER
  
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1229 002744 012767 000010 010756      MOV      #10,TEMP2
1230 002752 012777 000040 010652      MOV      #40,JDHBAR      :SET BAR BIT FOR LINE 5
1231                                     :TO START TRANSMISSION
1232 002760 005777 010634          25:      TST      JDHSCR      :WAIT FOR TRANSMITTER
1233                                     :TO FINISH
1234 002764 100412          BMI      35
1235 002766 005267 010732      INC      TIME2          :UPDATE TRANSMITTER TIMER
1236 002772 005267 010730      INC      TEMP1          :UPDATE NO CLOCK TIMER
1237 002776 001370          BNE      25
1238 003000 005367 010724      DEC      TEMP2
1239 003004 001365          BNE      25
1240 003006 104001          HLT
1241 003010 003405          BR
1242 003012 026767 010706 010702 35:      CMP      TIME2,TIME1    :VERIFY THAT TRANSMITTER
1243 003020 103401          BLO      45              :WAS FASTER AT THIS SELECTED SPEED
1244                                     : (NUMBER OF COUNTS IN TIME2
1245                                     : LESS THAN TIME1)
1246 003022 104002          HLT      2              :TRANSMITTER TIMING ERROR FOR
1247                                     : LINE 5
1248 003024 104410          45:      SCOPE1          :CHECK FOR FREEZE ON CURRENT DATA
1249 003026 016767 010672 01066E      MOV      TIME2,TIME1    :SET UP FOR NEXT COMPARISION
1250 003034 005204          INC      R4              :SELECT NEXT SPEED
1251 003036 062700 002000      ADD      #2000,R0
1252 003042 005301          DEC      R1
1253 003044 001317          BNE      15
1254 003046 104400          55:      SCOPE          :CHECK FOR ITERATIONS. LOOP
1255                                     :
1256                                     : TRANSMITTER LINE SPEED SELECTION TEST
1257                                     : TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 6
1258                                     : VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1259                                     : VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1260                                     : AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1261
1262 003050 012767 000340 174720 17:      MOV      #340,PS
1263 003056 012767 000010 010602      MOV      #10,ICOUNT
1264 003064 012767 003270 010570      MOV      #55,ESCAPE
1265 003072 012767 003126 010564      MOV      #15,FREEZ1
1266 003100 012705 000006      MOV      #6,R5          ;LINE 6 WILL BE TESTED
1267 003104 012700 002000      MOV      #2000,R0
1268                                     :CONSTANT FOR SELECTION
1269 003110 012701 000015      MOV      #15,R1
1270 003114 012704 000001      MOV      #1,R4
1271 003120 012767 177777 010574      MOV      #-1,TIME1
1272 003126 012777 004000 010464 15:      MOV      #BIT11,JDHSCR  :INITIALIZE COMPARISION VALUE
1273 003134 010577 010460      MOV      R5,JDHSCR
1274 003140 005077 010462      CLR      JDHBA
1275 003144 012777 177775 010456      MOV      #-3,JD4BC
1276                                     :CLEAR INTERFACE
1277 003152 010077 010446      MOV      R0,JDHLPR
1278 003156 005067 010542      CLR      TIME2
1279 003162 005067 010540      CLR      TEMP1
1280 003166 012767 000010 010534      MOV      #10,TEMP2
1281 003174 012777 000100 010430      MOV      #100,JDHBAR
1282                                     :SET BAR BIT FOR LINE 6
1283 003202 005777 010412          25:      TST      JDHSCR      :TO START TRANSMISSION
1284                                     :WAIT FOR TRANSMITTER
1285                                     :TO FINISH

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1295 003206 100412 BMI 3$
1296 003210 005267 010510 INC TIME2 ;UPDATE TRANSMITTER TIMER
1297 003214 005267 010506 INC TEMP1 ;UPDATE NO CLOCK TIMER
1298 003220 001370 BNE 2$
1299 003222 005367 010502 DEC TEMP2
1300 003226 001365 BNE 2$
1301 003230 104001 HLT 1 ;TRANSMITTER DID NOT FINISH, ERROR
1302 003232 000405 BR 4$
1303 003234 026767 010464 010460 3$: CMP TIME2,TIME1 ;VERIFY THAT TRANSMITTER
1304 003242 103401 BLO 4$ ;WAS FASTER AT THIS SELECTED SPEED
; (NUMBER OF COUNTS IN TIME2
; LESS THAN TIME1)
1305 003244 104002 HLT 2 ;TRANSMITTER TIMING ERROR FOR
; LINE 6
1306 003246 104410 SCOPE1 4$: ;CHECK FOR FREEZE ON CURRENT DATA
1307 003250 016757 010450 010444 MOV TIME2,TIME1 ;SET UP FOR NEXT COMPARISON
1308 003256 005204 INC R4 ;SELECT NEXT SPEED
1309 003260 062700 002000 ADD #2000,R0
1310 003264 005301 DEC R1
1311 003266 001317 BNE 1$
1312 003270 104400 SCOPE 5$: ;CHECK FOR ITERATIONS, LOOP
;TRANSMITTER LINE SPEED SELECTION TEST
;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 7
;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1313 003272 012767 000340 174476 710: MOV #340,PS ;DISABLE ALL INTERRUPTS
1314 003300 012767 000010 010360 MOV #10,ICOUNT ;SET UP FOR 10 ITERATIONS
1315 003306 012767 002512 010346 MOV #5$,ESCAPE ;SET UP TO ESCAPE TO NEXT TEST
1316 003314 012767 003350 010342 MOV #1$,FREEZE ;SET UP TO LOOP WITH DATA
1317 003322 012705 000007 MOV #7,R5 ;LINE 7 WILL BE TESTED
1318 003326 012700 002000 MOV #2000,R0 ;CONSTANT FOR SELECTION
1319 003332 012701 000015 MOV #15,R1 ;OF INITIAL (LOWEST) SPEED
1320 003336 012704 000001 MOV #1,R4 ;15 DIFFERENT SPEEDS WILL BE TESTED
1321 003342 012767 177777 010352 MOV #-1,TIME1 ;BINARY CODE FOR INITIAL SPEED
1322 003350 012777 004000 010242 1$: MOV #BIT11,JDHSCR ;INITIALIZE COMPARISON VALUE
1323 003356 010577 010236 MOV R5,JDHSCR ;CLEAR INTERFACE
1324 003362 005077 010240 CLR JDHBA ;SELECT LINE 7 FOR TESTING
1325 003366 012777 177775 010234 MOV #-3,JDHBC ;CLEAR BUS ADDRESS
1326 003374 010077 010224 MOV R0,JDHLPR ;SET UP TO TRANSMIT
1327 003400 005067 010320 CLR TIME2 ;3 CHARACTERS
1328 003404 005067 010316 CLR TEMP1 ;SELECT LINE SPEED
1329 003410 012767 000010 010312 MOV #10,TEMP2 ;CLEAR TRANSMITTER TIME TIMER
1330 003416 012777 000200 010206 MOV #200,JDHBAR ;SET UP NO CLOCK TIMER
1331 003424 005777 010170 2$: TST JDHSCR ;SET BAR BIT FOR LINE 7
1332 003430 100412 BMI 3$ ;TO START TRANSMISSION
1333 003432 005267 010266 INC TIME2 ;WAIT FOR TRANSMITTER
1334 003436 005267 010264 INC TEMP1 ;TO FINISH
1335 003442 001370 BNE 2$
1336 003444 005367 010200 DEC TEMP2
;UPDATE TRANSMITTER TIMER
;UPDATE NO CLOCK TIMER

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1341 003450 001365      BNE      25
1342 003452 104001      HLT      1          ;TRANSMITTER DID NOT FINISH, EPROR
1343 003454 000405      BR       45
1344 003456 026767 010242 010236 35:  CMP     TIME2,TIME1 ;VERIFY THAT TRANSMITTER
1345 003464 103401      BLO     45          ;WAS FASTER AT THIS SELECTED SPEED
1346                                     ;NUMBER OF COUNTS IN TIME2
1347                                     ;LESS THAN TIME1)
1348 003466 104002      HLT      2          ;TRANSMITTER TIMING ERROR FOR
1349                                     ;LINE 7
1350 003470 104410 45:  SCOPE1 ;CHECK FOR FREEZE ON CURRENT DATA
1351 003472 016767 010226 010222  MOV     TIME2,TIME1 ;SET UP FOR NEXT COMPARISION
1352 003500 005204      INC     R4          ;SELECT NEXT SPEED
1353 003502 062700 002000  ADD     #2000,R0
1354 003506 005301      DEC     R1
1355 003510 001317      BNE     15
1356 003512 104400 55:  SCOPE ;CHECK FOR ITERATIONS, LOOP
1357
1358                                     ;TRANSMITTER LINE SPEED SELECTION TEST
1359                                     ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 10
1360                                     ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1361                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1362                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1363
1364 003514 012767 000340 174254 T11: MOV     #340,PS ;DISABLE ALL INTERRUPTS
1365 003522 012767 000010 010136  MOV     #10,ICOUNT ;SET UP FOR 10 ITERATIONS
1366 003530 012767 003734 010124  MOV     #55,ESCAPE ;SET UP TO ESCAPE TO NEXT TEST
1367 003536 012767 003572 010120  MOV     #15,FREEZI ;SET UP TO LOOP WITH DATA
1368 003544 012705 000010  MOV     #10,R5 ;LINE 10 WILL BE TESTED
1369 003550 012700 002000  MOV     #2000,R0 ;CONSTANT FOR SELECTION
1370                                     ;OF INITIAL (LOWEST) SPEED
1371 003554 012701 000015  MOV     #15,R1 ;15 DIFFERENT SPEEDS WILL BE TESTED
1372 003560 012704 000001  MOV     #1,R4 ;BINARY CODE FOR INITIAL SPEED
1373 003564 012767 177777 010130  MOV     #-1,TIME1 ;INITIALIZE COMPARISION VALUE
1374 003572 012777 004000 010020 15:  MOV     #BIT11,JDHSCR ;CLEAR INTERFACE
1375 003600 010577 010014  MOV     R5,JDHSCR ;SELECT LINE 10 FOR TESTING
1376 003604 005077 010016  CLR     JDHBA ;CLEAR BUS ADDRESS
1377 003610 012777 177775 010012  MOV     #-3,JDHBC ;SET UP TO TRANSMIT
1378                                     ;3 CHARACTERS
1379 003616 010077 010002  MOV     R0,JDHLPR ;SELECT LINE SPEED
1380 003622 005067 010076  CLR     TIME2 ;CLEAR TRANSMITTER TIME TIMER
1381 003626 005067 010074  CLR     TEMP1 ;SET UP NO CLOCK TIMER
1382 003632 012767 000010 010070  MOV     #10,TEMP2
1383 003640 012777 000400 007764  MOV     #400,JDHBAR ;SET BAR BIT FOR LINE 10
1384                                     ;TO START TRANSMISSION
1385 003646 005777 007746 25:  TST     JDHSCR ;WAIT FOR TRANSMITTER
1386                                     ;TO FINISH
1387 003652 100412  BMI     35
1388 003654 005267 010044  INC     TIME2 ;UPDATE TRANSMITTER TIMER
1389 003660 005267 010042  INC     TEMP1 ;UPDATE NO CLOCK TIMER
1390 003664 001370  BNE     25
1391 003666 005367 010036  DEC     TEMP2
1392 003672 001365  BNE     25
1393 003674 104001  HLT      1          ;TRANSMITTER DID NOT FINISH, ERROR
1394 003676 000405  BR       45
1395 003700 026767 010020 010014 35:  CMP     TIME2,TIME1 ;VERIFY THAT TRANSMITTER
1396 003706 103401  BLO     45          ;WAS FASTER AT THIS SELECTED SPEED

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1453 004136 016767 007562 007556      MOV      TIME2,TIME1      ;SET UP FOR NEXT COMPARISION
1454 004144 005204                INC      R4                ;SELECT NEXT SPEED
1455 004146 062700 002000      ADD      #2000,R0
1456 004152 005301                DEC      R1
1457 004154 001317                BNE     1$
1458 004156 104400                5$:     SCOPE                ;CHECK FOR ITERATIONS, LOOP
1459
1460                ;TRANSMITTER LINE SPEED SELECTION TEST
1461                ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 12
1462                ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1463                ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1464                ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1465
1466 004160 012767 000340 173610 T13:    MOV      #340,PS          ;DISABLE ALL INTERRUPTS
1467 004166 012767 000010 007472    MOV      #10,ICOUNT      ;SET UP FOR 10 ITERATIONS
1468 004174 012767 004400 007460    MOV      #5$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
1469 004202 012767 004236 007454    MOV      #1$,FREEZ1      ;SET UP TO LOOP WITH DATA
1470 004210 012705 000012                MOV      #12,R5          ;LINE 12 WILL BE TESTED
1471 004214 012700 002000                MOV      #2000,R0        ;CONSTANT FOR SELECTION
1472                ;OF INITIAL (LOWEST) SPEED
1473 004220 012701 000015                MOV      #15,R1          ;15 DIFFERENT SPEEDS WILL BE TESTED
1474 004224 012704 000001                MOV      #1,R4           ;BINARY CODE FOR INITIAL SPEED
1475 004230 012767 177777 007464    MOV      #-1,TIME1        ;INITIALIZE COMPARISION VALUE
1476 004236 012777 004000 007354 1$:     MOV      #BIT11,JDHSCR    ;CLEAR INTERFACE
1477 004244 010577 007350                MOV      R5,JDHSCR        ;SELECT LINE 12 FOR TESTING
1478 004250 005077 007352                CLR     JDHBA             ;CLEAR BUS ADDRESS
1479 004254 012777 177775 007346    MOV      #-3,JDHBC        ;SET UP TO TRANSMIT
1480                ;3 CHARACTERS
1481 004262 010077 007336                MOV      R0,JDHLPR        ;SELECT LINE SPEED
1482 004266 005067 007432                CLR     TIME2            ;CLEAR TRANSMITTER TIME TIMER
1483 004272 005067 007430                CLR     TEMP1            ;SET UP NO CLOCK TIMER
1484 004276 012767 000010 007424    MOV      #10,TEMP2
1485 004304 012777 002000 007320    MOV      #2000,JDHBAR     ;SET BAR BIT FOR LINE 12
1486                ;TO START TRANSMISSION
1487 004312 005777 007302                2$:     TST     JDHSCR        ;WAIT FOR TRANSMITTER
1488                ;TO FINISH
1489 004316 100412                BMI     3$
1490 004320 005267 007400                INC     TIME2            ;UPDATE TRANSMITTER TIMER
1491 004324 005267 007376                INC     TEMP1            ;UPDATE NO CLOCK TIMER
1492 004330 001370                BNE     2$
1493 004332 005367 007372                DEC     TEMP2
1494 004336 001365                BNE     2$
1495 004340 104001                HLT     1                ;TRANSMITTER DID NOT FINISH, ERROR
1496 004342 000405                BR      4$
1497 004344 026767 007354 007350 3$:     CMP     TIME2,TIME1      ;VERIFY THAT TRANSMITTER
1498 004352 103401                BLO     4$                ;WAS FASTER AT THIS SELECTED SPEED
1499                ;(NUMBER OF COUNTS IN TIME2
1500                ;LESS THAN TIME1)
1501 004354 104002                HLT     2                ;TRANSMITTER TIMING ERROR FOR
1502                ;LINE 12
1503 004356 104410                4$:     SCOPE1            ;CHECK FOR FREEZE ON CURRENT DATA
1504 004360 016767 007340 007334    MOV      TIME2,TIME1      ;SET UP FOR NEXT COMPARISION
1505 004366 005204                INC     R4                ;SELECT NEXT SPEED
1506 004370 062700 002000      ADD      #2000,R0
1507 004374 005301                DEC     R1
1508 004376 001317                BNE     1$

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1509 004400 104400          SS:  SCOPE                                ;CHECK FOR ITERATIONS, LOOP
1510
1511                      ;TRANSMITTER LINE SPEED SELECTION TEST
1512                      ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 13
1513                      ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1514                      ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1515                      ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1516
1517 004402 012767 000340 173366 T14:  MOV    #340,PS                ;DISABLE ALL INTERRUPTS
1518 004410 012767 000010 007250      MOV    #10,ICOUNT           ;SET UP FOR 10 ITERATIONS
1519 004416 012767 004622 007236      MOV    #5$,ESCAPE         ;SET UP TO ESCAPE TO NEXT TEST
1520 004424 012767 004460 007232      MOV    #1$,FREEZ1        ;SET UP TO LOOP WITH DATA
1521 004432 012705 000013              MOV    #13,R5             ;LINE 13 WILL BE TESTED
1522 004436 012700 002000              MOV    #2000,R0          ;CONSTANT FOR SELECTION
1523                                ;OF INITIAL (LOWEST) SPEED
1524 004442 012701 000015              MOV    #15,R1            ;15 DIFFERENT SPEEDS WILL BE TESTED
1525 004446 012704 000001              MOV    #1,R4             ;BINARY CODE FOR INITIAL SPEED
1526 004452 012767 177777 007242      MOV    #-1,TIME1         ;INITIALIZE COMPARISION VALUE
1527 004460 012777 004000 007132 1$:  MOV    #BIT11,ADHSCR      ;CLEAR INTERFACE
1528 004466 010577 007126              MOV    R5,ADHSCR         ;SELECT LINE 13 FOR TESTING
1529 004472 005077 007130              CLR    ADHBA             ;CLEAR BUS ADDRESS
1530 004476 012777 177775 007124      MOV    #-3,ADHBC        ;SET UP TO TRANSMIT
1531                                ;3 CHARACTERS
1532 004504 010077 007114              MOV    R0,ADHLPR        ;SELECT LINE SPEED
1533 004510 005067 007210              CLR    TIME2             ;CLEAR TRANSMITTER TIME TIMER
1534 004514 005067 007206              CLR    TEMP1            ;SET UP NO CLOCK TIMER
1535 004520 012767 000010 007202      MOV    #10,TEMP2
1536 004526 012777 004000 007076      MOV    #4000,ADHBAR     ;SET BAR BIT FOR LINE 13
1537                                ;TO START TRANSMISSION
1538 004534 005777 007060          2$:  TST    ADHSCR          ;WAIT FOR TRANSMITTER
1539                                ;TO FINISH
1540 004540 100412              BMI    3$
1541 004542 005267 007156              INC    TIME2             ;UPDATE TRANSMITTER TIMER
1542 004546 005267 007154              INC    TEMP1            ;UPDATE NO CLOCK TIMER
1543 004552 001370              BNE    2$
1544 004554 005367 007150              DEC    TEMP2
1545 004560 001365              BNE    2$
1546 004562 104001              HLT    1                 ;TRANSMITTER DID NOT FINISH. ERROR
1547 004564 000405              BR     4$
1548 004566 026767 007132 007126 3$:  CMP    TIME2,TIME1      ;VERIFY THAT TRANSMITTER
1549 004574 103401              BLO    4$                ;WAS FASTER AT THIS SELECTED SPEED
1550                                ;(NUMBER OF COUNTS IN TIME2
1551                                ;LESS THAN TIME1)
1552 004576 104002              HLT    2                 ;TRANSMITTER TIMING ERROR FOR
1553                                ;LINE 13
1554 004600 104410          4$:  SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
1555 004602 016767 007116 007112      MOV    TIME2,TIME1      ;SET UP FOR NEXT COMPARISION
1556 004610 005204              INC    R4                ;SELECT NEXT SPEED
1557 004612 062700 002000              ADD    #2000,R0
1558 004616 005301              DEC    R1
1559 004620 001317              BNE    1$
1560 004622 104400          SS:  SCOPE                                ;CHECK FOR ITERATIONS, LOOP
1561
1562                      ;TRANSMITTER LINE SPEED SELECTION TEST
1563                      ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 14
1564                      ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED

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1565                                     :VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1566                                     :AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1567
1568 004624 012767 000340 173144 T15:  MOV    #340,PS          ;DISABLE ALL INTERRUPTS
1569 004632 012767 000010 007026      MOV    #10,ICOUNT      ;SET UP FOR 10 ITERATIONS
1570 004640 012767 005044 007014      MOV    #5$,ESCAPE     ;SET UP TO ESCAPE TO NEXT TEST
1571 004646 012767 004702 007010      MOV    #1$,FREEZ1     ;SET UP TO LOOP WITH DATA
1572 004654 012705 000014              MOV    #14,R5         ;LINE 14 WILL BE TESTED
1573 004660 012700 002000              MOV    #2000,R0      ;CONSTANT FOR SELECTION
1574                                     ;OF INITIAL (LOWEST) SPEED
1575 004664 012701 000015              MOV    #15,R1        ;15 DIFFERENT SPEEDS WILL BE TESTED
1576 004670 012704 000001              MOV    #1,R4         ;BINARY CODE FOR INITIAL SPEED
1577 004674 012767 177777 007020      MOV    #-1,TIME1     ;INITIALIZE COMPARISION VALUE
1578 004702 012777 004000 006710 1$:  MOV    #BIT11,JDHSCR  ;CLEAR INTERFACE
1579 004710 010577 006704              MOV    R5,JDHSCR     ;SELECT LINE 14 FOR TESTING
1580 004714 005077 006706              CLR    JDHBA         ;CLEAR BUS ADDRESS
1581 004720 012777 177775 006702      MOV    #-3,JDHBC     ;SET UP TO TRANSMIT
1582                                     ;3 CHARACTERS
1583 004726 010077 006672              MOV    R0,JDHLPR     ;SELECT LINE SPEED
1584 004732 005067 006766              CLR    TIME2         ;CLEAR TRANSMITTER TIME TIMER
1585 004736 005067 006764              CLR    TEMP1        ;SET UP NO CLOCK TIMER
1586 004742 012767 000010 006760      MOV    #10,TEMP2
1587 004750 012777 010000 006654      MOV    #10000,JDHBAR ;SET BAR BIT FOR LINE 14
1588                                     ;TO START TRANSMISSION
1589 004756 005777 006636 2$:  TST    JDHSCR        ;WAIT FOR TRANSMITTER
1590                                     ;TO FINISH
1591 004762 100412              BMI    3$
1592 004764 005267 006734              INC    TIME2         ;UPDATE TRANSMITTER TIMER
1593 004770 005267 006732              INC    TEMP1        ;UPDATE NO CLOCK TIMER
1594 004774 001370              BNE    2$
1595 004776 005367 006726              DEC    TEMP2
1596 005002 001365              BNE    2$
1597 005004 104001              HLT    1             ;TRANSMITTER DID NOT FINISH, ERROR
1598 005006 000405              BR     4$
1599 005010 026767 006710 006704 3$:  CMP    TIME2,TIME1  ;VERIFY THAT TRANSMITTER
1600 005016 103401              BLO    4$           ;WAS FASTER AT THIS SELECTED SPEED
1601                                     ;(NUMBER OF COUNTS IN TIME2
1602                                     ;LESS THAN TIME1)
1603 005020 104002              HLT    2             ;TRANSMITTER TIMING ERROR FOR
1604                                     ;LINE 14
1605 005022 104410 4$:  SCOPE1 ;CHECK FOR FREEZE ON CURRENT DATA
1606 005024 016767 006674 006670      MOV    TIME2,TIME1  ;SET UP FOR NEXT COMPARISION
1607 005032 005204              INC    R4           ;SELECT NEXT SPEED
1608 005034 062700 002000              ADD    #2000,R0
1609 005040 005301              DEC    R1
1610 005042 001317              BNE    1$
1611 005044 104400 5$:  SCOPE          ;CHECK FOR ITERATIONS, LOOP
1612
1613                                     ;TRANSMITTER LINE SPEED SELECTION TEST
1614                                     ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 15
1615                                     ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1616                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1617                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1618
1619 005046 012767 000340 172722 T16:  MOV    #340,PS          ;DISABLE ALL INTERRUPTS
1620 005054 012767 000010 006604      MOV    #10,ICOUNT      ;SET UP FOR 10 ITERATIONS

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1621	005062	012767	005266	006572		MOV	#5\$, ESCAPE		;SET UP TO ESCAPE TO NEXT TEST
1622	005070	012767	005124	006566		MOV	#1\$, FREEZ1		;SET UP TO LOOP WITH DATA
1623	005076	012705	000015			MOV	#15, R5	;LINE 15	WILL BE TESTED
1624	005102	012700	002000			MOV	#2000, R0		;CONSTANT FOR SELECTION
1625									;OF INITIAL (LOWEST) SPEED
1626	005106	012701	000015			MOV	#15, R1		;15 DIFFERENT SPEEDS WILL BE TESTED
1627	005112	012704	000001			MOV	#1, R4		;BINARY CODE FOR INITIAL SPEED
1628	005116	012767	177777	006576		MOV	#-1, TIME1		;INITIALIZE COMPARISION VALUE
1629	005124	012777	004000	006466	1\$:	MOV	#BIT11, @DHSCR		;CLEAR INTERFACE
1630	005132	010577	006462			MOV	R5, @DHSCR		;SELECT LINE 15 FOR TESTING
1631	005136	005077	006464			CLR	@DHBA		;CLEAR BUS ADDRESS
1632	005142	012777	177775	006460		MOV	#-3, @DHBC		;SET UP TO TRANSMIT
1633									;3 CHARACTERS
1634	005150	010077	006450			MOV	R0, @DHLPR		;SELECT LINE SPEED
1635	005154	005067	006544			CLR	TIME2		;CLEAR TRANSMITTER TIME TIMER
1636	005160	005067	006542			CLR	TEMP1		;SET UP NO CLOCK TIMER
1637	005164	012767	000010	006536		MOV	#10, TEMP2		
1638	005172	012777	020000	006432		MOV	#20000, @DHBAR		;SET BAR BIT FOR LINE 15
1639									;TO START TRANSMISSION
1640	005200	005777	006414		2\$:	TST	@DHSCR		;WAIT FOR TRANSMITTER
1641									;TO FINISH
1642	005204	100412				BMI	3\$		
1643	005206	005267	006512			INC	TIME2		;UPDATE TRANSMITTER TIMER
1644	005212	005267	006510			INC	TEMP1		;UPDATE NO CLOCK TIMER
1645	005216	001370				BNE	2\$		
1646	005220	005367	006504			DEC	TEMP2		
1647	005224	001365				BNE	2\$		
1648	005226	104001				HLT	1		;TRANSMITTER DID NOT FINISH, ERROR
1649	005230	000405				BR	4\$		
1650	005232	026767	006466	006462	3\$:	CMP	TIME2, TIME1		;VERIFY THAT TRANSMITTER
1651	005240	103401				BLO	4\$;WAS FASTER AT THIS SELECTED SPEED
1652									; (NUMBER OF COUNTS IN TIME2
1653									; LESS THAN TIME1)
1654	005242	104002				HLT	2		;TRANSMITTER TIMING ERROR FOR
1655									;LINE 15
1656	005244	104410			4\$:	SCOPE1			;CHECK FOR FREEZE ON CURRENT DATA
1657	005246	016767	006452	006446		MOV	TIME2, TIME1		;SET UP FOR NEXT COMPARISION
1658	005254	005204				INC	R4		;SELECT NEXT SPEED
1659	005256	062700	002000			ADD	#2000, R0		
1660	005262	005301				DEC	R1		
1661	005264	001317				BNE	1\$		
1662	005266	104400			5\$:	SCOPE			;CHECK FOR ITERATIONS, LOOP
1663									
1664									
1665									;TRANSMITTER LINE SPEED SELECTION TEST
1666									;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 16
1667									;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1668									;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1669									;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1670	005270	012767	000340	172500	T17:	MOV	#340, PS		;DISABLE ALL INTERRUPTS
1671	005276	012767	000010	006362		MOV	#10, ICOUNT		;SET UP FOR 10 ITERATIONS
1672	005304	012767	005510	006350		MOV	#5\$, ESCAPE		;SET UP TO ESCAPE TO NEXT TEST
1673	005312	012767	005346	006344		MOV	#1\$, FREEZ1		;SET UP TO LOOP WITH DATA
1674	005320	012705	000016			MOV	#16, R5	;LINE 16	WILL BE TESTED
1675	005324	012700	002000			MOV	#2000, R0		;CONSTANT FOR SELECTION
1676									;OF INITIAL (LOWEST) SPEED


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1677 005330 012701 000015      MOV      #15,R1      ;15 DIFFERENT SPEEDS WILL BE TESTED
1678 005334 012704 000001      MOV      #1,R4      ;BINARY CODE FOR INITIAL SPEED
1679 005340 012767 177777 006354      MC      #-1,TIME1   ;INITIALIZE COMPARISION VALUE
1680 005346 012777 004000 006244 1$:      MOV      #BIT11,ADHSCR ;CLEAR INTERFACE
1681 005354 010577 006240      MOV      R5,ADHSCR  ;SELECT LINE 16 FOR TESTING
1682 005360 005077 006242      CLR     ADHBA      ;CLEAR BUS ADDRESS
1683 005364 012777 177775 006236      MOV      #-3,ADHBC  ;SET UP TO TRANSMIT
1684                                     ;3 CHARACTERS
1685 005372 010077 006226      MOV      R0,ADHLPR  ;SELECT LINE SPEED
1686 005376 005067 006322      CLR     TIME2      ;CLEAR TRANSMITTER TIME TIMER
1687 005402 005067 006320      CLR     TEMP1      ;SET UP NO CLOCK TIMER
1688 005406 012767 000010 006314      MOV      #10,TEMP2
1689 005414 012777 040000 006210      MOV      #40000,ADHBAR ;SET BAR BIT FOR LINE 16
1690                                     ;TO START TRANSMISSION
1691 005422 005777 006172      2$:      TST     ADH=CR     ;WAIT FOR TRANSMITTER
1692                                     ;TO FINISH
1693 005426 100412      BMI     3$
1694 005430 005267 006270      INC     TIME2      ;UPDATE TRANSMITTER TIMER
1695 005434 005267 006266      INC     TEMP1      ;UPDATE NO CLOCK TIMER
1696 005440 001370      BNE     2$
1697 005442 005367 006262      DEC     TEMP2
1698 005446 001365      BNE     2$
1699 005450 104001      HLT     1          ;TRANSMITTER DID NOT FINISH, ERROR
1700 005452 000405      BR      4$
1701 005454 026767 006244 006240 3$:      CMP     TIME2,TIME1 ;VERIFY THAT TRANSMITTER
1702 005462 103401      BLO     4$        ;WAS FASTER AT THIS SELECTED SPEED
1703                                     ; (NUMBER OF COUNTS IN TIME2
1704                                     ; LESS THAN TIME1)
1705 005464 104002      HLT     2          ;TRANSMITTER TIMING ERROR FOR
1706                                     ; LINE 16
1707 005466 104410      4$:      SCOPE1 ;CHECK FOR FREEZE ON CURRENT DATA
1708 005470 015767 006230 006224      MOV     TIME2,TIME1 ;SET UP FOR NEXT COMPARISION
1709 005476 005204      INC     R4        ;SELECT NEXT SPEED
1710 005500 062700 002000      ADD     #2000,R0
1711 005504 005301      DEC     R1
1712 005506 001317      BNE     1$
1713 005510 104400      5$:      SCOPE          ;CHECK FOR ITERATIONS, LOOP
1714
1715                                     ;TRANSMITTER LINE SPEED SELECTION TEST
1716                                     ;TRANSMIT 3 CHARACTERS AT A SELECTED SPEED ON LINE 17
1717                                     ;VERIFY THAT TRANSMITTER DONE OCCURS AT THE SELECTED SPEED
1718                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1719                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1720
1721 005512 012767 000340 172256 T20:      MOV     #340,PS    ;DISABLE ALL INTERRUPTS
1722 005520 012767 000010 006140      MOV     #10,ICOUNT ;SET UP FOR 10 ITERATIONS
1723 005526 012767 005732 006126      MOV     #5$,ESCAPE ;SET UP TO ESCAPE TO NEXT TEST
1724 005534 012767 005570 006122      MOV     #1$,FREEZ1 ;SET UP TO LOOP WITH DATA
1725 005542 012705 000017      MOV     #17,R5    ;LINE 17 WILL BE TESTED
1726 005546 012700 002000      MOV     #2000,R0  ;CONSTANT FOR SELECTION
1727                                     ;OF INITIAL (LOWEST) SPEED
1728 005552 012701 000015      MOV     #15,R1    ;15 DIFFERENT SPEEDS WILL BE TESTED
1729 005556 012704 000001      MOV     #1,R4     ;BINARY CODE FOR INITIAL SPEED
1730 005562 012767 177777 006132      MOV     #-1,TIME1 ;INITIALIZE COMPARISION VALUE
1731 005570 012777 004000 006022 1$:      MOV     #BIT11,ADHSCR ;CLEAR INTERFACE
1732 005576 010577 006016      MOV     R5,ADHSCR ;SELECT LINE 17 FOR TESTING
    
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1733 005602 005077 006020          CLR    2DH3A          ;CLEAR BUS ADDRESS
1734 005606 012777 177775 006014  MOV    #-3,2DHBC     ;SET UP TO TRANSMIT
1735                                     ;3 CHARACTERS
1736 005614 010077 006004          MOV    R0,2DHLPR     ;SELECT LINE SPEED
1737 005620 005067 006100          CLR    TIME2         ;CLEAR TRANSMITTER TIME TIMER
1738 005624 005067 006076          CLR    TEMP1         ;SET UP NO CLOCK TIMER
1739 005630 012767 000010 006072  MOV    #10,TEMP2
1740 005636 012777 100000 005766  MOV    #100000,2DHBAR ;SET BAR BIT FOR LINE 17
1741                                     ;TO START TRANSMISSION
1742 005644 005777 005750          2$:   TST    2DHSCR     ;WAIT FOR TRANSMITTER
1743                                     ;TO FINISH
1744 005650 100412          BMI    3$
1745 005652 005267 006046          INC    TIME2         ;UPDATE TRANSMITTER TIMER
1746 005656 005267 006044          INC    TEMP1         ;UPDATE NO CLOCK TIMER
1747 005662 001370          BNE    2$
1748 005664 005367 006040          DEC    TEMP2
1749 005670 001365          BNE    2$
1750 005672 104001          HLT    1              ;TRANSMITTER DID NOT FINISH, ERROR
1751 005674 000405          BR     4$
1752 005676 026767 006022 006016  3$:   CMP    TIME2,TIME1  ;VERIFY THAT TRANSMITTER
1753 005704 103401          BLO    4$             ;WAS FASTER AT THIS SELECTED SPEED
1754                                     ;(NUMBER OF COUNTS IN TIME2
1755                                     ;LESS THAN TIME1)
1756 005706 104002          HLT    2              ;TRANSMITTER TIMING ERROR FOR
1757                                     ;LINE 17
1758 005710 104410          4$:   SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
1759 005712 016767 006006 006002  MOV    TIME2,TIME1  ;SET UP FOR NEXT COMPARISION
1760 005720 005204          INC    R4             ;SELECT NEXT SPEED
1761 005722 062700 002000          ADD    #2000,R0
1762 005726 005301          DEC    R1
1763 005730 001317          BNE    1$
1764 005732 104400          5$:   SCOPE          ;CHECK FOR ITERATIONS, LOOP
1765                                     ;RECEIVER LINE SPEED SELECTION TEST
1766                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 0
1767                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
1768                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1769                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1770
1771
1772 005734 012767 000340 172034  T21:  MOV    #340,PS        ;DISABLE ALL INTERRUPTS
1773 005742 012767 000010 005716  MOV    #10,ICOUNT    ;SET UP FOR 10 ITERATIONS
1774 005750 012767 006154 005704  MOV    #5$,ESCAPE    ;SET UP TO ESCAPE TO NEXT TEST
1775 005756 012767 006012 005700  MOV    #1$,FREEZ1    ;SET UP TO LOOP WITH DATA
1776 005764 012705 000000          MOV    #0,R5         ;LINE 0 WILL BE TESTED
1777 005770 012700 002100          MOV    #2100,R0      ;CONSTANT FOR SELECTION
1778                                     ;OF INITIAL (LOWEST) SPEED
1779 005774 012701 000015          MOV    #15,R1        ;15 DIFFERENT SPEEDS WILL BE TESTED
1780 006000 012704 000001          MOV    #1,R4         ;BINARY CODE FOR INITIAL SPEED
1781 006004 012767 177777 005710  MOV    #-1,TIME1     ;INITIALIZE COMPARISION VALUE
1782 006012 012777 004000 005600  1$:   MOV    #BIT11,2DHSCR ;CLEAR INTERFACE
1783 006020 010577 005574          MOV    R5,2DHSCR     ;SELECT LINE 0 FOR TESTING
1784 006024 005077 005576          CLR    2DHBA         ;CLEAR BUS ADDRESS
1785 006030 012777 177777 005572  MOV    #-1,2DHBC     ;SET UP TO TRANSMIT
1786                                     ;1 CHARACTERS
1787 006036 010077 005562          MOV    R0,2DHLPR     ;SELECT LINE SPEED
1788 006042 005067 005656          CLR    TIME2         ;CLEAR RECEIVER TIME TIMER

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1789 006046 005067 005654          CLR      TEMP1          ;SET UP NO CLOCK TIMER
1790 006052 012767 000010 005650    MOV      #10,TEMP2
1791 006060 012777 000001 005544    MOV      #1,ADHBAR      ;SET BAR BIT FOR LINE 0
1792                                     ;TO START TRANSMISSION
1793 006066 105777 005526          2$:     TSTB     ADHSCR    ;WAIT FOR RECEIVER
1794                                     ;TO FINISH
1795 006072 100412                                     BMI      3$
1796 006074 005267 005624          INC      TIME2          ;UPDATE RECEIVER TIMER
1797 006100 005267 005622          INC      TEMP1          ;UPDATE NO CLOCK TIMER
1798 006104 001370                                     BNE      2$
1799 006106 005367 005616          DEC      TEMP2
1800 006112 001365                                     BNE      2$
1801 006114 104001                                     HLT      1              ;RECEIVER DID NOT FINISH, ERROR
1802 006116 000405                                     BR       4$
1803 006120 026767 005600 005574 3$:   CMP      TIME2,TIME1    ;VERIFY THAT RECEIVER
1804 006126 103401                                     BLO      4$            ;WAS FASTER AT THIS SELECTED SPEED
1805                                     ;(NUMBER OF COUNTS IN TIME2
1806                                     ;LESS THAN TIME1)
1807 006130 104002                                     HLT      2              ;RECEIVER TIMING ERROR FOR
1808                                     ;LINE 0
1809 006132 104410                                     4$:     SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
1810 006134 016767 005564 005560    MOV      TIME2,TIME1    ;SET UP FOR NEXT COMPARISION
1811 006142 005204                                     INC      R4             ;SELECT NEXT SPEED
1812 006144 062700 002100          ADD      #2100,R0
1813 006150 005301                                     DEC      R1
1814 006152 001317                                     BNE      1$
1815 006154 104400          5$:     SCOPE          ;CHECK FOR ITERATIONS, LOOP
1816
1817                                     ;RECEIVER LINE SPEED SELECTION TEST
1818                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 1
1819                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
1820                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1821                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1822
1823 006156 012767 000340 171612 T22:  MOV      #340,PS        ;DISABLE ALL INTERRUPTS
1824 006164 012767 000010 005474    MOV      #10,ICOUNT     ;SET UP FOR 10 ITERATIONS
1825 006172 012767 006376 005462    MOV      #5$,ESCAPE     ;SET UP TO ESCAPE TO NEXT TEST
1826 006200 012767 006234 005456    MOV      #1$,FREEZ1     ;SET UP TO LOOP WITH DATA
1827 006206 012705 000001          MOV      #1,R5           ;LINE 1 WILL BE TESTED
1828 006212 012700 002100          MOV      #2100,R0       ;CONSTANT FOR SELECTION
1829                                     ;OF INITIAL (LOWEST) SPEED
1830 006216 012701 000015          MOV      #15,R1         ;15 DIFFERENT SPEEDS WILL BE TESTED
1831 006222 012704 000001          MOV      #1,R4          ;BINARY CODE FOR INITIAL SPEED
1832 006226 012767 177777 005466    MOV      #-1,TIME1      ;INITIALIZE COMPARISION VALUE
1833 006234 012777 004000 005356 1$:   MOV      #BIT11,ADHSCR   ;CLEAR INTERFACE
1834 006242 010577 005252          MOV      R5,ADHSCR      ;SELECT LINE 1 FOR TESTING
1835 006246 005077 005354          CLR      ADHBA          ;CLEAR BUS ADDRESS
1836 006252 012777 177777 005350    MOV      #-1,ADHBC      ;SET UP TO TRANSMIT
1837                                     ;1 CHARACTERS
1838 006260 010077 005340          MOV      R0,ADHLPR      ;SELECT LINE SPEED
1839 006264 005067 005434          CLR      TIME2          ;CLEAR RECEIVER TIME TIMER
1840 006270 005067 005432          CLR      TEMP1          ;SET UP NO CLOCK TIMER
1841 006274 012767 000010 005426    MOV      #10,TEMP2
1842 006302 012777 000002 005322    MOV      #2,ADHBAR      ;SET BAR BIT FOR LINE 1
1843                                     ;TO START TRANSMISSION
1844 006310 105777 005304          2$:     TSTB     ADHSCR    ;WAIT FOR RECEIVER

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M03

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1845                                     ;TO FINISH
1846 006314 100412                     BMI 3$
1847 006316 005267 J05402              INC TIME2
1848 006322 005267 005400              INC TEMP1
1849 006326 001370                     BNE 2$
1850 006330 005367 005374              DEC TEMP2
1851 006334 001365                     BNE 2$
1852 006336 104001                     HLT 1
1853 006340 000405                     BR 4$
1854 006342 026767 005356 005352 3$:  CMP TIME2,TIME1
1855 006350 103401                     BLO 4$
1856
1857
1858 006352 104002                     HLT 2
1859
1860 006354 104410                     4$: SCOPE1
1861 006356 016767 005342 005336      MOV TIME2,TIME1
1862 006364 005204                     INC R4
1863 006366 062700 002100              ADD #2100,R0
1864 006372 005301                     DEC R1
1865 006374 001317                     BNE 1$
1866 006376 104400                     5$: SCOPE
1867
1868                                     ;RECEIVER LINE SPEED SELECTION TEST
1869                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 2
1870                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
1871                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1872                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1873
1874 006400 012767 000340 171370 T23:  MOV #340,PS
1875 006406 012767 000010 005252      MOV #10,ICOUNT
1876 006414 012767 006620 005240      MOV #5$,ESCAPE
1877 006422 012767 006456 005234      MOV #1$,FREEZ1
1878 006430 012705 000002              MOV #2,R5
1879 006434 012700 002100              MOV #2100,R0
1880
1881 006440 012701 000015              MOV #15,R1
1882 006444 012704 000001              MOV #1,R4
1883 006450 012767 177777 005244      MOV #-1,TIME1
1884 006456 012777 004000 005134 1$:  MOV #BIT11,JDHSCR
1885 006464 010577 005130              MOV R5,JDHSCR
1886 006470 005077 005132              CLR JDHBA
1887 006474 012777 177777 005126      MOV #-1,JDHBC
1888
1889 006502 010077 005116              MOV R0,JDHLPR
1890 006506 005067 005212              CLR TIME2
1891 006512 005067 005210              CLR TEMP1
1892 006516 012767 000010 005204      MOV #10,TEMP2
1893 006524 012777 000004 005100      MOV #4,JDHBAR
1894
1895 J06532 105777 005062 2$:          TSTB JDHSCR
1896
1897 006536 100412                     BMI 3$
1898 006540 005267 005160              INC TIME2
1899 006544 005267 005156              INC TEMP1
1900 006550 001370                     BNE 2$

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1901	006552	005367	005152		DEC	TEMP2		
1902	006556	001365			BNE	2\$		
1903	006560	104001			HLT	1		;RECEIVER DID NOT FINISH, ERROR
1904	006562	000405			BR	4\$		
1905	006564	026767	005134	005130	3\$:	CMP	TIME2, TIME1	;VERIFY THAT RECEIVER
1906	006572	103401			BLO	4\$;WAS FASTER AT THIS SELECTED SPEED
1907								; (NUMBER OF COUNTS IN TIME2
1908								; LESS THAN TIME1)
1909	006574	104002			HLT	2		;RECEIVER TIMING ERROR FOR
1910								; LINE 2
1911	006576	104410			4\$:	SCOPE1		;CHECK FOR FREEZE ON CURRENT DATA
1912	006600	016767	005120	005114	MOV	TIME2, TIME1		;SET UP FOR NEXT COMPARISION
1913	006606	005204			INC	R4		;SELECT NEXT SPEED
1914	006610	062700	002100		ADD	#2100, R0		
1915	006614	005301			DEC	R1		
1916	006616	001317			BNE	1\$		
1917	006620	104400			5\$:	SCOPE		;CHECK FOR ITERATIONS, LOOP
1918								
1919								;RECEIVER LINE SPEED SELECTION TEST
1920								;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 3
1921								;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
1922								;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
1923								;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1924								
1925	006622	012767	000340	171146	T24:	MOV	#340, PS	;DISABLE ALL INTERRUPTS
1926	006630	012767	000010	005030	MOV	#10, ICOUNT		;SET UP FOR 10 ITERATIONS
1927	006636	012767	007042	005016	MOV	#5\$, ESCAPE		;SET UP TO ESCAPE TO NEXT TEST
1928	006644	012767	006700	005012	MOV	#1\$, FREEZ1		;SET UP TO LOOP WITH DATA
1929	006652	012705	000003		MOV	#3, R5		;LINE 3 WILL BE TESTED
1930	006656	012700	002100		MOV	#2100, R0		;CONSTANT FOR SELECTION
1931								;OF INITIAL (LOWEST) SPEED
1932	006662	012701	000015		MOV	#15, R1		;15 DIFFERENT SPEEDS WILL BE TESTED
1933	006666	012704	000001		MOV	#1, R4		;BINARY CODE FOR INITIAL SPEED
1934	006672	012767	177777	005022	MOV	#-1, TIME1		;INITIALIZE COMPARISION VALUE
1935	006700	012777	004000	004712	1\$:	MOV	#BIT1!, @DHSCR	;CLEAR INTERFACE
1936	006706	010577	004706		MOV	R5, @DHSCR		;SELECT LINE 3 FOR TESTING
1937	006712	005077	004710		CLR	@DHBA		;CLEAR BUS ADDRESS
1938	006716	012777	177777	004704	MOV	#-1, @DHBC		;SET UP TO TRANSMIT
1939								;1 CHARACTERS
1940	006724	010077	004674		MOV	R0, @DHLPR		;SELECT LINE SPEED
1941	006730	005067	004770		CLR	TIME2		;CLEAR RECEIVER TIME TIMER
1942	006734	005067	004766		CLR	TEMP1		;SET UP NO CLOCK TIMER
1943	006740	012767	000010	004762	MOV	#10, TEMP2		
1944	006746	012777	000010	004656	MOV	#10, @DHBAR		;SET BAR BIT FOR LINE 3
1945								;TO START TRANSMISSION
1946	006754	105777	004640		2\$:	TSTL	@DHSCR	;WAIT FOR RECEIVER
1947								;TO FINISH
1948	006760	100412			BMI	3\$		
1949	006762	005267	004736		INC	TIME2		;UPDATE RECEIVER TIMER
1950	006766	005267	004734		INC	TEMP1		;UPDATE NO CLOCK TIMER
1951	006772	001370			BNE	2\$		
1952	006774	005367	004730		DEC	TEMP2		
1953	007000	001365			BNE	2\$		
1954	007002	104001			HLT	1		;RECEIVER DID NOT FINISH, ERROR
1955	007004	000405			BR	4\$		
1956	007006	026767	004712	004706	3\$:	CMP	TIME2, TIME1	;VERIFY THAT RECEIVER

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1957 007014 103401          BLO      45          ; WAS FASTER AT THIS SELECTED SPEED
1958                                     ; (NUMBER OF COUNTS IN TIME2
1959                                     ; LESS THAN TIME1)
1960 007016 104002          HLT      2          ; RECEIVER TIMING ERROR FOR
1961                                     ; LINE 3
1962 007020 104410          45:     SCOPE!      ; CHECK FOR FREEZE ON CURRENT DATA
1963 007022 016767 004676 004672  MOV      TIME2,TIME1 ; SET UP FOR NEXT COMPARISON
1964 007030 005204          INC      R4          ; SELECT NEXT SPEED
1965 007032 062700 002100  ADD      #2100,R0
1966 007036 005301          DEC      R1
1967 007040 001317          BNE     15
1968 007042 104400          55:     SCOPE          ; CHECK FOR ITERATIONS. LOOP
1969
1970                                     ; RECEIVER LINE SPEED SELECTION TEST
1971                                     ; TRANSMIT 1 CHARACTER AT A SELECTED SPEED ON LINE 4
1972                                     ; VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
1973                                     ; VERIFY THAT THE AMOUNT OF TIME TAKEN IS LESS
1974                                     ; AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
1975
1976 007044 012767 000340 170724 125:     MOV      #340,P5      ; DISABLE ALL INTERRUPTS
1977 007052 012767 000010 004606  MOV      #10,COUNT   ; SET UP FOR 10 ITERATIONS
1978 007060 012767 007264 004574  MOV      #55,ESCAPE  ; SET UP TO ESCAPE TO NEXT TEST
1979 007066 012767 007122 004570  MOV      #15,FREEZE  ; SET UP TO LOOP WITH DATA
1980 007074 012705 000004          MOV      #4,R5       ; LINE 4 WILL BE TESTED
1981 007100 012700 002100  MOV      #2100,R0    ; CONSTANT FOR SELECTION
1982                                     ; OF INITIAL (LOWEST) SPEED
1983 007104 012701 000015  MOV      #5,R1       ; IS DIFFERENT SPEEDS WILL BE TESTED
1984 007110 012704 000001  MOV      #1,R4       ; BINARY CODE FOR INITIAL SPEED
1985 007114 012767 177777 004600  MOV      #-1,TIME1   ; INITIALIZE COMPARISON VALUE
1986 007122 012777 004000 004470 15:     MOV      #BIT11,JDHSCR ; CLEAR INTERFACE
1987 007130 010577 004464  MOV      R5,JDHSCR   ; SELECT LINE 4 FOR TESTING
1988 007134 005077 004466  CLR      JDHBA       ; CLEAR BUS ADDRESS
1989 007140 012777 177777 004462  MOV      #-1,JDH9C   ; SET UP TO TRANSMIT
1990                                     ; 1 CHARACTER
1991 007146 010077 004452  MOV      R0,JDHLPR   ; SELECT LINE SPEED
1992 007152 005067 004546  CLR      TIME2       ; CLEAR RECEIVER TIME TIMER
1993 007156 005067 004544  CLR      TEMP1       ; SET UP NO CLOCK TIMER
1994 007162 012767 000010 004540  MOV      #10,TEMP2
1995 007170 012777 000020 004434  MOV      #20,JDHBAR  ; SET BAR BIT FOR LINE 4
1996                                     ; TO START TRANSMISSION
1997 007176 105777 004416          25:     TSTB      JDHSCR ; WAIT FOR RECEIVER
1998                                     ; TO FINISH
1999
2000 007202 100412          BMI     35
2001 007204 005267 004514          INC     TIME2        ; UPDATE RECEIVER TIMER
2002 007210 005267 004512          INC     TEMP1        ; UPDATE NO CLOCK TIMER
2003 007214 001370          BNE     25
2004 007216 005367 004506          DEC     TEMP2
2005 007222 001365          BNE     25
2006 007224 104001          HLT     1
2007 007226 000405          BR     45
2008 007230 026767 004470 004464 35:     CMP      TIME2,TIME1 ; VERIFY THAT RECEIVER
2009 007236 103401          BLO     45          ; WAS FASTER AT THIS SELECTED SPEED
2010                                     ; (NUMBER OF COUNTS IN TIME2
2011                                     ; LESS THAN TIME1)
2012 007240 104002          HLT     2          ; RECEIVER TIMING ERROR FOR
                                     ; LINE 4

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2013 007242 104410          4$: SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
2014 007244 016767 004454 004450 MOV TIME2,TIME1 ;SET UP FOR NEXT COMPARISION
2015 007252 005204          INC R4          ;SELECT NEXT SPEED
2016 007254 062700 002100 ADD #2100,R0
2017 007260 005301          DEC R1
2018 007262 001317          BNE 1$
2019 007264 104400          5$: SCOPE          ;CHECK FOR ITERATIONS, LOOP
2020
2021          ;RECEIVER LINE SPEED SELECTION TEST
2022          ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 5
2023          ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2024          ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2025          ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2026
2027 007266 012767 000340 170502 T26: MOV #340,FS          ;DISABLE ALL INTERRUPTS
2028 007274 012767 000010 004354 MOV #10,ICOUNT      ;SET UP FOR 10 ITERATIONS
2029 007302 012767 007506 004352 MOV #5$,ESCAPE     ;SET UP TO ESCAPE TO NEXT TEST
2030 007310 012767 007344 004346 MOV #1$,FREEZE1    ;SET UP TO LOOP WITH DATA
2031 007316 012705 000005          MOV #5,R5          ;LINE 5 WILL BE TESTED
2032 007322 012700 002100          MOV #2100,R0      ;CONSTANT FOR SELECTION
2033          ;OF INITIAL (LOWEST) SPEED
2034 007326 012701 000015          MOV #15,R1        ;15 DIFFERENT SPEEDS WILL BE TESTED
2035 007332 012704 000001          MOV #1,R4         ;BINARY CODE FOR INITIAL SPEED
2036 007336 012767 177777 004356 MOV #-1,TIME1      ;INITIALIZE COMPARISION VALUE
2037 007344 012777 004000 004246 1$: MOV #BIT11,2DHSCR ;CLEAR INTERFACE
2038 007352 010577 004242          MOV R5,2DHSCR     ;SELECT LINE 5 FOR TESTING
2039 007356 005077 004244          CLR 2DHBA         ;CLEAR BUS ADDRESS
2040 007362 012777 177777 004240 MOV #-1,2DHBC     ;SET UP TO TRANSMIT
2041          ;1 CHARACTERS
2042 007370 010077 004230          MOV R0,2DHLPR    ;SELECT LINE SPEED
2043 007374 005067 004324          CLR TIME2        ;CLEAR RECEIVER TIME TIMER
2044 007400 005067 004322          CLR TEMP1        ;SET UP NO CLOCK TIMER
2045 007404 012767 000010 004316 MOV #10,TEMP2
2046 007412 012777 000040 004212 MOV #40,2DHBAR    ;SET BAR BIT FOR LINE 5
2047          ;TO START TRANSMISSION
2048 007420 105777 004174          2$: TSTB 2DHSCR    ;WAIT FOR RECEIVER
2049          ;TO FINISH
2050 007424 100412          BMI 3$
2051 007426 005267 004272          INC TIME2        ;UPDATE RECEIVER TIMER
2052 007432 005267 004270          INC TEMP1        ;UPDATE NO CLOCK TIMER
2053 007436 001370          BNE 2$
2054 007440 005367 004264          DEC TEMP2
2055 007444 001365          BNE 2$
2056 007446 104001          HLT !
2057 007450 000405          BR 4$
2058 007452 026767 004246 004242 3$: CMP TIME2,TIME1 ;VERIFY THAT RECEIVER
2059 007460 103401          BLO 4$           ;WAS FASTER AT THIS SELECTED SPEED
2060          ;(NUMBER OF COUNTS IN TIME2
2061          ;LESS THAN TIME1)
2062 007462 104002          HLT 2           ;RECEIVER TIMING ERROR FOR
2063          ;LINE 5
2064 007464 104410          4$: SCOPE1        ;CHECK FOR FREEZE ON CURRENT DATA
2065 007466 016767 004232 004226 MOV TIME2,TIME1 ;SET UP FOR NEXT COMPARISION
2066 007474 005204          INC R4          ;SELECT NEXT SPEED
2067 007476 062700 002100 ADD #2100,R0
2068 007502 005301          DEC R1

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2069 007504 001317          BNE      15
2070 007506 104400          5$:     SCOPE                      ;CHECK FOR ITERATIONS, LOOP
2071
2072          ;RECEIVER LINE SPEED SELECTION TEST
2073          ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 6
2074          ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2075          ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2076          ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2077
2078 007510 012767 000340 170260 T27:  MOV     #340,PS          ;DISABLE ALL INTERRJPTS
2079 007516 012767 000010 004142      MOV     #10,ICOUNT      ;SET UP FOR 10 ITERATIONS
2080 007524 012767 007730 004130      MOV     #55,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
2081 007532 012767 007566 004124      MOV     #15,FREEZ1      ;SET UP TO LOOP WITH DATA
2082 007540 012705 000006          MOV     #6,R5           ;LINE 6 WILL BE TESTED
2083 007544 012700 002100          MOV     #2100,R0        ;CONSTANT FOR SELECTION
2084          ;OF INITIAL (LOWEST) SPEED
2085 007550 012701 000015          MOV     #15,R1          ;15 DIFFERENT SPEEDS WILL BE TESTED
2086 007554 012704 000001          MOV     #1,R4           ;BINARY CODE FOR INITIAL SPEED
2087 007560 012767 177777 004134      MOV     #-1,TIME1       ;INITIALIZE COMPARISION VALJE
2088 007566 012777 004000 004024 1$:  MOV     #BIT11,JDHSCR   ;CLEAR INTERFACE
2089 007574 010577 004020          MOV     R5,JDHSCR       ;SELECT LINE 6 FOR TESTING
2090 007600 005077 004022          CLR     JDHBA           ;CLEAR BUS ADDRESS
2091 007604 012777 177777 004016      MOV     #-1,JDHBC       ;SET UP TO TRANSMIT
2092          ;1 CHARACTERS
2093 007612 010077 004006          MOV     R0,JDHLPR       ;SELECT LINE SPEED
2094 007616 005067 004102          CLR     TIME2           ;CLEAR RECEIVER TIME TIMER
2095 007622 005067 004100          CLR     TEMP1           ;SET UP NO CLOCK TIMER
2096 007626 012767 000010 004074      MOV     #10,TEMP2
2097 007634 012777 000100 003770      MOV     #100,JDHBAR     ;SET BAR BIT FOR LINE 6
2098          ;TO START TRANSMISSION
2099 007642 105777 003752          2$:  TSTB     JDHSCR        ;WAIT FOR RECEIVER
2100          ;TO FINISH
2101 007646 100412          BMI     3$
2102 007650 005267 004050          INC     TIME2           ;UPDATE RECEIVER TIMER
2103 007654 005267 004046          INC     TEMP1           ;UPDATE NO CLOCK TIMER
2104 007660 001370          BNE     2$
2105 007662 005367 004042          DEC     TEMP2
2106 007666 001365          BNE     2$
2107 007670 104001          HLT     1               ;RECEIVER DID NOT FINISH, ERRJR
2108 007672 000405          BR      4$
2109 007674 026767 004024 004020 3$:  CMP     TIME2,TIME1     ;VERIFY THAT RECEIVER
2110 007702 103401          BLO     4$              ;WAS FASTER AT THIS SELECTED SPEED
2111          ;(NUMBER OF COUNTS IN TIME2
2112          ;LESS THAN TIME1)
2113 007704 104002          HLT     2               ;RECEIVER TIMING ERROR FOR
2114          ;LINE 6
2115 007706 104410          4$:  SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
2116 007710 016767 004010 004004      MOV     TIME2,TIME1     ;SET UP FOR NEXT COMPARISION
2117 007716 005204          INC     R4              ;SELECT NEXT SPEED
2118 007720 062700 002100          ADD     #2100,R0
2119 007724 005301          DEC     R1
2120 007726 001317          BNE     1$
2121 007730 104400          5$:  SCOPE                      ;CHECK FOR ITERATIONS, LOOP
2122
2123          ;RECEIVER LINE SPEED SELECTION TEST
2124          ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 7

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E04

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2125                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SFLECTED SPEED
2126                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2127                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2128
2129 007732 012767 000340 170036 T30:  MOV    #340,PS           ;DISABLE ALL INTERRUPTS
2130 007740 012767 000010 003720      MOV    #10,COUNT        ;SET UP FOR 10 ITERATIONS
2131 007746 012767 010152 003706      MOV    #5$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
2132 007754 012767 010010 003702      MOV    #1$,FREEZ1     ;SET UP TO LOOP WITH DATA
2133 007762 012705 000007                MOV    #7,R5           ;LINE 7 WILL BE TESTED
2134 007766 012700 002100                MOV    #2100,RO        ;CONSTANT FOR SELECTION
2135                                     ;OF INITIAL (LOWEST) SPEED
2136 007772 012701 000015                MOV    #15,R1         ;15 DIFFERENT SPEEDS WILL BE TESTED
2137 007776 012704 000001                MOV    #1,R4          ;BINARY CODE FOR INITIAL SPEED
2138 010002 012767 177777 003712      MOV    #-1,TIME1      ;INITIALIZE COMPARISION VALUE
2139 010010 012777 004000 003602 1$:  MOV    #BIT11,ADHSCR   ;CLEAR INTERFACE
2140 010016 010577 003576                MOV    R5,ADHSCR      ;SELECT LINE 7 FOR TESTING
2141 010022 005077 003600                CLR    ADHBA          ;CLEAR BUS ADDRESS
2142 010026 012777 177777 003574      MOV    #-1,ADHBC      ;SET UP TO TRANSMIT
2143                                     ;1 CHARACTERS
2144 010034 010077 003564                MOV    RO,ADHLPR      ;SELECT LINE SPEED
2145 010040 005067 003660                CLR    TIME2          ;CLEAR RECEIVER TIME TIMER
2146 010044 005067 003656                CLR    TEMP1          ;SET UP NO CLOCK TIMER
2147 010050 012767 000010 003652      MOV    #10,TEMP2
2148 010056 012777 000200 003546      MOV    #200,ADHBAR    ;SET BAR BIT FOR LINE 7
2149                                     ;TO START TRANSMISSION
2150 010064 105777 003530                2$:  TSTB   ADHSCR      ;WAIT FOR RECEIVER
2151                                     ;TO FINISH
2152 010070 100412                BMI    3$
2153 010072 005267 003626                INC    TIME2          ;UPDATE RECEIVER TIMER
2154 010076 005267 003624                INC    TEMP1          ;UPDATE NO CLOCK TIMER
2155 010102 001370                BNE    2$
2156 010104 005367 003620                DEC    TEMP2
2157 010110 001365                BNE    2$
2158 010112 104001                HLT    1
2159 010114 000405                BR    4$
2160 010116 026767 003602 003576 3$:  CMP    TIME2,TIME1    ;VERIFY THAT RECEIVER
2161 010124 103401                BLO    4$             ;WAS FASTER AT THIS SELECTED SPEED
2162                                     ; (NUMBER OF COUNTS IN TIME2
2163                                     ; LESS THAN TIME1)
2164 010126 104002                HLT    2             ;RECEIVER TIMING ERROR FOR
2165                                     ;LINE 7
2166 010130 104410                4$:  SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
2167 010132 016767 003566 003562      MOV    TIME2,TIME1    ;SET UP FOR NEXT COMPARISION
2168 010140 005204                INC    R4             ;SELECT NEXT SPEED
2169 010142 005200 002100                ADD    #2100,RO
2170 010146 005301                DEC    R1
2171 010150 001317                BNE    1$
2172 010152 104400                5$:  SCOPE           ;CHECK FOR ITERATIONS. LOOP
2173
2174                                     ;RECEIVER LINE SPEED SELECTION TEST
2175                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 10
2176                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2177                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2178                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2179
2180 010154 012767 000340 167614 T31:  MOV    #340,PS           ;DISABLE ALL INTERRUPTS
  
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2181	010162	012767	000010	003476		MOV	#10,ICOUNT	;SET UP FOR 10 ITERATIONS
2182	010170	012767	010374	003464		MOV	#5\$,ESCAPE	;SET UP TO ESCAPE TO NEXT TEST
2183	010176	012767	010232	003460		MOV	#1\$,FREEZ1	;SET UP TO LOOP WITH DATA
2184	010204	012705	000010			MOV	#10,R5	;LINE 10 WILL BE TESTED
2185	010210	012700	002100			MOV	#2100,RO	;CONSTANT FOR SELECTION
2186								;OF INITIAL (LOWEST) SPEED
2187	010214	012701	000015			MOV	#15,R1	;15 DIFFERENT SPEEDS WILL BE TESTED
2188	010220	012704	000001			MOV	#1,R4	;BINARY CODE FOR INITIAL SPEED
2189	010224	012767	177777	003470		MOV	#-1,TIME1	;INITIALIZE COMPARISON VALUE
2190	010232	012777	004000	003360	1\$:	MOV	#BIT11,ADHSCR	;CLEAR INTERFACE
2191	010240	010577	003354			MOV	R5,ADHSCR	;SELECT LINE 10 FOR TESTING
2192	010244	005077	003356			CLR	ADHBA	;CLEAR BUS ADDRESS
2193	010250	012777	177777	003352		MOV	#-1,ADHBC	;SET UP TO TRANSMIT
2194								;1 CHARACTERS
2195	010256	010077	003342			MOV	RO,ADHLPR	;SELECT LINE SPEED
2196	010262	005067	003436			CLR	TIME2	;CLEAR RECEIVER TIME TIMER
2197	010266	005067	003434			CLR	TEMP1	;SET UP NO CLOCK TIMER
2198	010272	012767	000010	003430		MOV	#10,TEMP2	
2199	010300	012777	000400	003324		MOV	#400,ADHBAR	;SET BAR BIT FOR LINE 10
2200								;TO START TRANSMISSION
2201	010306	105777	003306		2\$:	TSTB	ADHSCR	;WAIT FOR RECEIVER
2202								;TO FINISH
2203	010312	100412				BMI	3\$	
2204	010314	005267	003404			INC	TIME2	;UPDATE RECEIVER TIMER
2205	010320	005267	003402			INC	TEMP1	;UPDATE NO CLOCK TIMER
2206	010324	001370				BNE	2\$	
2207	010326	005367	003376			DEC	TEMP2	
2208	010332	001365				BNE	2\$	
2209	010334	104001				HLT	1	;RECEIVER DID NOT FINISH, ERROR
2210	010336	000405				BR	4\$	
2211	010340	026767	003360	003354	3\$:	CMP	TIME2,TIME1	;VERIFY THAT RECEIVER
2212	010346	103401				BLO	4\$;WAS FASTER AT THIS SELECTED SPEED
2213								; (NUMBER OF COUNTS IN TIME2
2214								; LESS THAN TIME1)
2215	010350	104002				HLT	2	;RECEIVER TIMING ERROR FOR
2216								;LINE 10
2217	010352	104410			4\$:	SCOPE1		;CHECK FOR FREEZE ON CURRENT DATA
2218	010354	016767	003344	003340		MOV	TIME2,TIME1	;SET UP FOR NEXT COMPARISON
2219	010362	005204				INC	R4	;SELECT NEXT SPEED
2220	010364	062700	002100			ADD	#2100,RO	
2221	010370	005301				DEC	R1	
2222	010372	001317				BNE	1\$	
2223	010374	104400			5\$:	SCOPE		;CHECK FOR ITERATIONS, LOOP
2224								
2225								;RECEIVER LINE SPEED SELECTION TEST
2226								;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 11
2227								;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2228								;VERIFY THAT THE AMOUNT OF TIME TAKEN IS LESS
2229								;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2230								
2231	010376	012767	000340	167372	T32:	MOV	#34L	;DISABLE ALL INTERRUPTS
2232	010404	012767	000010	003254		MOV	#10,ICOUNT	;SET UP FOR 10 ITERATIONS
2233	010412	012767	010616	003242		MOV	#5\$,ESCAPE	;SET UP TO ESCAPE TO NEXT TEST
2234	010420	012767	010454	003236		MOV	#1\$,FREEZ1	;SET UP TO LOOP WITH DATA
2235	010426	012705	000011			MOV	#11,R5	;LINE 11 WILL BE TESTED
2236	010432	012700	002100			MOV	#2100,RO	;CONSTANT FOR SELECTION

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2237                                     ;OF INITIAL (LOWEST) SPEED
2238 010436 012701 000015          MOV      #15,R1          ;15 DIFFERENT SPEEDS WILL BE TESTED
2239 010442 012704 000001          MOV      #1,R4          ;BINARY CODE FOR INITIAL SPEED
2240 010446 012767 177777 003246    MOV      #-1,TIME1     ;INITIALIZE COMPARISION VALUE
2241 010454 012777 004000 003136 1$:  MOV      #BIT11,ADHSCR ;CLEAR INTERFACE
2242 010462 010577 003132          MOV      R5,ADHSCR     ;SELECT LINE 11 FOR TESTING
2243 010466 005077 003134          CLR      ADHBA         ;CLEAR BUS ADDRESS
2244 010472 012777 177777 003130    MOV      #-1,ADHBC     ;SET UP TO TRANSMIT
2245                                     ;1 CHARACTERS
2246 010500 010077 003120          MOV      R0,ADHLPR     ;SELECT LINE SPEED
2247 010504 005067 003214          CLR      TIME2        ;CLEAR RECEIVER TIME TIMER
2248 010510 005067 003212          CLR      TEMP1        ;SET UP NO CLOCK TIMER
2249 010514 012767 000010 003206    MOV      #10,TEMP2
2250 010522 012777 001000 003102    MOV      #1000,ADHBAR ;SET BAR BIT FOR LINE 11
2251                                     ;TO START TRANSMISSION
2252 010530 105777 003064          2$:  TSTB      ADHSCR     ;WAIT FOR RECEIVER
2253                                     ;TO FINISH
2254 010534 100412          BMI      3$
2255 010536 005267 003162          INC      TIME2        ;UPDATE RECEIVER TIMER
2256 010542 005267 003160          INC      TEMP1        ;UPDATE NO CLOCK TIMER
2257 010546 001370          BNE      2$
2258 010550 005367 003154          DEC      TEMP2
2259 010554 001365          BNE      2$
2260 010556 104001          HLT      1            ;RECEIVER DID NOT FINISH. ERROR
2261 010560 000405          BR       4$
2262 010562 026767 003136 003132 3$:  CMP      TIME2,TIME1  ;VERIFY THAT RECEIVER
2263 010570 103401          BLO      4$          ;WAS FASTER AT THIS SELECTED SPEED
2264                                     ;(NUMBER OF COUNTS IN TIME2
2265                                     ;LESS THAN TIME1)
2266 010572 104002          HLT      2            ;RECEIVER TIMING ERROR FOR
2267                                     ;LINE 11
2268 010574 104410          4$:  SCOPE1
2269 010576 016767 003122 003116    MOV      TIME2,TIME1  ;CHECK FOR FREEZE ON CURRENT DATA
2270 010604 005204          INC      R4           ;SET UP FOR NEXT COMPARISION
2271 010606 062700 002100          ADD      #2100,R0     ;SELECT NEXT SPEED
2272 010612 005301          DEC      R1
2273 010614 001317          BNE      1$
2274 010616 104400          5$:  SCOPE          ;CHECK FOR ITERATIONS. LOOP
2275
2276                                     ;RECEIVER LINE SPEED SELECTION TEST
2277                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 12
2278                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2279                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2280                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2281
2282 010620 012767 000340 167150 T33:  MOV      #340,PS      ;DISABLE ALL INTERRUPTS
2283 010626 012767 000010 003032    MOV      #10,ICOUNT   ;SET UP FOR 10 ITERATIONS
2284 010634 012767 011040 003020    MOV      #5$,ESCAPE   ;SET UP TO ESCAPE TO NEXT TEST
2285 010642 012767 010676 003014    MOV      #1$,FREEZ1   ;SET UP TO LOOP WITH DATA
2286 010650 012705 000012          MOV      #12,R5       ;LINE 12 WILL BE TESTED
2287 010654 012700 002100          MOV      #2100,R0     ;CONSTANT FOR SELECTION
2288                                     ;OF INITIAL (LOWEST) SPEED
2289 010660 012701 000015          MOV      #15,R1       ;15 DIFFERENT SPEEDS WILL BE TESTED
2290 010664 012704 000001          MOV      #1,R4        ;BINARY CODE FOR INITIAL SPEED
2291 010670 012767 177777 003024    MOV      #-1,TIME1     ;INITIALIZE COMPARISION VALUE
2292 010676 012777 004000 002714 1$:  MOV      #BIT11,ADHSCR ;CLEAR INTERFACE

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2293 010704 010577 002710      MOV      R5,ADHSCR      ;SELECT LINE 12 FOR TESTING
2294 010710 005077 002712      CLR      ADHBA          ;CLEAR BUS ADDRESS
2295 010714 012777 177777 002706  MOV      #-1,ADHBC      ;SET UP TO TRANSMIT
2296                                     ;1 CHARACTERS
2297 010722 010077 002676      MOV      R0,ADHLPR      ;SELECT LINE SPEED
2298 010726 005067 002772      CLR      TIME2          ;CLEAR RECEIVER TIME TIMER
2299 010732 005067 002770      CLR      TEMP1          ;SET UP NO CLOCK TIMER
2300 010736 012767 000010 002764  MOV      #10,TEMP2
2301 010744 012777 002000 002660  MOV      #2000,ADHBAR
2302                                     ;SET BAR BIT FOR LINE 12
2303 010752 105777 002642          2$: TSTB      ADHSCR      ;TO START TRANSMISSION
2304                                     ;WAIT FOR RECEIVER
2305 010756 100412          SMI      3$            ;TO FINISH
2306 010760 005267 002740      INC      TIME2          ;UPDATE RECEIVER TIMER
2307 010764 005267 002736      INC      TEMP1          ;UPDATE NO CLOCK TIMER
2308 010770 001370          BNE      2$
2309 010772 005367 002732      DEC      TEMP2
2310 010776 001365          BNE      2$
2311 011000 104001          HLT      1            ;RECEIVER DID NOT FINISH, ERROR
2312 011002 000405          BR       4$
2313 011004 026767 002714 002710  3$: CMP      TIME2,TIME1  ;VERIFY THAT RECEIVER
2314 011012 103401          BLO      4$            ;WAS FASTER AT THIS SELECTED SPEED
2315                                     ;(NUMBER OF COUNTS IN TIME2
2316                                     ;LESS THAN TIME1)
2317 011014 104002          HLT      2            ;RECEIVER TIMING ERROR FOR
2318                                     ;LINE 12
2319 011016 104410          4$: SCOPE1          ;CHECK FOR FREEZE ON CURRENT DATA
2320 011020 016767 002700 002674  MOV      TIME2,TIME1  ;SET UP FOR NEXT COMPARISION
2321 011026 005204          INC      R4            ;SELECT NEXT SPEED
2322 011030 062700 002100      ADD      #2100,R0
2323 011034 005301          DEC      R1
2324 011036 001317          BNE      1$
2325 011040 104400          5$: SCOPE          ;CHECK FOR ITERATIONS, LOOP
2326
2327                                     ;RECEIVER LINE SPEED SELECTION TEST
2328                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 13
2329                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2330                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2331                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2332
2333 011042 012767 000340 166726  T34: MOV      #340,PS      ;DISABLE ALL INTERRUPTS
2334 011050 012767 000010 002610  MOV      #10,ICOUNT    ;SET UP FOR 10 ITERATIONS
2335 011056 012767 011262 002576  MOV      #5$,ESCAPE    ;SET UP TO ESCAPE TO NEXT TEST
2336 011064 012767 011120 002572  MOV      #1$,FREEZ1    ;SET UP TO LOOP WITH DATA
2337 011072 012705 000013          MOV      #13,R5        ;LINE 13 WILL BE TESTED
2338 011076 012700 002100      MOV      #2100,R0      ;CONSTANT FOR SELECTION
2339                                     ;OF INITIAL (LOWEST) SPEED
2340 011102 012701 000015          MOV      #15,R1        ;15 DIFFERENT SPEEDS WILL BE TESTED
2341 011106 012704 000001          MOV      #1,R4         ;BINARY CODE FOR INITIAL SPEED
2342 011112 012767 177777 002602  MOV      #-1,TIME1     ;INITIALIZE COMPARISION VALUE
2343 011120 012777 004000 002472  1$: MOV      #BIT11,ADHSCR ;CLEAR INTERFACE
2344 011126 010577 002466          MOV      R5,ADHSCR    ;SELECT LINE 13 FOR TESTING
2345 011132 005077 002470          CLR      ADHBA        ;CLEAR BUS ADDRESS
2346 011136 012777 177777 002464  MOV      #-1,ADHBC     ;SET UP TO TRANSMIT
2347                                     ;1 CHARACTERS
2348 011144 010077 002454          MOV      R0,ADHLPR    ;SELECT LINE SPEED

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2405 011416 105777 002176      2$:  TSTB  @DHSCR      ;WAIT FOR RECEIVER
2406                                     ;TO FINISH
2407 011422 100412      BMI  3$
2408 011424 005267 002274      INC  TIME2      ;UPDATE RECEIVER TIMER
2409 011430 005267 002272      INC  TEMP1      ;UPDATE NO CLOCK TIMER
2410 011434 001370      BNE  2$
2411 011436 005367 002266      DEC  TEMP2
2412 011442 001365      BNE  2$
2413 011444 104001      HLT  1          ;RECEIVER DID NOT FINISH, ERROR
2414 011446 000405      BR   4$
2415 011450 026767 002250 002244 3$:  CMP  TIME2,TIME1 ;VERIFY THAT RECEIVER
2416 011456 103401      BLO  4$        ;WAS FASTER AT THIS SELECTED SPEED
2417                                     ;(NUMBER OF COUNTS IN TIME2
2418                                     ;LESS THAN TIME1)
2419 011460 104002      HLT  2          ;RECEIVER TIMING ERROR FOR
2420                                     ;LINE 14
2421 011462 104410      SCOPE1         ;CHECK FOR FREEZE ON CURRENT DATA
2422 011464 016767 002234 002230 4$:  MOV  TIME2,TIME1 ;SET UP FOR NEXT COMPARISION
2423 011472 005204      INC  R4        ;SELECT NEXT SPEED
2424 011474 062700 002100      ADD  #2100,R0
2425 011500 005301      DEC  R1
2426 011502 001317      BNE  1$
2427 011504 104400      5$:  SCOPE        ;CHECK FOR ITERATIONS, LOOP
2428
2429                                     ;RECEIVER LINE SPEED SELECTION TEST
2430                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 15
2431                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2432                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2433                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2434
2435 011506 012767 000340 166262 73E:  MOV  #340,PS    ;DISABLE ALL INTERRUPTS
2436 011514 012767 000010 002'44  MOV  #10,ICOUNT ;SET UP FOR 10 ITERATIONS
2437 011522 012767 011726 002132  MOV  #5$,ESCAPE ;SET UP TO ESCAPE TO NEXT TEST
2438 011530 012767 011564 002126  MOV  #1$,FREEZ1 ;SET UP TO LOOP WITH DATA
2439 011536 012705 000015      MOV  #15,R5    ;LINE 15 WILL BE TESTED
2440 011542 012700 002100      MOV  #2100,R0  ;CONSTANT FOR SELECTION
2441                                     ;OF INITIAL (LOWEST) SPEED
2442 011546 012701 000015      MOV  #15,R1    ;15 DIFFERENT SPEEDS WILL BE TESTED
2443 011552 012704 000001      MOV  #1,R4    ;BINARY CODE FOR INITIAL SPEED
2444 011556 012767 177777 002136  MOV  #-1,TIME1 ;INITIALIZE COMPARISION VALUE
2445 011564 012777 004000 002026 1$:  MOV  #BIT11,@DHSCR ;CLEAR INTERFACE
2446 011572 010577 002022      MOV  R5,@DHSCR ;SELECT LINE 15 FOR TESTING
2447 011576 005077 002024      CLR  @DHBA    ;CLEAR BUS ADDRESS
2448 011602 012777 177777 002020  MOV  #-1,@DHBC ;SET UP TO TRANSMIT
2449                                     ;1 CHARACTERS
2450 011610 010077 002010      MOV  R0,@DHLPR ;SELECT LINE SPEED
2451 011614 005067 002104      CLR  TIME2    ;CLEAR RECEIVER TIME TIMER
2452 011620 005067 002102      CLR  TEMP1    ;SET UP NO CLOCK TIMER
2453 011624 012767 000010 002076  MOV  #10,TEMP2
2454 011632 012777 020000 001772  MOV  #20000,@DHBAR ;SET BAR BIT FOR LINE 15
2455                                     ;TO START TRANSMISSION
2456 011640 105777 001754      2$:  TSTB  @DHSCR  ;WAIT FOR RECEIVER
2457                                     ;TO FINISH
2458 011644 100412      BMI  3$
2459 011646 005267 002052      INC  TIME2    ;UPDATE RECEIVER TIMER
2460 011652 005267 002050      INC  TEMP1    ;UPDATE NO CLOCK TIMER
  
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2461 011656 001370          BNE      2$
2462 011660 005367 002044  DEC      TEMP2
2463 011664 001365          BNE      2$
2464 011666 104001          HLT      1          ;RECEIVER DID NOT FINISH, ERROR
2465 011670 000405          BR       4$
2466 011672 026767 002026 002022 3$:  CMP     TIME2,TIME1 ;VERIFY THAT RECEIVER
2467 011700 103401          BLO     4$          ;WAS FASTER AT THIS SELECTED SPEED
2468                                     ;(NUMBER OF COUNTS IN TIME2
2469                                     ;LESS THAN TIME1)
2470 011702 104002          HLT      2          ;RECEIVER TIMING ERROR FOR
2471                                     ;LINE 15
2472 011704 104410          4$:  SCOPE1 ;CHECK FOR FREEZE ON CURRENT DATA
2473 011706 016767 002012 002006  MOV     TIME2,TIME1 ;SET UP FOR NEXT COMPARISION
2474 011714 005204          INC     R4          ;SELECT NEXT SPEED
2475 011716 062700 002100  ADD     #2100,R0
2476 011722 005301          DEC     R1
2477 011724 001317          BNE     1$
2478 011726 104400          5$:  SCOPE          ;CHECK FOR ITERATIONS. LOOP
2479
2480                                     ;RECEIVER LINE SPEED SELECTION TEST
2481                                     ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 16
2482                                     ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2483                                     ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2484                                     ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2485
2486 011730 012767 000340 166040 T37: MOV     #340,PS          ;DISABLE ALL INTERRUPTS
2487 011736 012767 000010 001722  MOV     #10,ICOUNT    ;SET UP FOR 10 ITERATIONS
2488 011744 012767 012150 001710  MOV     #5$,ESCAPE    ;SET UP TO ESCAPE TO NEXT TEST
2489 011752 012767 012006 001704  MOV     #1$,FREEZ1    ;SET UP TO LOOP WITH DATA
2490 011760 012705 000016          MOV     #16,R5        ;LINE 16 WILL BE TESTED
2491 011764 012700 002100  MOV     #2100,R0      ;CONSTANT FOR SELECTION
2492                                     ;OF INITIAL (LOWEST) SPEED
2493 011770 012701 000015          MOV     #15,R1        ;15 DIFFERENT SPEEDS WILL BE TESTED
2494 011774 012704 000001          MOV     #1,R4         ;BINARY CODE FOR INITIAL SPEED
2495 012000 012767 177777 001714  MOV     #-1,TIME1     ;INITIALIZE COMPARISION VALUE
2496 012006 012777 004000 001604 1$:  MOV     #BIT11,ADHSCR ;CLEAR INTERFACE
2497 012014 010577 001600          MOV     R5,ADHSCR    ;SELECT LINE 16 FOR TESTING
2498 012020 005077 001602          CLR     ADHBA        ;CLEAR BUS ADDRESS
2499 012024 012777 177777 001576  MOV     #-1,ADHBC     ;SET UP TO TRANSMIT
2500                                     ;1 CHARACTERS
2501 012032 010077 001566          MOV     R0,ADHLPR    ;SELECT LINE SPEED
2502 012036 005067 001662          CLR     TIME2        ;CLEAR RECEIVER TIME TIMER
2503 012042 005067 001660          CLR     TEMP1        ;SET UP NO CLOCK TIMER
2504 012046 012767 000010 001654  MOV     #10,TEMP2
2505 012054 012777 040000 001550  MOV     #40000,ADHBAR ;SET BAR BIT FOR LINE 16
2506                                     ;TO START TRANSMISSION
2507 012062 105777 001532          2$:  TSTB   ADHSCR      ;WAIT FOR RECEIVER
2508                                     ;TO FINISH
2509 012066 100412          BMI     3$
2510 012070 005267 001630          INC     TIME2        ;UPDATE RECEIVER TIMER
2511 012074 005267 001626          INC     TEMP1        ;UPDATE NO CLOCK TIMER
2512 012100 001370          BNE     2$
2513 012102 005367 001622          DEC     TEMP2
2514 012106 001365          BNE     2$
2515 012110 104001          HLT     1          ;RECEIVER DID NOT FINISH, ERROR
2516 012112 000405          BR      4$

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2517 012114 026767 001604 001600 3$:  CMP      TIME2,TIME1      ;VERIFY THAT RECEIVER
2518 012122 103401                BLO      4$              ;WAS FASTER AT THIS SELECTED SPEED
2519                                ;(NUMBER OF COUNTS IN TIME2
2520                                ;LESS THAN TIME1)
2521 012124 104002                HLT      2              ;RECEIVER TIMING ERROR FOR
2522                                ;LINE 16
2523 012126 104410                4$:  SCOPE1            ;CHECK FOR FREEZE ON CURRENT DATA
2524 012130 016767 001570 001564      MOV      TIME2,TIME1      ;SET UP FOR NEXT COMPARIION
2525 012136 005204                INC      R4              ;SELECT NEXT SPEED
2526 012140 062700 002100          ADD      #2100,R0
2527 012144 005301                DEC      R1
2528 012146 001317                BNE     1$
2529 012150 104400                5$:  SCOPE              ;CHECK FOR ITERATIONS, LOOP
2530
2531                                ;RECEIVER LINE SPEED SELECTION TEST
2532                                ;TRANSMIT 1 CHARACTERS AT A SELECTED SPEED ON LINE 17
2533                                ;VERIFY THAT RECEIVER DONE OCCURS AT THE SELECTED SPEED
2534                                ;VERIFY THAT THE AMOUN OF TIME TAKEN IS LESS
2535                                ;AT THIS SPEED THAN AT THE PREVIOUSLY SELECTED SPEED
2536
2537 012152 012767 000340 165616 T40:  MOV      #340,PS          ;DISABLE ALL INTERRUPTS
2538 012160 012767 000010 001500      MOV      #10,ICOUNT      ;SET UP FOR 10 ITERATIONS
2539 012166 012767 012372 001466      MOV      #5$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
2540 012174 012767 012230 001462      MOV      #1$,FREEZ1      ;SET UP TO LOOP WITH DATA
2541 012202 012705 000017                MOV      #17,R5          ;LINE 17 WILL BE TESTED
2542 012206 012700 002100          MOV      #2100,R0        ;CONSTANT FOR SELECTION
2543                                ;OF INITIAL (LOWEST) SPEED
2544 012212 012701 000015                MOV      #15,R1          ;15 DIFFERENT SPEEDS WILL BE TESTED
2545 012216 012704 000001                MOV      #1,R4           ;BINARY CODE FOR INITIAL SPEED
2546 012222 012767 177777 001472      MOV      #-1,TIME1       ;INITIALIZE COMPARIION VALUE
2547 012230 012777 004000 001362 1$:  MOV      #BIT11,JDHSCR    ;CLEAR INTERFACE
2548 012236 010577 001356                MOV      R5,JDHSCR       ;SELECT LINE 17 FOR TESTING
2549 012242 005077 001360                CLR      JDHBA           ;CLEAR BUS ADDRESS
2550 012246 012777 177777 001354      MOV      #-1,JDHBC       ;SET UP TO TRANSMIT
2551                                ;1 CHARACTERS
2552 012254 010077 001344                MOV      R0,JDHLPR       ;SELECT LINE SPEED
2553 012260 005067 001440                CLR      TIME2           ;CLEAR RECEIVER TIME TIMER
2554 012264 005067 001436                CLR      TEMP1           ;SET UP NO CLOCK TIMER
2555 012270 012767 000010 001432      MOV      #10,TEMP2
2556 012276 012777 100000 001326      MOV      #100000,JDHBAR  ;SET BAR BIT FOR LINE 17
2557                                ;TO START TRANSMISSION
2558 012304 105777 001310                2$:  TSTB      JDHSCR     ;WAIT FOR RECEIVER
2559                                ;TO FINISH
2560 012310 100412                BMI      3$
2561 012312 005267 001406                INC      TIME2           ;UPDATE RECEIVER TIMER
2562 012316 005267 001404                INC      TEMP1           ;UPD'ATE NO CLOCK TIMER
2563 012322 001370                BNE     2$
2564 012324 005367 001400                DEC      TEMP2
2565 012330 001365                BNE     2$
2566 012332 104001                HLT      1              ;RECEIVER DID NOT FINISH, ERROR
2567 012334 000405                BR       4$
2568 012336 026767 001362 001356 3$:  CMP      TIME2,TIME1      ;VERIFY THAT RECEIVER
2569 012344 103401                BLO     4$              ;WAS FASTER AT THIS SELECTED SPEED
2570                                ;(NUMBER OF COUNTS IN TIME2
2571                                ;LESS THAN TIME1)
2572 012346 104002                HLT      2              ;RECEIVER TIMING ERROR FOR

```



```

2581
2582
2583
2584
2585
2586
2587
2588 012374 104401
2589 012376 014316
2590 012400 005067 001312
2591 012404 005067 001242
2592 012410 005267 001240
2593 012414 016767 001234 165146
2594 012422 013701 000042
2595 012426 001405
2596 012430 000005
2597 012432 004711
2598 012434 000240
2599 012436 000240
2600 012440 000240
2601 012442 000167 166534
2602
2603
2604
2605
2606 012446 032767 002000 165114
2607 012454 001030
2608 012456 032767 040000 165104
2609 012464 001021
2610 012466 032767 004000 165074
2611 012474 001006
2612 012476 005267 001166
2613 012502 026767 001162 001156
2614 012510 001007
2615 012512 005067 001152
2616 012516 005067 001130
2617 012522 011667 001132
2618 012526 000002
2619 012530 016716 001124
2620 012534 000002
2621 012536 005767 001110
2622 012542 001745
2623 012544 000762
2624
2625
2626
2627 012546 032767 001000 165014
2628 012554 001402
2629 012556 016716 001102
2630 012562 000002

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

EOP: TYPE ;TYPE NAME OF TEST
MEPASS
CLR LAST ;CLEAR LAST ERROR PC
CLR ERRFLG ;CLEAR ERROR FLAG
INC PASCNT ;UPDATE PASS COUNT
MOV PASCNT LIGHTS ;DISPLAY PASS COUNT
MOV #42,R1 ;CHECK FOR ACT-11 OR DDP
BEQ RESTRT ;IF NOT, CONTINUE TESTING

LOGICAL: JSR PC,(R1)
NOP
NOP
NOP
RESTRT: JMP BEGIN

;CHECK FOR LOOP ON CURRENT TEST
;CHECK FOR ITERATION SUPPRESSION

SCOPER: BIT #SW10,SWR
BNE 4$
1$: BIT #SW14,SWR
BNE 3$
BIT #SW11,SWR
BNE 2$
INC LPCNT
CMP LPCNT,ICOUNT
BNE 3$
2$: CLR LPCNT
CLR ERRFLG
MOV (SP),RETURN
RTI
3$: MOV RETURN,(SP)
RTI
4$: TST ERRFLG
BEQ 1$
BR 2$

;CHECK FOR FREEZE ON CURRENT DATA
SCOP1R: BIT #S.09,SWR
BEQ 1$
MOV FREEZ1,(SP)
1$: RTI

```


:ERROR HANDLER

012564	032767	020000	164776	ERRORS:	BIT	#SW13,SWR
012572	001051				BNE	HALTS
012574	021667	001116			CMP	(SP),LAST
012600	001404				BEQ	IS
012602	011667	001110			MOV	(SP),LAST
012606	005067	001040			CLR	ERRFLG
012612	104406			IS:	SAVPC	
012614	011605				MOV	(SP),R5
012616	162705	000002			SUB	#2,R5
012622	011504				MOV	(R5),R4
012624	006304				ASL	R4
012626	006304				ASL	R4
012630	042704	177001			BIC	#177001,R4
012634	062704	014506			ADD	#ERRTAB,R4
012640	012467	000034			MOV	(R4)+,ERRMSG
012644	011467	000042			MOV	(R4),DATABP
012650	005767	000776			TST	ERRFLG
012654	001403				BEQ	TYPMSG
012656	005767	000030			TST	DATABP
012662	001007				BNE	TYPDAT
012664	104402			TYPMSG:	OCTASC	
012666	012760				ERTAB0	
012670	012767	000001	000754		MOV	#1,ERRFLG
012676	104401				TYPE	
012700	000000			ERRMSG:	0	
012702	005767	000004		TYPDAT:	TST	DATABP
012706	001402				BEQ	RESREG
012710	104402				OCTASC	
012712	000000			DATABP:	0	
012714	104407			RESREG:	RESOS	
012716	005767	164646		HALTS:	TST	SWR
012722	100005				BPL	EXITER
012724	010046				PUSHRO	
012726	016600	000002			MOV	2(SP),RO
012732	000000				HALT	
012734	012600				POPPO	
012736	005267	000714		EXITER:	INC	ERRCNT
012742	032767	002000	164620		BIT	#SW10,SWR
012750	001402				BEQ	IS
012752	016716	000704			MOV	ESCAPE,(SP)
012756	000002			IS:	RTI	
012760	000001			EPTAB0:	1	
012762	006	002			.BYTE	6.2
012764	013710				SAVPC	

```

27073 : TRAP DISPATCH SERVICE
27074 : ARGUMENT OF TRAP IS EXTRACTED
27075 : AND USED AS OFFSET TO OBTAIN POINTER
27076 : TO SELECTED SUBROUTINE
27077
27078 012766 011646 TRPSRV: MOV (SP), -(SP) ; GET PC OF RETURN
27079 012770 162716 000002 SUB #2, (SP) ; =PC OF TRAP
27080 012774 017616 000000 MOV 2(SP), (SP) ; GET TRAP
27081 013000 006316 TRPOK: ASL (SP) ; MULTIPLY TRAP ARG BY 2
27082 013002 042716 177001 BIC #177001, (SP) ; CLEAR UNWANTED BITS
27083 013006 062716 014426 ADD #TRPTAB, (SP) ; POINTER TO SUBROUTINE ADDRESS
27084 013012 017616 000000 MOV 2(SP), (SP) ; SUBROUTINE ADDRESS
27085 013016 000136 JMP 2(SP)+ ; GO TO SUBROUTINE
27086
27087 ; SAVE PC OF TEST THAT FAILED AND RC R5
27088 013020 016667 000004 000662 SV05P: MOV 4(SP), SAVPC
27089
27090 ; SAVE R0-R5
27091 013026 010567 000652 SV05: MOV R5, SAVR5
27092 013032 010467 000644 MOV R4, SAVR4
27093 013036 010367 000636 MOV R3, SAVR3
27094 013042 010267 000630 MOV R2, SAVR2
27095 013046 010167 000622 MOV R1, SAVR1
27096 013052 010067 000614 MOV R0, SAVR0
27097 013056 000002 RTI
27098 ; RESTORE R0-R5
27099 013060 016700 000606 RS05: MOV SAVR0, R0
27100 013064 016701 000604 MOV SAVR1, R1
27101 013070 016702 000602 MOV SAVR2, R2
27102 013074 016703 000600 MOV SAVR3, R3
27103 013100 016704 000576 MOV SAVR4, R4
27104 013104 016705 000574 MOV SAVR5, R5
27105 013110 000002 RTI
  
```

```

;TELETYPE OUTPUT ROUTINE
2714 013112 017605 000000 TYPED: MOV @SP,R5
2715 013116 062716 000002 ADD #2,(SP)
2716 013122 105777 000466 1S: TSTB @TPCSR
2717 013126 100375 BPL 1S
2718 013130 105715 TSTB (R5)
2719 013132 001001 BNE 2S
2720 013134 000002 RTI
2721 013136 112577 000454 2S: MOVB (R5)+,@TPDBR
2722 013142 000767 BR 1S

;ASCII STRING INPUT ROUTINE
2723 013144 017667 000000 000006 INSTRG: MOV @SP,MSG
2724 013152 062716 000002 ADD #2,(SP)
2725 013156 104401 INSTR1: TYPE
2726 013160 000000 MSG: 0
2727 013162 012704 014450 MOV #INBUF,R4
2728 013166 012703 000007 MOV #7,R3
2729 013172 105777 000412 1S: TSTB @TKCSR
2730 013176 100375 BPL 1S
2731 013200 117714 000406 MOVB @TKDBR,(R4)
2732 013204 142714 000200 BICB #200,(R4)
2733 013210 122427 000015 CMPB (R4)+,#15
2734 013214 001413 BEQ INSTR2
2735 013216 117777 000370 000372 2S: MOVB @TKDBR,@TPDBR
2736 013224 105777 000364 TSTB @TPCSR
2737 013230 100375 BPL 2S
2738 013232 005303 DEC R3
2739 013234 001356 BNE 1S
2740 013236 104401 INSTRE: TYPE
2741 013240 014222 MCM
2742 013242 000745 BR INSTR1
2743 013244 000002 INSTR2: RTI

```

2750			
2751			
2752			
2753	013246	011605	
2754	013250	012567	000146
2755	013254	012567	000144
2756	013260	012567	000142
2757	013264	112567	000140
2758	013270	112567	000135
2759	013274	010516	
2760	013276	005005	
2761	013300	012704	014450
2762	013304	122714	000015
2763	013310	001420	
2764	013312	121427	000060
2765	013316	002415	
2766	013320	121427	000067
2767	013324	003012	
2768	013326	142714	000060
2769	013332	152405	
2770	013334	122714	000015
2771	013340	001406	
2772	013342	006305	
2773	013344	006305	
2774	013346	006305	
2775	013350	000760	
2776	013352	104404	
2777	013354	000750	
2778			
2779			
2780			
2781	013356	020567	000042
2782	013362	101373	
2783	013364	020567	000032
2784	013370	103770	
2785	013372	136705	000032
2786	013376	001365	
2787			
2788			
2789			
2790	013400	016704	000022
2791	013404	010524	
2792	013406	062705	000002
2793	013412	105367	000013
2794	013416	001372	
2795	013420	000002	
2796	013422	000000	
2797	013424	000000	
2798	013426	000000	
2799	013430	000000	
2800		013431	

: CONVERT ASCII STRING TO OCTAL

```

PARAMS: MOV (SP),R5
         MOV (R5)+,LOLIM
         MOV (R5)+,HILIM
         MOV (R5)+,DEVADR
         MOV (R5)+,LOBITS
         MOV (R5)+,ADRCNT
         MOV R5,(SP)
PARAMI: CLR R5
         MOV #INBUF,R4
         CMPB #15,(R4)
IS:      BEQ PARERR
         CMPB (R4),#60
         BLT PARERR
         CMPB (R4),#67
         BGT PARERR
         BICB #60,(R4)
         BISB (R4)+,R5
         CMPB #15,(R4)
         BEQ LIMITS
         ASL R5
         ASL R5
         ASL R5
         BR IS
PARERR: INSTER
         BR PARAMI
  
```

: TEST TO SEE IF NUMBER IS WITHIN LIMITS

```

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

: STORE NUMBER AT SPECIFIED ADDRESS

```

IS:      MOV DEVADR,R4
         MOV R5,(R4)+
         ADD #2,R5
         DECB ADRCNT
         BNE IS
         RTI
  
```

```

LOLIM: 0
HILIM: 0
DEVADR: 0
LOBITS: 0
ADRCNT=LOBITS+1
  
```

```

2901
2902                                     : CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
2903
2904 013432 104401      OCTASN: TYPE
2905 013434 014226      MCRLF
2906 013436 017601      MOV      2(SP),R1
2907 013442 062716      ADD      #2,(SP)
2908 013446 012167      MOV      (R1)+,WRDCNT
2909 013452 112167      1$:  MOVB   (R1)+,CHRCNT
2910 013456 112167      MOVB   (R1)+,SPACNT
2911 013462 013167      MOV      2(R1)+,BINWRD
2912 013466 016704      2$:  MOV      BINWRD,R4
2913 013472 116705      MOVB   CHRCNT,R5
2914 013476 012700      MOV      #TEMP,R0
2915 013502 010403      3$:  MOV      R4,R3
2916 013504 042703      BIC     #177770,R3
2917 013510 062703      ADD     #260,R3
2918 013514 110320      MOVB   R3,(R0)+
2919 013516 006204      ASR    R4
2920 013520 006204      ASR    R4
2921 013522 006204      ASR    R4
2922 013524 005305      DEC    R5
2923 013526 001365      BNE    3$
2924 013530 012703      MOV     #MDATA,R3
2925 013534 114023      4$:  MOVB  -(R0),(R3)+
2926 013536 105367      DECB   CHRCNT
2927 013542 001374      BNE    4$
2928 013544 105767      TSTB   SPACNT
2929 013550 001405      BEQ    6$
2930 013552 112723      5$:  MOVB  #240,(R3)+
2931 013556 105367      DECB   SPACNT
2932 013562 001373      BNE    5$
2933 013564 105013      6$:  CLRB  (R3)
2934 013566 104401      TYPE
2935 013570 014474      MDATA
2936 013572 005367      DEC    WRDCNT
2937 013576 001325      BNE    1$
2938 013600 000002      RTI
2939 013602 000000      WRDCNT: 0
2940 013604 000000      CHRCNT: 0
2941 013605 013605      SPACNT=CHRCNT+1
2942 013606 000000      BINWRD: 0
  
```

2843 ;INDIRECT POINTERS

2844			
2845	013610	177560	TKCSR: 177560
2846	013612	177562	TKDBR: 177562
2847	013614	177564	TPCSR: 177564
2848	013616	177566	TPDBR: 177566
2849	013620	000000	DHSCR: 0
2850	013622	000000	DHNRC: 0
2851	013624	000000	DHLPR: 0
2852	013626	000000	DHBA: 0
2853	013630	000000	DHBC: 0
2854	013632	000000	DHBAR: 0
2855	013634	000000	DHBCR: 0
2856	013636	000000	DHSSR: 0
2857	013640	000000	DHSLR: 0
2858	013642	000000	DHRVEC: 0
2859	013644	000000	DHRLVL: 0
2860	013646	000000	DHTVEC: 0
2861	013650	000000	DHTLVL: 0

2862 ;PROGRAM VARIABLES

2863				
2864	013652	000000	ERRFLG: 0	;ERROR FLAG
2865	013654	000000	PASCNT: 0	;PASS COUNT
2866	013656	000000	ERRCNT: 0	;ERROR COUNT
2867	013660	000000	RETURN: 0	;SCOPE RETURN ADDRESS FOR TEST LOOPING
2868	013662	000000	ESCAPE: 0	;ADDRESS FOR ERROR ESCAPE
2869	013664	000000	FREEZ1: 0	;DATA LOOPING RETURN ADDRESS
2870	013666	000000	ICOUNT: 0	;ITERATION COUNT FOR TEST IN PROGRESS
2871	013670	000000	LPCNT: 0	;NUMBER OF ITERATIONS THIS TEST
2872	013672	000000	SAVRO: 0	;R0 SAVE AREA
2873	013674	000000	SAVR1: 0	;R1 SAVE AREA
2874	013676	000000	SAVR2: 0	;R2 SAVE AREA
2875	013700	000000	SAVR3: 0	;R3 SAVE AREA
2876	013702	000000	SAVR4: 0	;R4 SAVE AREA
2877	013704	000000	SAVR5: 0	;R5 SAVE AREA
2878	013706	000000	SAVSP: 0	;STACK POINTER SAVE AREA
2879	013710	000000	SAVPC: 0	;CALLING ROUTINE SAVE AREA
2880	013712	000000	INIFLG: 0	;PROGRAM INITIALIZATION FLAG
2881	013714	000000	STFLG: 0	;PROGRAM START FLAG
2882	013716	000000	LAST: 0	;LAST ERROR PC
2883	013720	000000	TCONST: 0	
2884	013722	000000	TIME1: 0	
2885	013724	000000	TIME2: 0	
2886	013726	000000	TEMP1: 0	
2887	013730	000000	TEMP2: 0	

H05

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 DZDHDC.PFC

```

2888                                     ;ENTER HERE ON POWER FAILURE
2889
2890
2891 013732 010046          PFAIL:  MOV    R0,-(SP)          ;SAVE R0-R5 ON PROCESSOR STACK
2892 013734 010146          MOV    R1,-(SP)
2893 013736 010246          MOV    R2,-(SP)
2894 013740 010346          MOV    R3,-(SP)
2895 013742 010446          MOV    R4,-(SP)
2896 013744 010546          MOV    R5,-(SP)
2897 013746 016746 164052  MOV    24,-(SP)
2898 013752 010667 177730  MOV    SP,SAVSP          ;SAVE STACK POINTER
2899 013756 012767 013770 164040 MOV    *RESTART,24      ;SET UP FOR POWER UP TRAP
2900 013764 000000          HALT          ;HALT ON POWER DOWN NORMAL
2901 013766 000777          BR
2902
2903                                     ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
2904
2905 013770 016706 177712  RESTAR: MOV    SAVSP,SP          ;RESTORE STACK POINTER
2906 013774 012605          MOV    (SP)+,R5          ;RESTORE R0-R5
2907 013776 012604          MOV    (SP)+,R4
2908 014000 012603          MOV    (SP)+,R3
2909 014002 012602          MOV    (SP)+,R2
2910 014004 012601          MOV    (SP)+,R1
2911 014006 012600          MOV    (SP)+,R0
2912 014010 012767 013732 164006  MOV    *PFAIL,24          ;SET UP FOR POWER FAILURE
2913 014016 012767 000340 163752  MOV    *340,PS
2914 014024 012706 014734          MOV    *STACK,SP
2915 014030 005067 000426          CLR    TEMP
2916 014034 005267 000422          INC    TEMP
2917 014040 001375          BNE    .-4
2918 014042 104402          OCTASC
2919 014044 014066          PFTAB
2920 014046 104401          TYPE
2921 014050 014231          MPFAIL
2922 014052 005067 177574          CLR    ERRFLG
2923 014056 005067 177634          CLR    LAST
2924 014062 000177 177572          JMP    @RETURN
2925 014066 000001          PFTAB: 1
2926 014070 000006 000002          6,2
2927 014074 000207          RETURN
  
```

2928 014076 005015 042012 030510
 2929 014104 020061 050123 042505
 2930 014112 020104 042523 042514
 2931 014120 052103 047511 020116
 2932 014126 047514 044507 020103
 2933 014134 042524 052123 006440
 2934 014142 000012
 2935 014144 005015 042526 052103
 2936 014152 051117 040440 042104
 2937 014160 042522 051523 000055
 2938 014166 005015 047503 052116
 2939 014174 047522 020114 042522
 2940 014202 044507 052123 051105
 2941 014210 040440 042104 042522
 2942 014216 051523 000055
 2943 014222 020040 000077
 2944 014226 005015 000
 2945 014231 040 050040 053517
 2946 014236 051105 043040 044501
 2947 014244 052514 042522 020054
 2948 014252 051120 043517 040522
 2949 014260 020115 042522 052123
 2950 014266 051101 020124 052101
 2951 014274 052040 051505 020124
 2952 014302 047111 050040 047522
 2953 014310 051107 051505 000123
 2954 014316 005015 055104 044104
 2955 014324 000104
 2956 014326 005015 000122
 2957 014332 005015 042524 052123
 2958 014340 050040 026503 000
 2959 014345 116 020117 046103
 2960 014352 041517 006513 046012
 2961 014360 047111 020105 051440
 2962 014366 042520 042105 000
 2963 014373 124 046511 047111
 2964 014400 020107 051105 047522
 2965 014406 006522 046012 047111
 2966 014414 020105 051440 042520
 2967 014422 042105 000
 2968 014426
 2969
 2970
 2971
 2972 014426 012446
 2973 014430 013112
 2974 014432 013432
 2975 014434 013144
 2976 014436 013236
 2977 014440 013246
 2978 014442 013020
 2979 014444 013060
 2980 014446 012546
 2981
 2982
 2983

MTITLE: .ASCIZ <15><12><12>/DH11 SPEED SELECTION LOGIC TEST /<15><12>

MVECTO: .ASCIZ <15><12>/VECTOR ADDRESS-/

MREGAD: .ASCIZ <15><12>/CONTROL REGISTER ADDRESS-/

MQM: .ASCIZ / ?/

MCRLF: .ASCIZ <15><12>

MPFAIL: .ASCIZ / POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS/

MEPASS: .ASCIZ <15><12>/DZDHD/

MR: .ASCIZ <15><12>/R/

MTSTPC: .ASCIZ <15><12>/TEST PC-/

EM1: .ASCIZ /NO CLOCK/<15><12>/LINE SPEED/

EM2: .ASCIZ /TIMING ERROR/<15><12>/LINE SPEED/

.EVEN

;TABLE OF POINTERS FOR TRAP DECODING

TRPTAB: SCOPER
 TYPER
 OCTASN
 INSTRG
 INSTRE
 PARAMS
 SVOSP
 RSOS
 SCOP1R

;BUFFERS FOR INPUT-OUTPUT

2984 014450 000000
 2985 014462 014462
 2986 014462 000000
 2987 014474 014474
 2988 014474 000000
 2989 014506 014506
 2990
 2991
 2992
 2993 014506
 2994 014506 000000
 2995 014510 000000
 2996 014512 014345
 2997 014514 014522
 2998 014516 014373
 2999 014520 014522
 3000
 3001
 3002
 3003 014522 000002
 3004 014524 002 004
 3005 014526 013704
 3006 014530 002 000
 3007 014532 013702
 3008 014534 000000
 3009 000001

INBUF: 0
 .=.+10
 TEMP: 0
 .=.+10
 MDATA: 0
 .=.+10

;TABLE OF POINTERS TO ERROR MESSAGES AND DATA

ERRTAB: 0 ;NO MESSAGE
 0 ;NO DATA
 ET1: EM1 ;NO CLOCK ERROR
 DT1
 ET2: EM2 ;TIMING ERROR
 DT1

;DATA TABLES FOR ERROR OUTPUT

DT1: 2 ;2 DATA WORDS WILL BE TYPED
 .BYTE 2,4 ;TWO DIGITS, 4 SPACES
 SAVR5 ;LINE UNDER TEST
 .BYTE 2,0 ;TWO DIGITS, NO SPACES
 SAVR4 ;SELECTED SPEED
 ENCCOD: 0
 .END

M05

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 DZDHD.C.PFC CROSS REFERENCE TABLE -- USER SYMBOLS

PARAM = 104405	868*	907	915	936										
PARAMS 013246	2753*	2977												
PARAM1 013276	2760*	2777												
PARERR 013352	2763	2765	2767	2776*	2782	2784	2786							
PASCNT 013654	885*	2592*	2593	2865*										
PC =%000007	550*	2597*												
PFAIL 013732	848	883	2891*	2912										
PFTAB 014066	2919	2925*												
POPPO = 012600	564*	2669												
POP1SP= 005726	562*													
POP2SP= 022626	566*													
PS = 177776	556*	881*	930*	956*	1007*	1058*	1109*	1160*	1211*	1262*	1313*	1364*	1415*	
	1466*	1517*	1568*	1619*	1670*	1721*	1772*	1823*	1874*	1925*	1976*	2027*	2078*	
	2129*	2180*	2231*	2282*	2333*	2384*	2435*	2486*	2537*	2913*				
PUSHRO= 010046	563*	2666												
PUSH1S= 005746	561*													
PUSH2S= 024646	565*													
RESREG 012714	2660	2663*												
RESTAR 013770	2899	2905*												
RESTR 012442	2595	2601*												
RESOS = 104407	870*	2663												
RETURN 013660	943*	948	2617*	2619	2867*	2924								
RSOS 013060	2707*	2979												
RO =%000000	543*	961*	971	996*	1012*	1022	1047*	1063*	1073	1098*	1114*	1124	1149*	
	1165*	1175	1200*	1216*	1226	1251*	1267*	1277	1302*	1318*	1328	1353*	1369*	
	1379	1404*	1420*	1430	1455*	1471*	1481	1506*	1522*	1532	1557*	1573*	1583	
	1608*	1624*	1634	1659*	1675*	1685	1710*	1726*	1736	1761*	1777*	1787	1812*	
	1828*	1838	1863*	1879*	1889	1914*	1930*	1940	1965*	1981*	1991	2016*	2032*	
	2042	2067*	2083*	2093	2118*	2134*	2144	2169*	2185*	2195	2220*	2236*	2246	
	2271*	2287*	2297	2322*	2338*	2348	2373*	2389*	2399	2424*	2440*	2450	2475*	
	2491*	2501	2526*	2542*	2552	2577*	2667*	2703	2707*	2814*	2818*	2825	2891	
	2911*													
R1 =%000001	544*	896*	899*	901*	903	963*	997*	1014*	1048*	1065*	1099*	1116*	1150*	
	1167*	1201*	1218*	1252*	1269*	1303*	1320*	1354*	1371*	1405*	1422*	1456*	1473*	
	1507*	1524*	1558*	1575*	1609*	1626*	1660*	1677*	1711*	1728*	1762*	1773*	1813*	
	1830*	1864*	1881*	1915*	1932*	1966*	1983*	2017*	2034*	2068*	2085*	2119*	2136*	
	2170*	2187*	2221*	2238*	2272*	2289*	2323*	2340*	2374*	2391*	2425*	2442*	2476*	
	2493*	2527*	2544*	2578*	2594*	2597	2702	2708*	2806*	2808	2809	2810	2811	
	2892	2910*												
R2 =%000002	545*	897*	899	900*	902*	2701	2709*	2893	2909*					
R3 =%000003	546*	898*	901	902	2700	2710*	2734*	2744*	2815*	2816*	2817*	2818	2824*	
	2825*	2830*	2833*	2894	2908*									
R4 =%000004	547*	964*	995*	1015*	1046*	1066*	1097*	1117*	1148*	1168*	1199*	1219*	1250*	
	1270*	1301*	1321*	1352*	1372*	1403*	1423*	1454*	1474*	1505*	1525*	1556*	1576*	
	1607*	1627*	1658*	1678*	1709*	1729*	1760*	1780*	1811*	1831*	1862*	1882*	1913*	
	1933*	1964*	1984*	2015*	2035*	2066*	2086*	2117*	2137*	2168*	2188*	2219*	2239*	
	2270*	2290*	2321*	2341*	2372*	2392*	2423*	2443*	2474*	2494*	2525*	2545*	2576*	
	2643*	2644*	2645*	2646*	2647*	2648	2649	2699	2711*	2733*	2737*	2738*	2739	
	2761*	2762	2764	2766	2768*	2769	2770	2790*	2791*	2812*	2815	2819*	2820*	
	2821*	2895	2907*											
R5 =%000005	548*	960*	967	1011*	1018	1062*	1069	1113*	1120	1164*	1171	1215*	1222	
	1266*	1273	1317*	1324	1368*	1375	1419*	1426	1470*	1477	1521*	1528	1572*	
	1579	1623*	1630	1674*	1681	1725*	1732	1776*	1783	1827*	1834	1878*	1885	
	1929*	1936	1980*	1987	2031*	2038	2082*	2089	2133*	2140	2184*	2191	2235*	
	2242	2286*	2293	2337*	2344	2388*	2395	2439*	2446	2490*	2497	2541*	2548	
	2641*	2642*	2643	2698	2712*	2717*	2721	2724	2753*	2754	2755	2756	2757	

N05.

DZDHD MACY11 27(732) 10-MAY-76 10:46 PAGE 67
 DZDHD.C.PFC CROSS REFERENCE TABLE -- USER SYMBOLS

		2758	2759	2760*	2769*	2772*	2773*	2774*	2781	2783	2785	2791	2792*	2813*
SAVPC	013710	2822*	2896	2906*										
SAVRO	013672	2677	2694*	2879*										
SAVR1	013674	2703*	2707	2872*										
SAVR2	013676	2702*	2708	2873*										
SAVR3	013700	2701*	2709	2874*										
SAVR4	013702	2700*	2710	2875*										
SAVR5	013704	2699*	2711	2876*	3007									
SAVSP	013706	2698*	2712	2877*	3005									
SAVOSP=	104406	2878*	2898*	2905										
SCOPE =	104400	869*	2640											
		863*	999	1050	1101	1152	1203	1254	1305	1356	1407	1458	1509	1560
		1611	1662	1713	1764	1815	1866	1917	1968	2019	2070	2121	2172	2223
SCOPE1=	104410	2274	2325	2376	2427	2478	2529	2580						
SCOPE1=	104410	2606*	2972											
		871*	993	1044	1095	1146	1197	1248	1299	1350	1401	1452	1503	1554
		1605	1656	1707	1758	1809	1860	1911	1962	2013	2064	2115	2166	2217
SCOPE1R	012546	2268	2319	2370	2421	2472	2523	2574						
SP =	%000006	2627*	2980											
		549*	882*	931*	2617	2619*	2629*	2636	2638	2641	2667	2673*	2693*	2694*
		2685*	2686*	2687*	2688*	2689*	2690	2694	2717	2718*	2729	2730*	2753	2759*
		2806	2807*	2891*	2892*	2893*	2894*	2895*	2896*	2897*	2898	2905*	2906	2907
		2908	2909	2910	2911	2914*								
SPACNT=	013605	2810*	2828	2831*	2841*									
STACK =	014734	557*	882	931	2914									
START	001000	855	881*											
STFLG	013714	884*	944	946*	2881*									
SV05	013026	2698*												
SV05P	013020	2694*	2978											
SWR =	177570	554*	894	932	2606	2608	2610	2627	2634	2664	2671			
SW00 =	000001	537*	894											
SW01 =	000002	536*	932											
SW02 =	000004	535*												
SW03 =	000010	534*												
SW04 =	000020	533*												
SW05 =	000040	532*												
SW06 =	000100	531*												
SW08 =	000400	530*												
SW09 =	001000	529*	2627											
SW10 =	002000	528*	2606	2671										
SW11 =	004000	527*	2610											
SW12 =	010000	526*												
SW13 =	020000	525*	2634											
SW14 =	040000	524*	2608											
SW15 =	100000	523*												
TCONST	013720	2883*												
TEMP	014462	2814	2915*	2916*	2986*									
TEMP1	013726	973*	981*	1024*	1032*	1075*	1083*	1126*	1134*	1177*	1185*	1228*	1236*	1279*
		1287*	1330*	1338*	1381*	1389*	432*	1440*	1483*	1491*	1534*	1542*	1585*	1593*
		1636*	1644*	1687*	1695*	1738*	1746*	1789*	1797*	1840*	1848*	1891*	1899*	1942*
		1950*	1993*	2001*	2044*	2052*	2095*	2103*	2146*	2154*	2137*	2205*	2248*	2256*
		2299*	2307*	2350*	2358*	2401*	2409*	2452*	2460*	2503*	2511*	2554*	2562*	2886*
TEMP2	013730	974*	983*	1025*	1034*	1076*	1085*	1127*	1136*	1178*	1187*	1229*	1238*	1280*
		1289*	1331*	1340*	1382*	1391*	1433*	1442*	1484*	1493*	1535*	1544*	1586*	1595*
		1637*	1646*	1688*	1697*	1739*	1748*	1790*	1799*	1841*	1850*	1892*	1901*	1943*
		1952*	1994*	2003*	2045*	2054*	2096*	2105*	2147*	2156*	2198*	2207*	2249*	2258*

E06

DZDHC MACY11 27(732) 10-MAY-76 10:46 PAGE 73
 DZDHC.PFC CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

ADD	901 1659 2424 2644 2819 2959	902 1710 2475 2645 2820 933	996 1761 2526 2686 2821 2595	1047 1912 2577 2772	1098 1863 2647 2773	1149 1914 2688 2774	1200 1965 2718	1251 2016 2730	1302 2067 2792	1353 2118 2807	1404 2163 2817	1455 2220	1506 2271	1557 2322	1608 2373	
ASL	2019 2167 2315 2463	2167 2315 2463	2315 2463	2463	2622	2628	2637	2651	2660	2672	2740	2763	2771	2829		
ASR	2167 2315 2463	2315 2463	2463													
BFC	2167 2315 2463	2315 2463	2463													
BGT	2167 2315 2463	2315 2463	2463													
BHI	2167 2315 2463	2315 2463	2463													
BIC	2167 2315 2463	2315 2463	2463													
BICB	2167 2315 2463	2315 2463	2463													
BISB	2167 2315 2463	2315 2463	2463													
BIT	2167 2315 2463	2315 2463	2463													
BTTB	2167 2315 2463	2315 2463	2463													
BLO	988 1039 1804 1955 2518 2569	1039 1804 1955 2569	1090 1955 2784	1141 1906	1192 1957	1243 2008	1294 2059	1345 2110	1396 2161	1447 2212	1498 2263	1549 2314	1600 2365	1651 2416	1702 2467	
BLT	2167 2315 2463	2315 2463	2463													
BMI	979 1744 2509	1030 1795 2560	1081 1846	1132 1897	1183 1948	1234 1999	1285 2050	1336 2101	1387 2152	1438 2203	1489 2254	1540 2305	1591 2356	1642 2407	1693 2458	
BNE	891 1151 1406 1661 1916 2171 2426 2553 2555	904 1186 1441 1696 1951 2206 2461 2722 2720	924 1198 1443 1698 1953 2208 2463 2745 2736	945 1202 1457 1712 1967 2222 2477 2786 2743	982 1237 1492 1747 2002 2257 2512 2794	984 1239 1494 1749 2004 2259 2514 2823	998 1253 1508 1763 2018 2273 2528 2827	1033 1288 1543 1798 2053 2308 2563 2832	1035 1290 1545 1798 2055 2310 2565 2837	1049 1304 1559 1814 2059 2324 2579 2917	1084 1339 1594 1849 2104 2353 2607	1096 1341 1596 1851 2106 2361 2609	1100 1355 1610 1865 2120 2375 2611	1135 1390 1645 1900 2155 2410 2614	1137 1392 1647 1902 2157 2412 2635	
BFL	2555 2555	2722 2720	2745 2736	2786 2743	2794	2823	2827	2832	2837	2917						
BR	993 1549 2414	942 1700 2465	986 1751 2516	1037 1802 2567	1088 1853 2623	1139 1904 2725	1190 1955 2748	1241 2006 2775	1292 2057 2777	1343 2108 2901	1394 2159	1445 2210	1496 2261	1547 2312	1598 2363	
CLR	884 1121 1376 1631 1896 2141 2396 2616 2833	885 1125 1380 1635 1890 2145 2400 2639	886 1126 1381 1636 1891 2146 2401 2760	887 1172 1427 1682 1937 2192 2447 2915	889 1176 1431 1686 1941 2196 2451 2922	900 1177 1432 1687 1942 2197 2452 2923	968 1223 1478 1733 1988 2243 2498	968 1223 1478 1733 1988 2243 2498	972 1227 1482 1737 1992 2247 2502	973 1228 1483 1738 1993 2248 2503	1019 1274 1529 1784 2039 2294 2549	1023 1278 1533 1788 2043 2298 2553	1024 1279 1534 1789 2044 2299 2554	1070 1325 1580 1835 2090 2345 2590	1074 1329 1584 1839 2094 2349 2591	1075 1330 1585 1840 2095 2350 2615
CLRB	2833	2639	2760	2915	2922	2923										
OMP	903 1701 2466	987 1752 2517	1038 1803 2568	1089 1854 2613	1140 1905 2636	1191 1956 2781	1242 2007 2783	1293 2058	1344 2109	1395 2160	1446 2211	1497 2262	1548 2313	1599 2364	1650 2415	
CMPB	2739	2762	2764	2766	2770											
COM	925	946														
DEC	983 1354 1748 2119 2513 2793	997 1391 1762 2156 2527 2826	1034 1405 1799 2170 2564 2831	1048 1442 1813 2207 2578	1085 1456 1850 2221 2744	1099 1493 1864 2258 2822	1136 1507 1901 2272 2836	1150 1544 1915 2309	1167 1551 1952 2323	1201 1595 1966 2360	1238 1609 2003 2374	1252 1646 2017 2411	1289 1660 2054 2425	1303 1697 2068 2462	1340 1711 2105 2476	
DECB	2793	2826	2831													
EMT	567															
HALT	589 619 649	591 621 651	593 623 653	595 625 655	597 627 657	599 629 659	601 631 661	603 633 663	605 635 665	607 637 667	609 639 669	611 641 671	613 643 673	615 645 675	617 647 677	

	679	691	683	685	687	689	691	693	695	697	699	701	703	705	707
	709	711	713	715	717	719	721	723	725	727	729	731	733	735	737
	739	741	743	745	747	749	751	753	755	757	759	761	763	765	767
	769	771	773	775	777	779	781	783	785	787	789	791	793	795	797
	801	803	805	807	809	811	813	815	817	819	821	823	825	827	
INC	829	831	833	835	837	839	841	843	2668	2900					
	922	980	981	995	1031	1032	1046	1082	1083	1097	1133	1134	1148	1184	1185
	1199	1235	1236	1250	1286	1287	1301	1337	1338	1352	1388	1389	1403	1439	1440
	1454	1490	1491	1505	1541	1542	1556	1592	1593	1607	1643	1644	1658	1694	1695
	1709	1745	1746	1760	1796	1797	1811	1847	1848	1862	1898	1899	1913	1949	1950
	1964	2000	2001	2015	2051	2052	2066	2102	2103	2117	2153	2154	2168	2204	2205
	2219	2255	2256	2270	2306	2307	2321	2357	2358	2372	2408	2409	2423	2459	2460
	2474	2510	2511	2525	2561	2562	2576	2592	2612	2670	2916				
JMP	855														
JSR	2597														
MOV	881	882	883	896	897	898	899	921	930	931	943	956	957	958	959
	960	961	963	964	965	966	967	969	971	974	975	994	1007	1008	1009
	1010	1011	1012	1014	1015	1016	1017	1018	1020	1022	1025	1026	1045	1058	1059
	1060	1061	1062	1063	1065	1066	1067	1068	1069	1071	1073	1076	1077	1096	1109
	1110	1111	1112	1113	1114	1116	1117	1118	1119	1120	1122	1124	1127	1128	1147
	1160	1161	1162	1163	1164	1165	1167	1168	1169	1170	1171	1173	1175	1178	1179
	1198	1211	1212	1213	1214	1215	1216	1218	1219	1220	1221	1222	1224	1226	1229
	1230	1249	1262	1263	1264	1265	1266	1267	1269	1270	1271	1272	1273	1275	1277
	1290	1291	1300	1313	1314	1315	1316	1317	1318	1320	1321	1322	1323	1324	1326
	1328	1331	1332	1351	1364	1365	1366	1367	1368	1369	1371	1372	1373	1374	1375
	1377	1379	1382	1383	1402	1415	1416	1417	1418	1419	1420	1422	1423	1424	1425
	1426	1428	1430	1433	1434	1453	1466	1467	1468	1469	1470	1471	1473	1474	1475
	1476	1477	1479	1481	1484	1485	1504	1517	1518	1519	1520	1521	1522	1524	1525
	1526	1527	1528	1530	1532	1535	1536	1555	1568	1569	1570	1571	1572	1573	1575
	1576	1577	1578	1579	1581	1583	1586	1587	1606	1619	1620	1621	1622	1623	1624
	1626	1627	1628	1629	1630	1632	1634	1637	1638	1657	1670	1671	1672	1673	1674
	1675	1577	1678	1679	1680	1681	1683	1685	1688	1689	1708	1721	1722	1723	1724
	1725	1726	1728	1729	1730	1731	1732	1734	1736	1739	1740	1759	1772	1773	1774
	1775	1776	1777	1779	1780	1781	1782	1783	1785	1787	1790	1791	1810	1823	1824
	1825	1826	1827	1828	1830	1831	1832	1833	1834	1836	1838	1841	1842	1861	1874
	1875	1876	1877	1878	1879	1881	1882	1883	1884	1885	1887	1889	1892	1893	1912
	1925	1926	1927	1928	1929	1930	1932	1933	1934	1935	1936	1938	1940	1943	1944
	1963	1976	1977	1978	1979	1980	1981	1983	1984	1985	1986	1987	1989	1991	1994
	1995	2014	2027	2028	2029	2030	2031	2032	2034	2035	2036	2037	2038	2040	2042
	2045	2046	2065	2078	2079	2080	2081	2082	2083	2085	2086	2087	2088	2089	2091
	2093	2096	2097	2116	2129	2130	2131	2132	2133	2134	2136	2137	2138	2139	2140
	2142	2144	2147	2148	2167	2180	2181	2182	2183	2184	2185	2187	2188	2189	2190
	2191	2193	2195	2198	2199	2218	2231	2232	2233	2234	2235	2236	2238	2239	2240
	2241	2242	2244	2246	2249	2250	2269	2282	2283	2284	2285	2286	2287	2289	2290
	2291	2292	2293	2295	2297	2300	2301	2320	2333	2334	2335	2336	2337	2338	2340
	2341	2342	2343	2344	2346	2348	2351	2352	2371	2384	2385	2386	2387	2388	2399
	2391	2392	2393	2394	2396	2397	2399	2402	2403	2422	2435	2436	2437	2438	2439
	2440	2442	2443	2444	2445	2446	2448	2450	2453	2454	2473	2486	2487	2488	2489
	2490	2491	2493	2494	2495	2496	2497	2499	2501	2504	2505	2524	2537	2538	2539
	2540	2541	2542	2544	2545	2546	2547	2548	2550	2552	2555	2556	2575	2593	2594
	2617	2619	2629	2638	2641	2643	2648	2649	2656	2667	2673	2683	2685	2689	2694
	2698	2699	2700	2701	2702	2703	2707	2708	2709	2710	2711	2712	2717	2729	2733
	2734	2753	2754	2755	2756	2759	2761	2790	2791	2806	2808	2811	2812	2814	2815
	2824	2891	2892	2893	2894	2895	2896	2897	2898	2899	2905	2906	2907	2908	2909
	2910	2911	2912	2913	2914										
MC:8	2724	2737	2741	2757	2758	2809	2810	2813	2818	2825	2830				

NJP	2598	2599	2600												
RESET	2596														
RETURN	939	2927													
RTI	2618	2620	2630	2674	2704	2713	2723	2749	2795	2838					
SUB	2642	2684													
TRAP	863	864	865	866	867	868	869	870	871						
TST	990	923	944	977	1028	1079	1130	1181	1232	1283	1334	1385	1436	1487	1538
TSTB	1589	1640	1691	1742	2621	2650	2652	2659	2664						
	1793	1844	1895	1946	1997	2048	2099	2150	2201	2252	2303	2354	2405	2456	2507
	2559	2719	2721	2735	2742	2828									
.ASCIZ	2928	2935	2938	2943	2944	2945	2954	2956	2957	2959	2963				
.BYTE	911	912	919	920	940	941	2676	3004	3006						
.ENABL	520														
.END	3009														
.ENDC	893	894	921	923	960	1011	1062	1113	1164	1215	1266	1317	1368	1419	1470
	1521	1572	1623	1674	1725	1776	1827	1878	1929	1980	2031	2082	2133	2184	2235
	2286	2337	2388	2439	2490	2541									
.EQUIV	567														
.EVEN	2968														
.IF	891	893	921	959	1010	1061	1112	1163	1214	1265	1316	1367	1418	1469	1520
	1571	1622	1673	1724	1775	1826	1877	1928	1979	2030	2081	2132	2183	2234	2285
	2336	2387	2438	2489	2540										
.IFF	893	894													
.IIF	880														
.IRP	2949	2883													
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	1408	1419	1459	1470	1510	1521	1561	1572	1612	1623	1663	1674	1714	1725	1765
	1776	1816	1827	1867	1878	1918	1929	1969	1980	2020	2031	2071	2082	2122	2133
	2173	2184	2224	2235	2275	2286	2326	2337	2377	2388	2428	2439	2479	2490	2530
	2541	2581													
.MACRO	1	872	949												
.NLIST	1	501	520	864	865	866	867	868	869	870	871	872	949	960	1000
	1011	1051	1062	1102	1113	1153	1164	1204	1215	1255	1266	1306	1317	1357	1368
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	1776	1816	1827	1867	1878	1918	1929	1969	1980	2020	2031	2071	2082	2122	2133
	2173	2184	2224	2235	2275	2286	2326	2337	2377	2388	2428	2439	2479	2490	2530
	2541	2581													
.PAGE	539	586	844	872	2631	2678	2714	2750	2801	2843	2888	2928			
.REM	1														
.REPT	588	949	1765												
.TITLE	520														

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*DZDHC, DZDHC.SEG/SOL/CRF/PAGNUM=DSKZ:UTIL2.P11, DSKM:DZDHC.PFC
 RUN-TIME: 13 24 3 SECONDS
 RUN-TIME RATIO: 107/42=2.5
 CORE USED: 11K (21 PAGES)

